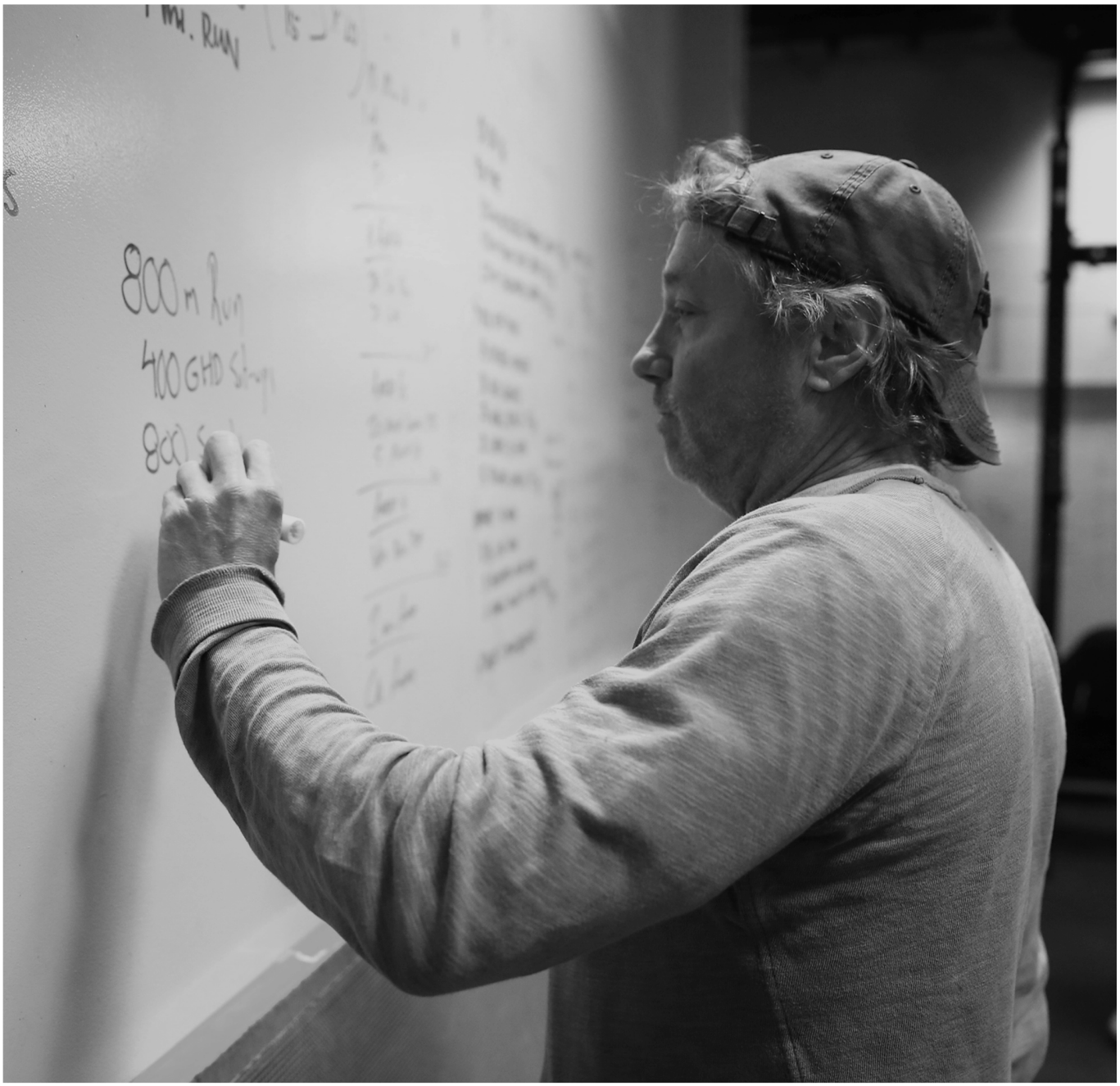
Glassman's ARCHIVE



COMPILATION

CrossFit Journal writings by Greg Glassman from 2001 through 2016



This collection of articles by BSI and MetFix's's co-founder, Greg Glassman, was originally published in *The CrossFit Journal*. Coach Glassman named his training methodology 'CrossFit,' which became a trademarked term owned by CrossFit Inc. In order to preserve his writings in their original form, references to 'CrossFit' remain in the following articles.



Glassman'S ARCHIVE

*MetFix

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CrossFit
Forging Elite Fitness

Foundations

CrossFit is a core strength and conditioning program. We have designed our program to elicit as broad an adaptational response as possible. CrossFit is not a specialized fitness program but a deliberate attempt to optimize physical competence in each of ten recognized fitness domains. They are Cardiovascular and Respiratory endurance, Stamina, Strength, Flexibility, Power, Speed, Coordination, Agility, Balance, and Accuracy.

The CrossFit Program was developed to enhance an individual's competency at all physical tasks. Our athletes are trained to perform successfully at multiple, diverse, and randomized physical challenges. This fitness is demanded of military and police personnel, firefighters, and many sports requiring total or complete physical prowess. CrossFit has proven effective in these arenas.

Aside from the breadth or totality of fitness the CrossFit Program seeks, our program is distinctive, if not unique, in its focus on maximizing neuroendocrine response, developing power, cross-training with multiple training modalities, constant training and practice with functional movements, and the development of successful diet strategies.

Our athletes are trained to bike, run, swim, and row at short, middle, and long distances guaranteeing exposure and competency in each of the three main metabolic pathways.

We train our athletes in gymnastics from rudimentary to advanced movements garnering great capacity at controlling the body both dynamically and statically while maximizing strength to weight ratio and flexibility. We also place a heavy emphasis on Olympic Weightlifting having seen this sport's unique ability to develop an athletes' explosive power, control of external objects, and mastery of critical motor recruitment patterns. And finally we encourage and assist our athletes to explore a variety of sports as a vehicle to express and apply their fitness.

An effective approach

In gyms and health clubs throughout the world the typical workout consists of isolation movements and extended aerobic sessions. The fitness community from trainers to the magazines has the exercising public believing that lateral raises, curls, leg extensions, sit-ups and the like combined with 20-40 minute stints on the stationary bike or treadmill are going to lead to some kind of great fitness. Well, at CrossFit we work exclusively with compound movements and shorter high intensity cardiovascular sessions. We've replaced the lateral raise with push-press, the curl with pull-ups, and the leg extension with squats. For every long distance effort our athletes will do five or six at short distance. Why? Because compound or functional movements and high intensity or anaerobic cardio is radically more effective at eliciting nearly any desired fitness result. Startlingly, this is not a matter of opinion but solid irrefutable scientific fact and yet the marginally effective old ways persist and are nearly universal. Our approach is consistent with what is practiced in elite training programs associated with major university athletic teams and professional sports. CrossFit endeavors to bring state-of-the-art coaching techniques to the general public and athlete who haven't access to current technologies, research, and coaching methods



Is this for me?

Absolutely! Your needs and the Olympic athlete's differ by degree not kind. Increased power, strength, cardiovascular and respiratory endurance, flexibility, stamina, coordination, agility, balance, and coordination are each important to the world's best athletes and to our grandparents. The amazing truth is that the very same methods that elicit optimal response in the Olympic or professional athlete will optimize the same response in the elderly. Of course, we can't load your grandmother with the same squatting weight that we'd assign an Olympic skier, but they both need to squat. In fact, squatting is essential to maintaining functional independence and improving fitness. Squatting is just one example of a movement that is universally valuable and essential yet rarely taught to any but the most advanced of athletes. This is a tragedy. Through painstakingly thorough coaching and incremental load assignment CrossFit has been able to teach anyone who can care for themselves to perform safely and with maximum efficacy the same movements typically utilized by professional coaches in elite and certainly exclusive environments.

Who has benefited from CrossFit?

Many professional and elite athletes are participating in the CrossFit Program. Prize-fighters, cyclists, surfers, skiers, tennis players, triathletes and others competing at the highest levels are using the CrossFit approach to advance their core strength and conditioning, but that's not all. CrossFit has tested its methods on the sedentary, overweight, pathological, and elderly and found that these special populations met the same success as our stable of athletes. We call this "bracketing". If our program works for Olympic Skiers and overweight, sedentary homemakers then it will work for you.



Your current regimen

If your current routine looks somewhat like what we've described as typical of the fitness magazines and gyms don't despair. Any exercise is better than none, and you've not wasted your time. In fact, the aerobic exercise that you've been doing is an essential foundation to fitness and the isolation movements have given you some degree of strength. You are in good company; we have found that some of the world's best athletes were sorely lacking in their core strength and conditioning. It's hard to believe but many elite athletes have achieved international success and are still far from their potential because they have not had the benefit of state-of-the-art coaching methods

Just what is a "core strength and conditioning" program?

CrossFit is a core strength and conditioning program in two distinct senses. First, we are a core strength and conditioning program in the sense that the fitness we develop is foundational to all other athletic needs. This is the same sense in which the university courses required of a particular major are called the "core curriculum". This is the stuff that everyone needs. Second, we are a "core" strength and conditioning program in the literal sense meaning the center of something. Much of our work focuses on the major functional axis of the human body, the extension and flexion, of the hips and extension, flexion, and rotation of the torso or trunk. The primacy of core strength and conditioning in this sense is supported by the simple observation that powerful hip extension alone is necessary and nearly sufficient for elite athletic performance. That is, our experience has been that no one without the capacity for powerful hip extension enjoys great athletic prowess and nearly everyone we've met with that capacity was a great athlete. Running, jumping, punching and throwing all originate at the core. At CrossFit we endeavor to develop our athletes from the inside out, from core to extremity, which is by the way how good functional movements recruit muscle, from the core to the extremities.

Can I enjoy optimal health without being an athlete?

No! Athletes experience a protection from the ravages of aging and disease that non-athletes never find. For instance, 80-year-old athletes are stronger than non-athletes in their prime at 25 years old. If you think that strength isn't important consider that strength loss is what puts people in nursing homes. Athletes have greater bone density, stronger immune systems, less coronary heart disease, reduced cancer risk, fewer strokes, and less depression than non-athletes

What is an athlete?

According to Merriam Webster's Collegiate Dictionary, an athlete is "a person who is trained or skilled in exercises, sports, or games requiring strength, agility, or stamina".

The CrossFit definition of an athlete is a bit tighter. The CrossFit definition of an athlete is "a person who is trained or skilled in strength, power, balance and agility, flexibility, and endurance". The CrossFit model holds "fitness", "health", and "athleticism" as strongly overlapping constructs. For most purposes they can be seen as equivalents.

What if I don't want to be an athlete; I just want to be healthy?

You're in luck. We hear this often, but the truth is that fitness, wellness, and pathology (sickness) are measures of the same entity, your health. There are a multitude of measurable parameters that can be ordered from sick (pathological) to well (normal) to fit (better than normal). These include but are not limited to blood pressure, cholesterol, heart rate, body fat, muscle mass, flexibility, and strength. It seems as though all of the body functions that can go awry have states that are pathological, normal, and exceptional and that elite athletes typically show these parameters in the exceptional range. The CrossFit view is that fitness and health are the same thing. It is also interesting to notice that the health professional maintains your health with drugs and surgery each with potentially undesirable side effect whereas the CrossFit Coach typically achieves a superior result always with "side benefit" vs. side effect.

What is the CrossFit method?

The CrossFit method is to establish a hierarchy of effort and concern that builds as follows:

Diet - lays the molecular foundations for fitness and health.

Metabolic Conditioning - builds capacity in each of three metabolic pathways, beginning with aerobic, then lactic acid, and then phosphocreatine pathways.

Gymnastics - establishes functional capacity for body control and range of motion.

Weightlifting and throwing - develop ability to control external objects and produce power.

Sport - applies fitness in competitive atmosphere with more randomized movements and skill mastery.



Examples of CrossFit exercises

Biking, running, swimming, and rowing in an endless variety of drills. The clean&jerk, snatch, squat, deadlift, push-press, bench-press, and power-clean. Jumping, medicine ball throws and catches, pull-ups, dips, push-ups, handstands, presses to handstand, pirouettes, kips, cartwheels, muscle-ups, sit-ups, scales, and holds. We make regular use of bikes, the track, rowing shells and ergometers, Olympic weight sets, rings, parallel bars, free exercise mat, horizontal bar, plyometrics boxes, medicine balls, and jump rope.

There isn't a strength and conditioning program anywhere that works with a greater diversity of tools, modalities, and drill

What if I don't have time for all of this?

It is a common sentiment to feel that because of the obligations of career and family that you don't have the time to become as fit as you might like. Here's the good news: world class, age group strength and conditioning is obtainable through an hour a day six days per week of training. It turns out that the intensity of training that optimizes physical conditioning is not sustainable past forty-five minutes to an hour. Athletes that train for hours a day are developing skill or training for sports that include adaptations inconsistent with elite strength and conditioning. Past one hour, more is not better!

"Fringe Athletes"

There is a near universal misconception that long distance athletes are fitter that their short distance counterparts. The triathlete, cyclist, and marathoner are often regarded as among the fittest athletes on earth. Nothing could be farther from the truth. The endurance athlete has trained long past any cardiovascular health benefit and has lost ground in strength, speed, and power, typically does nothing for coordination, agility, balance, and accuracy and possesses little more than average flexibility. This is hardly the stuff of elite athleticism. The CrossFit athlete, remember, has trained and practiced for optimal physical competence in all ten physical skills (cardiovascular/respiratory endurance, stamina, flexibility, strength, power, speed, coordination, agility, balance, and accuracy). The excessive aerobic volume of the endurance athlete's training has cost him in speed, power, and strength to the point where his athletic competency has been compromised. No triathlete is in ideal shape to wrestle, box, pole-vault, sprint, play any ball sport, fight fires, or do police work. Each of these requires a fitness level far beyond the needs of the endurance athlete. None of this suggests that being a marathoner, triathlete or other endurance athlete is a bad thing; just don't believe that training as a long distance athlete gives you the fitness that is prerequisite to many sports. CrossFit considers the Sumo Wrestler, triathlete, marathoner, and power lifter to be "fringe athletes" in that their fitness demands are so specialized as to be inconsistent with the adaptations that give maximum competency at all physical challenges. Elite strength and conditioning is a compromise between each of the ten physical adaptations. Endurance athletes do not balance that compromise.

Aerobics and Anaerobics

There are three main energy systems that fuel all human activity. Almost all changes that occur in the body due to exercise are related to the demands placed on these energy systems. Furthermore, the efficacy of any given fitness regimen may largely be tied to its ability to elicit an adequate stimulus for change within these three energy systems.

Energy is derived aerobically when oxygen is utilized to metabolize substrates derived from food and liberates energy. An activity is termed aerobic when the majority of energy needed is derived aerobically. These activities are usually greater than ninety seconds in duration and involve low to moderate power output or intensity. Examples of aerobic activity include running on the treadmill for twenty minutes, swimming a mile, and watching TV.

Energy is derived anaerobically when energy is liberated from substrates in the absence of oxygen. Activities are considered anaerobic when the majority of the energy needed is derived anaerobically. These activities are of less than two minutes in duration and involve moderate to high power output or intensity. There are two such anaerobic systems, the phosphagen system and the lactic acid system. Examples of anaerobic activity include running a 100-meter sprint, squatting, and doing pull-ups.

Our main purpose here is to discuss how anaerobic and aerobic training support performance variables like strength, power, speed, and endurance. We also support the contention that total conditioning and optimal health necessitates training each of the physiological systems in a systematic fashion.

It warrants mention that in any activity all three energy systems are utilized though one may dominate. The interplay of these systems can be complex, yet a simple examination of the characteristics of aerobic vs. anaerobic training can prove useful.

Aerobic training benefits cardiovascular function and decreases body fat. This is certainly of significant benefit. Aerobic conditioning allows us to engage in moderate/low power output for extended period of time. This is valuable for many sports. Athletes engaging in excessive aerobic training witness decreases in muscle mass, strength, speed, and power. It is not uncommon to find marathoners with a vertical leap of several inches and a bench press well below average for most athletes. Aerobic activity has a pronounced tendency to decrease anaerobic capacity. This does not

bode well for athletes or the individual interested in total conditioning or optimal health.

Anaerobic activity also benefits cardiovascular function and decreases body fat. Anaerobic activity is unique in its capacity to dramatically improve power, speed, strength, and muscle mass. Anaerobic conditioning allows us to exert tremendous forces over a very brief time. Perhaps the aspect of anaerobic conditioning that bears greatest consideration is that anaerobic conditioning will not adversely affect aerobic capacity! In fact, properly structured, anaerobic activity can be used to develop a very high level of aerobic fitness without the muscle wasting consistent with high volume aerobic exercise!

Basketball, football, gymnastics, boxing, track and field events under one mile, soccer, swimming events under 400 yards, volleyball, wrestling, and weightlifting are all sports that require the majority of training time spent in anaerobic activity. Long distance and ultra-endurance running, cross-country skiing, and 1500+ yard swimming are all sports that require aerobic training at levels that produce results unacceptable to other athletes or individuals concerned with total conditioning or optimal health.

The CrossFit approach is to judiciously balance anaerobic and aerobic exercise in a manner that is consistent with the athlete's goals. Our exercise prescriptions adhere to proper specificity, progression, variation, and recovery to optimize adaptations.

The Olympic Lifts, a.k.a., Weightlifting

There are two Olympic lifts, the clean and jerk and the snatch. Mastery of these lifts develops the squat, deadlift, powerclean, and split jerk while integrating them into a single movement of unequaled value in all of strength and conditioning. The Olympic lifters are without a doubt the world's strongest athletes.

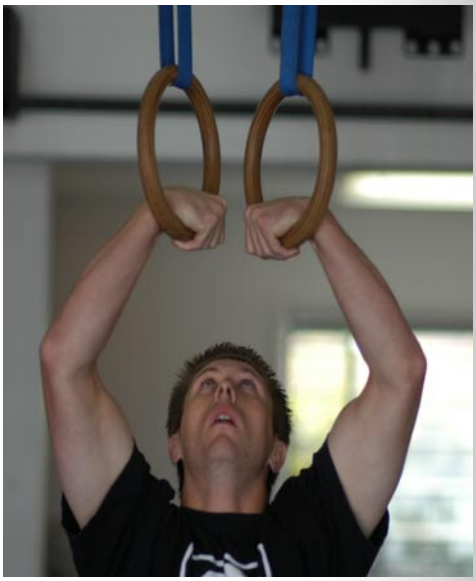
These lifts train athletes to effectively activate more muscle fibers more rapidly than through any other modality of training. The explosiveness that results from this training is of vital necessity to every sport.

Practicing the Olympic lifts teaches one to apply force to muscle groups in proper sequence, i.e., from the center of the body to its extremities (core to extremity). Learning this vital technical lesson benefits all athletes who need to impart force to another person or object as is commonly required in nearly all sports.

In addition to learning to impart explosive forces, the clean and jerk and snatch condition the body to receive such forces from another moving body both safely and effectively.

Numerous studies have demonstrated the Olympic lifts unique capacity to develop strength, muscle, power, speed, coordination, vertical leap, muscular endurance, bone strength, and the physical capacity to withstand stress. It is also worth mentioning that the Olympic lifts are the only lifts shown to increase maximum oxygen uptake, the most important marker for cardiovascular fitness.

Sadly, the Olympic lifts are seldom seen in the commercial fitness community because of their inherently complex and technical nature. CrossFit makes them available to anyone with the patience and persistence to learn.



Gymnastics

The extraordinary value of gymnastics as a training modality lies in its reliance on the body's own weight as the sole source of resistance. This places a unique premium on the improvement of strength to weight ratio. Unlike other strength training modalities gymnastics and calisthenics allow for increases in strength only while increasing strength to weight ratio!

Gymnastics develops pull-ups, squats, lunges, jumping, push-ups, and numerous presses to handstand, scales, and holds. These skills are unrivaled in their benefit to the physique as evident in any competitive gymnast.

As important as the capacity of this modality is for strength development it is without a doubt the ultimate approach to improving coordination, balance, agility, accuracy, and flexibility. Through the use of numerous presses, handstands, scales, and other floor work the gymnast's training greatly enhances kinesthetic sense.

The variety of movements available for inclusion in this modality probably exceeds the number of exercises known to all non-gymnastic sport! The rich variety here contributes substantially to the CrossFit program's ability to inspire great athletic confidence and prowess.

For a combination of strength, flexibility, well-developed physique, coordination, balance, accuracy, and agility the gymnast has no equal in the sports world. The inclusion of this training modality is absurdly absent from nearly all training programs.

Routines

There is no ideal routine! In fact, the chief value of any routine lies in abandoning it for another. The CrossFit ideal is to train for any contingency. The obvious implication is that this is possible only if there is a tremendously varied, if not randomized, quality to the breadth of stimulus. It is in this sense that the CrossFit Program is a core strength and conditioning program. Anything else is sport specific training not core strength and conditioning.

Any routine, no matter how complete, contains within its omissions the parameters for which there will be no adaptation. The breadth of adaptation will exactly match the breadth of the stimulus. For this reason the CrossFit program embraces short, middle, and long distance metabolic conditioning, low, moderate, and heavy load assignment. We encourage creative and continuously varied compositions that tax physiological functions against every realistically conceivable combination of stressors. This is the stuff of surviving fights and fires. Developing a fitness that is varied yet complete defines the very art of strength and conditioning coaching.

This is not a comforting message in an age where scientific certainty and specialization confer authority and expertise. Yet, the reality of performance enhancement cares not one wit for trend or authority. The CrossFit Program's success in elevating the performance of world-class athletes lies clearly in demanding of our athletes total and complete physical competence. No routine takes us there.

Neuroendocrine Adaptation

"Neuroendocrine adaptation" is a change in the body that affects you either neurologically or hormonally. Most important adaptations to exercise are in part or completely a result of a hormonal or neurological shift. Current research, much of it done by Dr. William Kraemer, Penn State University, has shown which exercise protocols maximize neuroendocrine responses. Earlier we faulted isolation movements as being ineffectual. Now we can tell you that one of the critical elements missing from these movements is that they invoke essentially no neuroendocrine response.

Among the hormonal responses vital to athletic development are substantial increases in testosterone, insulin-like growth factor, and human growth hormone. Exercising with protocols known to elevate these hormones eerily mimics the hormonal changes sought in exogenous hormonal therapy (steroid use) with none of the deleterious effect. Exercise regimens that induce a high neuroendocrine response produce champions! Increased muscle mass and bone density are just two of many adaptative responses to exercises capable of producing a significant neuroendocrine response.

It is impossible to overstate the importance of the neuroendocrine response to exercise protocols. This is why it is one of the four defining themes of the CrossFit Program. Heavy load weight training, short rest between sets, high heart rates, high intensity training, and short rest intervals, though not entirely distinct components, are all associated with a high neuroendocrine response.

Power

Power is defined as the "time rate of doing work." It has often been said that in sport speed is king. At CrossFit "power" is the undisputed king of performance. Power is in simplest terms, "hard and fast." Jumping, punching, throwing, and sprinting are all measures of power. Increasing your ability to produce power is necessary and nearly sufficient to elite athleticism. Additionally, power is the definition of intensity, which in turn has been linked to nearly every positive aspect of fitness. Increases in strength, performance, muscle mass, and bone density all arise in proportion to the intensity of exercise. And again, intensity is defined as power. Power is one of the four defining themes of the CrossFit

Program. Power development is an ever-present aspect of the CrossFit Daily Workout.

Cross-Training

Cross training is typically defined as participating in multiple sports. At CrossFit we take a much broader view of the term. We view cross training as exceeding the normal parameters of the regular demands of your sport or training. The CrossFit Program recognizes functional, metabolic, and modal cross training. That is we regularly train past the normal motions, metabolic pathways, and modes or sports common to the athlete's sport or exercise regimen. We are unique and again distinctive to the extent that we adhere to and program within this context.

If you remember the CrossFit objective of providing a broad based fitness that provides maximal competency in all adaptive capacities, cross training, or training outside of the athletes normal or regular demands is a given. The CrossFit coaching staff had long ago noticed that athletes are weakest at the margins of their exposure for almost every measurable parameter. For instance, if you only cycle between five to seven miles at each training effort you will test weak at less than five and greater than seven miles. This is true for range of motion, load, rest, intensity, and power, etc. The CrossFit workouts are engineered to expand the margins of exposure as broad as function and capacity will allow. Cross training is one of the four CrossFit defining themes.

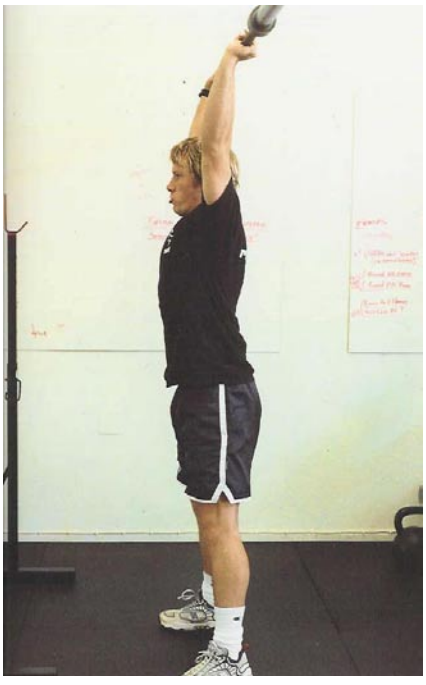
Functional Movements

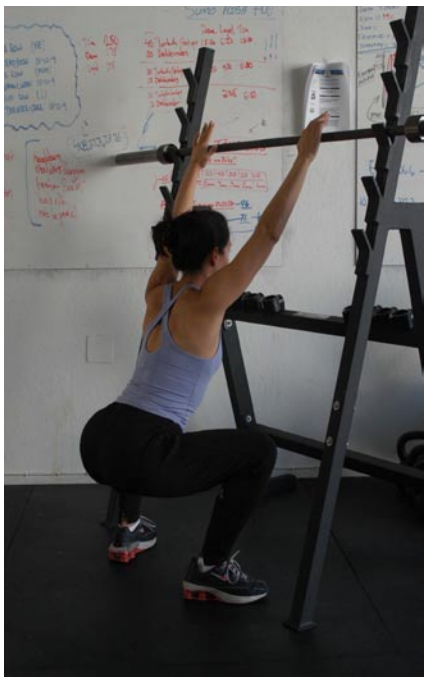
There are movements that mimic motor recruitment patterns that are found in everyday life. Others are somewhat unique to the gym. Squatting is standing from a seated position; deadlifting is picking any object off the ground.They are both functional movements. Leg extension and leg curl both have no equivalent in nature and are in turn non-functional movements. The bulk of isolation movements are non-functional movements. By contrast the compound or multi-joint movements are functional. Natural movement typically involves the movement of multiple joints for every activity.

The importance of functional movements is primarily two-fold. First of all the functional movements are mechanically sound and therefore safe, and secondly they are the movements that elicit a high neuroendocrine response.

CrossFit has managed a stable of elite athletes and dramatically enhanced their performance exclusively with functional movements. The superiority of training with functional movements is clearly apparent with any athlete within weeks of their incorporation.

The soundness and efficacy of functional movement is so profound that exercising without them is by comparison a colossal waste of time. For this reason functional movement is one of the four dominant CrossFit themes.







Diet

The CrossFit dietary prescription is as follows:

Protein should be lean and varied and account for about 30% of your total caloric load.

Carbohydrates should be predominantly low-glycemic and account for about 40% of your total caloric load.

Fat should be predominantly monounsaturated and account for about 30% of your total caloric load.

Calories should be set at between .7 and 1.0 grams of protein per pound of lean body mass depending on your activity level. The .7 figure is for moderate daily workout loads and the 1.0 figure is for the hardcore athlete.

What should I eat?

In plain language, base your diet on garden vegetables, especially greens, lean meats, nuts and seeds, little starch, and no sugar. That's about as simple as we can get. Many have observed that keeping your grocery cart to the perimeter of the grocery store while avoiding the aisles is a great way to protect your health. Food is perishable. The stuff with long shelf life is all circumspect. If you follow these simple guidelines you will benefit from nearly all that can be achieved through nutrition.

The Caveman or Paleolithic Model for Nutrition

Modern diets are ill suited for our genetic composition. Evolution has not kept pace with advances in agriculture and food processing resulting in a plague of health problems for modern man. Coronary heart disease, diabetes, cancer, osteoporosis, obesity and psychological dysfunction have all been scientifically linked to a diet too high in refined or processed carbohydrate. Search "google" or "Alta Vista" for Paleolithic nutrition, or diet. The return is extensive, compelling, and fascinating. The Caveman model is perfectly consistent with the CrossFit prescription.

What Foods should I avoid?

Excessive consumption of high-glycemic carbohydrates is the primary culprit in nutritionally caused health problems. High glycemic carbohydrates are those that raise blood sugar too rapidly. They include rice, bread, candy, potato, sweets, sodas, and most processed carbohydrates. Processing can include bleaching, baking, grinding, and refining. Processing of carbohydrates greatly increases their glycemic index, a measure of their propensity to elevate blood sugar.

What is the Problem with High-Glycemic Carbohydrates?

The problem with high-glycemic carbohydrates is that they give an inordinate insulin response. Insulin is an essential hormone for life, yet acute, chronic elevation of insulin leads to hyperinsulinism, which has been positively linked to obesity, elevated cholesterol levels, blood pressure, mood dysfunction and a Pandora's box of disease and disability. Research "hyperinsulinism" on the Internet. There's a gold mine of information pertinent to your health available there. The CrossFit prescription is a low-glycemic diet and consequently severely blunts the insulin response

Caloric Restriction and Longevity

Current research strongly supports the link between caloric restriction and an increased life expectancy. The incidence of cancers and heart disease sharply decline with a diet that is carefully limited in controlling caloric intake. "Caloric Restriction" is another fruitful area for Internet search. The CrossFit prescription is consistent with this research.

The CrossFit prescription allows a reduced caloric intake and yet still provides ample nutrition for rigorous activity.



"mess you up"

THE CrossFit Journal

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IN THIS ISSUE:
- *Outfitting a world-class strength and conditioning facility in your garage*
- *Equipment suppliers & vendors*
- *Equipment shopping list*
- *Garage gym on a budget*

The Garage Gym

How To Get Kicked Out Of Your Gym In Ten Days Or Less!

Day 1
Bring your own music – use a boom box – and turn it up to inspiration levels and start working out. AC-DC's "Thunderstruck" should do the trick.

Day 2
Set up a circuit like one of the typical CrossFit "Workouts of the Day" and put a sign up at each station advising others that this equipment is reserved for accurate timing of your effort.

Day 3
While practicing the Olympic lifts drop a max load from overhead. This may do it right here.

Day 4
Find a twenty-inch platform and perform box jumps. Try three sets of two minutes of max jumps. Bizarrely, this one irks the shit out of most gym management.

Day 5
Take a pair of dumbbells out into the parking lot to do walking lunges. You may be accused of theft.

Day 6
Bring several powerlifting buddies to do some super heavy deadlifts. Don't forget to grunt, scream, and use chalk!

Day 7
If the gym has support poles climb them. If not find something to climb; sling a rope over a beam or rafters, attach some climbing holds to the wall and use them. You won't get to the climbing part if you need to attach anything. You may get stopped at the door coming in with a twenty-five foot coil of two-inch rope.

Day 8
Workout with your shirt off. If you don't get a reaction have your girlfriend or wife take hers off.

Day 9
Walk on your hands, or do handstand push-ups or some other basic gymnastics stuff.

Day 10
If you've gotten this far, this one is the clincher. Record your efforts by writing them on the wall.

If after day ten you are still allowed in, you belong to a great gym. Let us know where it is; we'll feature it on our site. If you're asked to leave before or during this experiment it's time to clean out the garage!

The Need

The ideal gym would be located close to home or work, well equipped, clean, and manned by knowledgeable helpful staff. Our ideal gym would also not be overly crowded yet available to friends and family that we'd like to workout with. An ideal gym would be supportive of hard-core fitness, a la CrossFit. As long as we're dreaming it might also play only the music that we want to hear.

Many of us are blessed with gyms we love dearly. If that's your situation, great! For the rest of us our gyms are very different. Often the drive to the gym is 20-30 minutes coming and going, the music is worse than annoying, the staff are less than worthless, the place is packed with selectorized equipment for which we've no use and the few pieces of equipment that you want to use are in near constant use.



Commute, parking, filth, rust, crowding, music, staff, and members each can make what for us is an essential activity difficult or impossible. The "Spa" (big tip-off) in our neighborhood has over the years banned Olympic lifting, all jumping, plyometrics, walking lunges -believe it or not- and has as a matter of policy fostered an antagonistic attitude to serious training. No grunting, sweating, yelling, or dropping weights allowed. Our experience is not unique.

In part the problem is one of business model. Your average neighborhood health club or gym is predicated on a low to minimum wage, skilless staff supervising hapless members. The idea is to fill the space with machines, staff it with high school kids and let "Muscle and Fitness" provide the technical guidance. The predominant model in commercial facilities is the bodybuilding model: all machines and isolation work. Machines and isolation movements require little or no knowledgeable instruction or coaching whereas serious strength and conditioning requires less equipment and considerable expertise on the part of coaches. You can see this in the National Strength and Conditioning Association's, landmark Essentials of Strength and Conditioning where schematics of a university strength and conditioning facility and a commercial health club are shown. The schematics speak volumes. You'll notice that the commercial facility is littered with equipment whereas the university strength and conditioning facility is sparse by comparison.

At CrossFit we routinely receive email from athletes complaining that their gym doesn't have bumper plates, training/practice plates, rings, parallel bars, climbing ropes, plyo boxes, or some other piece or gear essential to our practice. The solution to this dilemma has been solved by many of these same clients: building a garage gym.

Now, when you look at the sea of worthless machines that makes up a commercial facility, the idea of developing a garage gym may seem daunting. Just remember, we're building a strength and conditioning gym, not a bodybuilding gym. We wouldn't keep 99% of the equipment at your Gold's gym if it were given to us.

The Cure

Here's the great news. You can build, rather inexpensively, a world-class strength and conditioning facility in your garage! At the CrossFit facility in Santa Cruz, California, we've picked up every piece of equipment critical to forging world-class athleticism, and many of our clients have the same stuff at home. Our facility is in fact little more than an oversized high ceiling garage. There's no piece of equipment that we need but don't have, not one. The same is true of our clients who've built their own facilities. They've got exactly what they need.



The garage gym tradition is revered and respected. The number of athletes training in garages, barns, and abandoned buildings is legion. Many of these are world dominant in their sport. Some go this route because no other resources are available, but most have chosen the garage-gym realizing it best provides for their needs. The lifting, throwing, jumping, and climbing essential to responsible programming will find no welcome home for you and your friends at 24-Hour Nautilus.

Your garage is begging to become a gym. There is within your garage more than enough space to develop a gym that will rival just about any commercial facility. Yeah, we know, your car and 15 years worth of accumulated junk make current use of that space. What we're talking about here is repurposing your garage from junkyard and auto shelter to a first-rate strength and conditioning facility. Pull the car into the driveway. Cover it if you must. Have a garage sale for the junk of value. You can erect a Rubbermaid storage shed in the back yard for all of your gardening equipment, tools, and other things you want to keep. The rest throw away! If your garage is full of "stuff" that you don't want to keep the easiest solution is to rent a disposal bin. The rental yard will drop the bin off and come back for it and dispose of the contents when you're done. It's easy!

Starting from the Ground Up: Matting

Once the garage is cleared and cleaned the next obvious step is to mat it. Matting is expensive but adds so much to comfort and safety that they are a must. Install in installments, one mat at a time if you need to.



Avoid buying your mats from fitness vendors. You can find 4'X6'X ¾ " rubber mats exactly like the ones sold by Bigger Faster Stronger (one of our favorite vendors) at your local horse feed and tack store. The same mats are sold by feed and tack stores as horse stall mats. Even if you have to rent a truck and drive two hours out of Manhattan to find a feed and tack store you'll save a bundle by not paying for shipping. The mats are 50-60 pounds apiece and the shipping is outrageous. You'll need one mat for each 24 square feet of garage.

We recommend that you draw your garage to scale on a paper and you'll see how many mats you can lay without cutting and how many you have to cut. Cutting the mats is not easy!! In fact, it's really, really hard. The best approach is to make a template out of brown shopping bag that fits the space for which you want to cut a mat. Lay the brown bag out on the mat to be cut and trace with white chalk the line you want to cut. Cutting ¾" rubber matting is best achieved with a utility knife. Use a four-foot steel or aluminum rule to draw your lines and to make the first pass with the knife. It will help to draw your lines approximately ¼" past what you've measured. Due to the compressibility of the mats this allows for really tight, nice, seams.

Let only about a ½" of blade out and from your belly with arms out straight overhead draw the knife towards you along the chalked line. Each cut will only be about 18 inches long and about ¼ inch deep. So, it will take three passes to get through. Don't cut over

Vendors & Manufacturers

Many of these vendor's websites don't contain all of their products. We recommend that you contact (call) vendors and ask for their current catalog. Your fitness library ought to include catalogs from each vendor.

1. **Iron Mind** (www.ironmind.com)
   Iron Mind is our favorite supplier by a long shot. Their equipment will last a lifetime and is a perfect match to the CrossFit minimalist/basics philosophy. The Iron Mind catalog is itself a tribute to the company's integrity and commitment. Iron Mind also publishes Milo, the best journal of strength training in the world.
2. **Bigger, Faster, Stronger (BFS)** (www.biggerfasterstronger.com)
   Bigger, Faster, Stronger's equipment is good and reasonably priced. They've typically had trouble fulfilling orders correctly and on time but they are well intentioned and honest. CrossFit has done more business with them than any other vendor.
3. **Concept II** (www.concept2.com)
   Concept II makes the Concept II Rowing Ergometer. We can't say enough good things about this company or this piece of "cardio" equipment. Concept II has turned their product into a sport. No one else can make this claim. Where else can you rank your metabolic conditioning against an international pool of world class athletes like you can from their website?
4. **Stairmaster** (www.stairmaster.com)
   Stairmaster makes the Gravitron, the perfect tool for developing pull-ups and dips. The Gravitron is perfect but Stairmaster is sloppy in fulfillment. They routinely make promises they can't keep.
5. **Power Systems** (www.power-systems.com)
   Power System's prices are rock bottom and their equipment is O.K. The biggest problem with Power Systems is in shipping. We much too often get broken equipment and their welds have been "iffy." We've gotten them to heavily discount broken pieces and then had them fixed. In the end, we'd still do business with them. Often Power Systems is the easy choice for odds and ends and their selection is impressive.
6. **Dynamax** (www.medicineballs.com)
   When it comes to medicine balls these guys are the only way to go. The training guide that comes with each medicine ball is absolutely outstanding. These guys understand fitness.
7. **York Barbell Company** (www.yorkbarbell.com)
   York Barbell makes beautiful equipment and is the best of the major American equipment manufacturers. Think York, think Lexus.
8. **Ivanko** (www.ivanko.com)
   Ivanko's stuff is gorgeous. Their site features articles explaining the engineering behind good bars and plates. Think Ivanko, think Mercedes.
9. **Eleiko** (www.eleikosport.com/company.asp)
   Eleiko has no peer in the weightlifting world. Their prices reflect as much. Where budgets are BIG Eleiko's the choice. Think Eleiko, think Rolls Royce.
10. **Sorinex** (http://www.sorinex.com/default.asp)
    We've not done business with Sorinex yet, but will in the future. The Sorin brothers are highly regarded in the industry and their equipment is gaining rapidly in popularity. Innovative (check out their new glute ham developer) and designed from experience this is excellent equipment.
11. **American Athletic, Inc. (AAI)** (http://www.gymnasticproducts.com/)
    AAI is our favorite supplier for parallel bars, rings, mats, and other gymnastics equipment. Their equipment is sound and beautiful.
12. **Spieth Anderson** (http://www.spiethanderson.com/gymnastics/)
    Spieth Anderson is the Eleiko of gymnastics supplies (think Spieth, think Rolls Royce). We just enjoy looking through their catalog. If your budget has no limits, Spieth is your first choice.
13. **Nick Massman** (raahlu@pacbell.net)
    Nick is the CrossFit engineer. He made our "ab bench", wall ball target, pull-up bar, rotating-thick handled pull-up bar, and other CrossFit originals. There's nothing Nick can't make, and his stuff is at least as good as IronMind's. For custom applications and one-of-a-kind pieces he's "the man." Nick has been able to take the best equipment and make it better!

the cement or on any surface you don't want to ruin. We recommend a sheet of plywood under the mats you are cutting.

This is one chore where a friend is almost essential. You'll want help loading and unloading the mats and measuring, cutting, and fitting them. They are only 50 pounds or so but couldn't be more awkward. They feel like they weigh 300 pounds a piece by the end of the day. This chore requires patience.

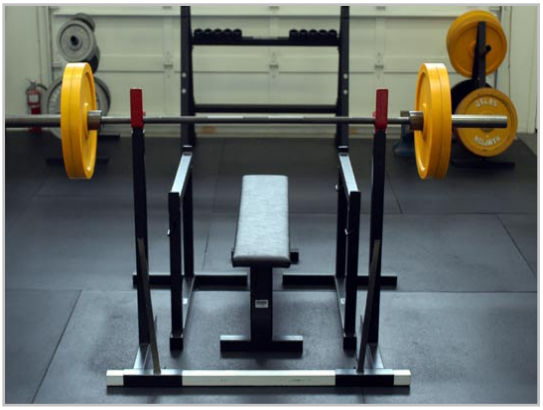
Don't even think about using a skill saw or other power saw. The resulting fire and smoke will take hours to clear and that's from a six inch cut. We've seen first timers make near perfect cuts around poles and corners using just a utility knife. Careful work and positioning of the mats will minimize seams and gaps. We use a twenty-five pound plate to slide into the mat's edges to cram them together shrinking gaps before laying the next mat. This is the hardest part of the garage gym.



Bare Minimum: Weights & Pull-up Bar

You want to get an Olympic weight set. These have the rotating sleeves

and accept plates with the 2" holes. You'll never regret buying a quality bar. It will set you back several hundred dollars but provide a lifetime of service. Bigger Faster Stronger and IronMind are our favorite vendors and Ivanko, Eleiko, and York are our favorite manufacturers. You may want to think about Bigger Faster Stronger's (www.biggerfasterstronger.com) "Aluma-lite" and "Ultra-lite" bars if your gym is going to be used by women, seniors, or children. These bars weigh 15 and 30 pounds respectively. We have and use both. A standard Olympic Bar is 45 pounds. If you are going to be working out with buddies you are going to want two Olympic bars. As far as plates go we highly recommend that you go with solid rubber composition plates. These plates are safer and quieter than steel and even regular bumper plates. If we were outfitting our facility again we'd go all rubber and almost no steel. The only steel we need is 2 ½ pound plates. Bigger Faster Stronger has non-composition rubber and plastic five and ten pound plates. The rubber composition plates are made by both Hampton and York and come in 25-20-15-and 10 kg weights. The rubber plates cost more but the noise reduction alone makes them worth the money.

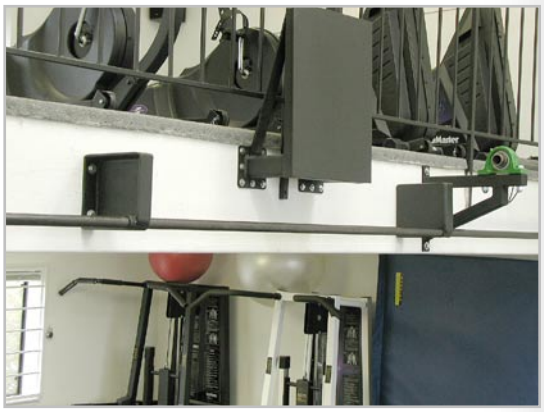


You'll want an Olympic Bar and Olympic Bumper Plate holder. It's annoying and unsafe leaving this equipment on the floor. The bar holders that hold the bars on end take up little space. If your plates are all full-sized bumper or rubber composition plates make sure your rack is designed to hold Olympic bumper plates. These plates are all 18 inches in diameter. We've made this mistake in ordering racks. We don't have a preferred vendor for these items.

Dumbbells are not *absolutely* essential, but we wouldn't be happy without them. Our favorite is the Durabell Dumbell made by Hampton and carried by York Barbell Company. They are super durable, rubber coated, and won't come apart and drop plates in your mouth. Best of all they store in vertical racks that take up little room. This is a great dumbbell and racking system at a great price. We paid a lot more for a lot less, unfortunately. Where budgets and space are tight you want to consider IronMind's "Olympic-Style Husky Handle Dumbbell Bars." These Dumbbells have to be seen and handled to be believed. They take Olympic plates and are thick handled (2 inches). You'll never outgrow these monsters. People's jaws drop when they see them.

You need a place to perform pull-ups and dips. The temptation is to go with one of the many freestanding pull-up and dip towers. They are cheap and adequate to the task but flimsy and take up valuable floor space. In our garage gym we place a premium on floor space. Power Systems makes a wall mounted pull-up bar and dip bar. We've had trouble with equipment coming damaged from Power Systems but these items are very sturdy and ultimately Power Systems made good on the damage. You can also have wall mounted pull-up and dip bars made by a local welder.

We had Nick Massman (raahlu@pacbell.net) build CrossFit a pull-up bar and mounting brackets that is twenty feet long. We also commissioned Nick to design and fabricate a thick handled (2" diameter) revolving pull-up bar. This monster will take someone with thirty pull-ups and bust them down to five reps. The load on the hands and forearms is amazing.



There's another angle to pull-ups and dips. We have in our facility two Starmaster Gravitrons (www.stairmaster.com/commercial/products/strength/gravitron/index.html). They have proven indispensable to developing pull-ups and dips in individuals not strong enough for either the pull-up or the dip. The pull-up and dip are unsurpassed in developing functional upper body strength and are formidable obstacles for most women and seniors. For them the Gravitron is indispensable. If you can't do a pull-ups or dip you need a Gravitron. If you already have pull-ups and dips the Gravitron is still a great tool to work additional reps when spent or for warm-up. The newer Gravitron allows for lowering of the carriage and provides a station for unassisted pull-up and dips. Though far from cheap they have been indispensable to CrossFit's practice. Some of our friends have found remanufactured Gravitrons for nearly half of the new price. Search the Internet for used Gravitrons.

If you only had a bar and a place to do pull-ups you *could* do an acceptable variant of the CrossFit Program. With this minimal amount of equipment you could do deadlifts, squats, push-press, push-ups, cleans, and pull-ups. In fact the minimalist/low-budget

approach to our program is to do deadlifts and Tabata Squats on day one, push-press and push-ups day two, and cleans and pull-ups day three and rest day four. Repeat. In minimalist/low-budget mode we derive our metabolic conditioning from running and jumping rope. You could get amazing results on this regimen. Our desire here, though, is to lay plans for a world-class strength and conditioning facility in your home. Let's proceed with the rest of our design.

The Benches and Racks

Now we want to get some "furniture". You will need to have a flat bench, squat racks, and "portable power racks". Iron Mind is the first choice for these critical pieces.

Squat racks are the next most important piece of equipment after your Olympic bar and pull-up bar. The Iron Mind (www.ironmind.com) squat racks are called "Vulcan Racks." They weigh only 50 pounds yet can support 1,500 safely. They are adjustable from 37.5 – 64" making them ideal for squatting and pressing, bench or standing. The more we use these racks the more we like them. They are used at the U.S. Olympic Training Center as well as at CrossFit. IronMind also makes dipping handles that transform the Vulcan Racks into a reasonably stable dipping platform.

The Iron Mind flat bench ("Five Star Flat Bench") is built to last forever. This all steel bench is the perfect bench for bench press though we've found it handy for dozens of other uses from step-ups to reaching our pull-up bar. We've seen cheaper ($280 with shipping) but not stronger benches.

Iron Mind's "Pillars of Power" are in a sense portable power racks. These bombproof racks – they will support 4,000 pounds – are a perfect tool for self-spotting bench press and squats as well as an excellent loading platform for numerous exercises. Spotting is always a dilemma when working out alone. The Pillars of Power are actually a better spotter than a workout partner for the bench press and squat.

The beauty of the Vulcan Racks, Five Star Flat Bench, and Pillars of Power is that they are professional grade equipment in use by hard-core lifters world wide, can be tucked away to fit in the smallest of spaces, and are perfectly portable. You are not compromising with this stuff. Programs with multi-million dollar budgets and acres of space are using this same gear. We're talking about some of the best training equipment available at any price!

Our Favorite Piece of "Cardio" Equipment



A jump rope, good bike, running shoes, and the Concept II Rower. That's the CrossFit cardio equipment list. Let's take a look at the rower.

Our favorite piece of equipment for metabolic conditioning ("cardio") is the Concept II Rower. The effect of rowing has to be experienced to be believed. Many of our world champion fighters are terrified of the rower! Often a good thousand-meter effort leaves an impact on the body that lasts for days. The claim of a complete or whole body exercise is often made and seldom true. Rowing is as complete as any single exercise can be. As for

But, I'm Broke!

If your budget is seriously limited here are some ideas:

1. Start with an Olympic bar and some rubber composition plates and a pull-up bar. That's enough to get started. You can find retailers in your area with what you need so that you can avoid shipping costs. They're substantial!
2. Make what you can. If you've the skill or know someone with the talents much of our equipment can be fabricated for less.
3. Shop around. Buy used. Gym equipment goes for pennies on the dollar at garage sales and in the classified section of your local paper. Make a habit of checking in with used sporting good stores, the classifieds, and the internet for used equipment.
4. You can mat your garage one mat at a time.
5. Allocate a monthly budget for the project and be patient.
6. Ultimately, be resourceful. If you want a gym nothing can stop you.

the Concept II Rower itself, they are cheap ($800) and virtually indestructible and essentially maintenance free. We've seen Concept II Rowers that have been in daily commercial use for years and years without any maintenance.

Concept II has an outstanding website (www.concept2.com) where rowers post their times at varying distances grouped by age, gender, and weight. The pool of athletes is deep enough that the posted times legitimately reflect a world ranking. This is possible because the Concept II Rower (C2) is a common and valuable tool of internationally competitive rowers. Concept II has turned their product into an international sport. We don't know of any other product that can make a similar claim.

The console on the C2 is our favorite on any "cardio" equipment. On this rower we can easily program any interval pattern we want like the Tabata interval (20 seconds of work followed by 10 seconds of rest, repeated 8 times). The C2 console allows us to row for time or distance and gives projected times and distances making targeted efforts easier. It's unbelievable to us that this flexibility is unique to this equipment.

The Concept II Rower stores on end and in this position takes up less space than most other common pieces of "cardio" equipment. Only running and jumping rope require equipment (shoes & rope) that stow away as compactly as this rower.

Gymnastics and Climbing Equipment

Because gymnasts have an extraordinary strength to weight ratio, unrivaled torso/upper body strength, and can express this strength in a multitude of planes, CrossFit makes regular use of skills and drills that develop this capacity. Other than the pull-up bar and dipping platform already mentioned we have parallettes (short parallel bars) and still rings.

Our parallettes came from AAI (http://www.gymnasticproducts.com/parallel.htm) and are marketed as "low parallel bars". AAI's "low parallel bars" cost $844.00. They are adjustable from 14-20" wide, stand 16" high and are 8' long. While unwieldy and somewhat large this is one piece of equipment you'll never outgrow. Presses to handstand, handstands, push-ups, pirouettes, L-holds, V-holds, … the list of exercises that can be learned on these is extensive. This is an ideal place to develop upper body strength, abdominal strength, agility, balance, coordination, and accuracy.

Space and budget may not allow for the commercial bars, so here are plans for homemade parallettes. Made from PVC these bars will allow for much of what you can do on the bigger set. From the Drills and Skills site: http://www.drillsandskills.com/skills/cond/ Incidentally, this is one of our favorite sites. The Skills and Drills Page will keep you motivated and challenged for deacades.

We strung a pair of still rings from our vaulted ceiling. You may not have the great luxury of a 15-20 foot ceiling. That doesn't mean you can't take advantage of the incomparable upper body strength that can be developed on the rings. You can get a pair of rings and straps from Professional Athletics (PA). PA carries Norbert's wood rings and straps for about $125. http://www.gymnastics-equipment.com/rings.html.

We've seen these rings hung over a wall or beam mounted pull-up bar allowing for muscle-ups (pulling yourself from a hang below the rings to a support above and dipping to full extension) and dips. The difference in difficulty between bar dips and ring dips is a source of unending entertainment. That's all we'll say about that.

As for the muscle-up, you just think you've got good upper body strength until you've actually done one. The muscle-up combines the world's nastiest pull-up with the hardest dip. The muscle-up is a functional movement that enables you, once you've mastered it, to surmount any object on which you can get a finger hold. This is potentially a life saving skill. We'll cover the muscle-up in great detail in a later issue, but let it suffice to say for now that the muscle-up is an indispensable tool for developing stupefying upper body strength. Learn the muscle-up; you can't without rings. Finally, the wooden rings and strap assembly hung over your pull-up bar is the ideal solution as to where to do dips.

We also use landing mats from AAI (http://www.gymnasticproducts.com/mats.htm) for stretching and to cushion a possible fall from the parallel bars, rings, or rope climb. Our favorite mat is 3.5' X 6' X 4".

Rope Climb is an extraordinary exercise yet requires a tall ceiling. Some of our

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friends have strung a rope in a tree in their yard. If you had a garage with exposed rafters you could string a shorter rope and start from seated and make multiple trips up and down for great effect. Our rope came from AAI (http://www.gymnasticproducts.com/), but it was expensive. AAI's ropes are absolutely beautiful (http://www.gymnasticproducts.com/training_accessories.htm), come in custom lengths and are booted or braided/knotted at the end to prevent unraveling. AAI Climbing Ropes also come with mounting hardware. They have several styles including one with braided knots every 12" to assist the beginner.

You won't find a better rope than AAI's, but you can put together a Climbing Rope at a fraction of the cost. One of our friends bought a length of 1 ½ " twisted manila rope, ran an eye bolt through a beam and passed the rope through the eye and tied a knot in the end to keep it from coming through. If monitored regularly for wear and fraying this is perfectly safe. The floor end needs to be knotted or "whipped" to keep from unraveling. This is not a pretty solution, but there's no compromise in function with this approach.



The Climbing Rope may or may not be an option in your gym, but there are several other climbing options that are possible in any space. Climbing Holds, Campus Boards, and Peg Boards are wickedly effective, functional, and fun. We've limited experience with this stuff, but it is our next frontier.

We've plans to fill our walls with climbing holds. This is cheap, beautiful, takes no useable space and is functional. You could put hundreds of these up in your garage. Search Google (www.google.com) for "Climbing Holds." Here are several we are considering:

http://www.metoliusclimbing.com/megapacks.asp
http://www.juggernet.com/prodsvs.htm
http://www.shopslms.com/climbingholds.html.

They mount to plywood and the plywood mounts to your walls. The vendors will supply all the hardware and instructions for installation. This is a must for a garage gym in our opinion.

Campus Boarding is great exercise. Metolius (http://www.metoliusclimbing.com/) explains the history (http://www.metoliusclimbing.com/howto_campusboards.htm) and details of campus boarding and gives plans (http://www.metoliusclimbing.com/howto_designcampus.htm) for constructing and installing a campus board and sells the equipment. We don't know of a better site or source for campus boarding. CrossFit plans to install a campus board within the next few months. Again, great functional exercise, doesn't take from otherwise useable space, and FUN!

Peg Boards can be used to develop great back and arm strength. Here are the best we've found on the net: http://bisinc.com/lgi_old/pegboard.ihtml & http://www.wolverinesports.com/fitness15.html. Again, we've plans to install Peg Boards on our walls soon. This is our favorite alternative to the Climbing Rope. This is, perhaps, a limited option with a low ceiling.

As a note, weight training generally lacks in pulling movements compared to pushing movements. This is why we place such an emphasis on gymnastics and climbing in our program. The Climbing Rope, Campus Board, Climbing Holds, and Peg Board all give great work emphasizing the back and arms as well as the hands and forearms. These apparatus are invaluable to rounding out your program.

Trunk Development Equipment

CrossFit's trunk work comes primarily from hip/back extensions and sit-ups performed on a Glute-Ham Developer and abdominal work done on our "Ab Bench" and "Ab Mat." The rest of our trunk work is calisthenics movements that, of course, require no equipment.

Our Glute-Ham Developer (GHD) came from Power Systems (www.power-systems.com). It came late, broken, poorly welded and to this day wobbles a little like a bad table that needs a match book under one of the legs. Though a mess, we had it fixed,

and Power Systems gave us a refund large enough to forgive the shoddy workmanship, and most of the frustration. Many of our friends have gone with the Bigger Faster Stronger GHD. It's just "O.K." We're not convinced we've seen the best of the GHD's on the market. If we were to replace ours we'd go with Sorinex (http://www.sorinex.com/default.asp). Here is our next GHD: http://www.sorinex.com/Products2.htm.



The science behind both the "ab mat" and the "ab bench" are perfectly brilliant. Koch, Blom, and Jacob are responsible for the research and understanding behind these products. You can read about and order the ab mat from http://www.abmat.com/intro.htm. This article is a must read! Order fulfillment has been troublesome to say the least but none of our friends have been ripped off. It just feels like it waiting months for your mat to arrive. This is one of the best $30 investments you can make. Some of our friends have made their own after giving up on delivery.

The "ab bench" (http://shop.store.yahoo.com/homegym/abbenrevbyfr.html) incorporates the same science. We paid $300 for our ab bench and we were heartbroken when we saw the quality of the product. It's fairly cheesy. The price has fallen to $169, which is a lot better, but we put Nick Massman (raahlu@pacbell.net) on the task and we got a much, much better ab-bench with an improved design. Nick's version of the ab-bench is something we are proud of; the original is a "piece."

Miscellaneous Basics

Plyometrics boxes are a simple and wickedly effective tool for both explosive/power training and metabolic conditioning. Timed box jumping is high intensity functional exercise and a regular feature in CrossFit's Workout of the Day. We have a full set of plyometrics boxes from BFS (www.biggerfasterstronger.com) but use the 20" box almost exclusively. We use the 10" box for "box squats" both weighted and free. We recommend getting the 20" box, its booster, and the 10" box. This gives you an excellent jumping box at three heights (the booster provides both a two and four inch boost depending on it's orientation) and a box for box squats.



The two-arm Kettlebell swing is a great exercise and for that we purchased Pavel Tsatsouline's Kettlebell set from Dragon Door Enterprises (http://www.dragondoor.com/p10.html). The set includes a 36, 53, and 72-pound Kettlebell. With the exception of the two-armed swing most of the Kettlebell exercises have been more novelty than productive. Additionally, most of the exercises featured on Pavel's videotape can be equally or better facilitated with dumbbells than the Kettlebell. Still, we recommend getting a set. The competitions have been a blast. We'll frequently pit two athletes against one another to see who can keep swinging the big one overhead for the best time.

It may seem trite to cover, but there's something to jump ropes. Our favorite jump rope came from Power Systems (www.power-systems.com). The rope is marketed as the "Superope" (http://www.power-systems.com/2002/search/group_name.asp?sku_group=35408?gp=gp). The Superope is billed as their fastest and most durable. Well, our Superope wore and broke after a year but the rope was so fast that it was worth replacing even if it wore out at five times the rate it did. There are two general trends in the design of jumping ropes: heavy and fast. After years of experimentation with both, we've come down squarely on the side of the fast rope, and this one is lightening fast!

We have in our facility several Dynamax Medicine Balls (http://www.medicineballs.com/). The Dynamax ball is a soft, low bounce ball. Dynamax's claims about the advantages of a less lively ball are proven the instant the ball bounces off your face, and it's a certainty that given enough exposure this is going to happen. The manual that comes with the Dynamax ball is one of the best publications accompanying any fitness product.

We have two unique applications for medicine ball training. The first is "wall ball." Wall ball is essentially a deep front squat-push-press/throw with a rapid recycle time. Nick Massman (raahlu@pacbell.net) made a steel backboard for this drill.

In addition to the "wall-ball" drill we use the medicine ball to teach the power clean and squat clean. This has been an extraordinarily effective drill to that end.

Miscellaneous Luxury Items

This brings us to our last piece of strength and conditioning equipment, Probotics "Just Jump or Run". KBA Coaching (http://www.kbacoach.com/index.html) carries the "Just Jump or Run". The "Just Jump or Run" (http://www.kbacoach.com/justjumporrun.html) is an electronic device that tests vertical jump, reaction time, sprint time, and anaerobic fade. We had a lot of fun with this for a while, but we don't use it much anymore, and I'm not sure if it was worth the $500 we paid for it.



As aids to instruction we've some specialized equipment that while being very useful for an instructional environment may have limited applicability for a home gym. Our facility has a 15-foot ceiling from which we've attached a block and tackle assembly from Harken (http://www.harken.com) with a 4:1 purchase. We use this with both heavy-duty leather padded ankle straps and a "Delta No-Tangle Harness Vest Style" from Sala (651.388.8282). The ankle straps (from Power Systems) we use to spot and assist handstand push-ups and presses on the rings and parallel bars and the harness we use to assist the muscle-up. If you've the ceiling height, budget, and commitment these items are of enormous benefit.

CrossFit also has a Sony digital video camera. Whether in a professional coaching environment or working out by yourself in the garage you can't see what it is that you are doing right or wrong without video. Eventually in your training this becomes more necessity than luxury especially for the Olympic lifts and gymnastics movements. It's cool.

You'll need a stopwatch for your workouts. Our favorite comes from www.stopwatches.com and is the Seiko S052 Interval Timing Stopwatch (http://www.bodytronics.com/mcart/index.cgi?&task=show&cat=Seiko+Stopwatches). This watch will time intervals of any work time, rest time, and total interval count you choose. This is a gem of a watch for the Tabata Interval. This great watch chimes a countdown for the work interval and the rest interval distinct from the end and beginning of the work and rest interval so that it can be used hands free and without looking at the watch to time your interval training efforts. Once you've used this watch other timing methods seem difficult.

We'll mention here in the name of completeness that we also have at CrossFit two StairMaster Stairclimbers and two StairMaster stationary bikes. They're fun, good diversion, but not critical.

Finishing



We recommend that you finish your garage in ¾" plywood. Lag bolted securely to the studs the plywood becomes the perfect surface for mounting anything you want or need. If you finish most the wall space with plywood you can cover your walls with climbing holds and have perfect flexibility for mounting your pull-up bar, dip bars, campus board, peg board, etc. The look is also appealing and shows your pride in what you've built.

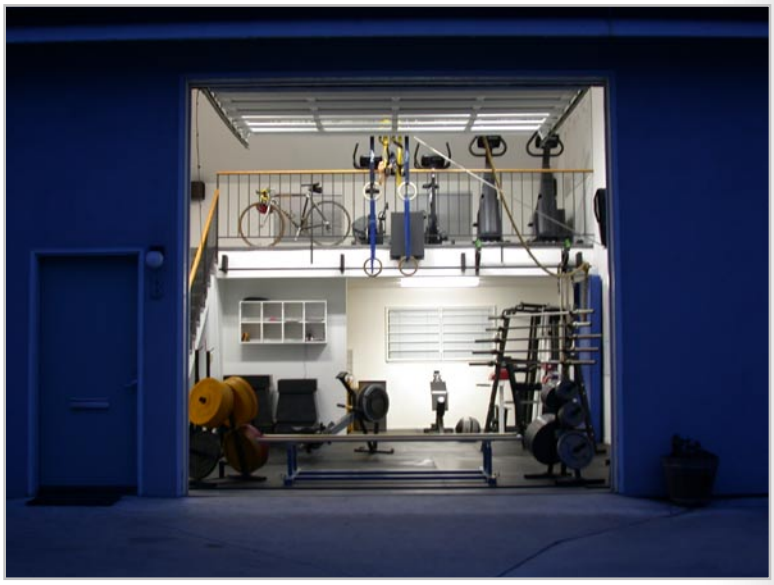
We've mounted sheets of marker boards on the CrossFit gym walls for use with dry erase markers. You can buy 4' X 8' sheets of marker board for about $15 per sheet from most lumberyards. We record achievements for various efforts on these boards. This can provide a very public display of your accomplishments and in turn becomes a wonderful source of motivation. We didn't know when we affixed these boards just how important they'd become. Now we couldn't be without them. Neither should you. Take our word for it.

We have a wall mounted monitor, satellite TV and music, and a full rack of audio-visual gear at CrossFit. Whether you're blasting your favorite tunes, keeping an eye on the stock ticker before leaving for work, or running IronMind's Bulgarian Training Hall Olympic Lifting Videotape as background motivation the total effect of an AV system is fantastic. We make extensive use of our system for entertainment, motivation, and instruction.

Every garage gym should have a library and there's no better way to seed your fitness library (other than with the CrossFit Journal, of course) than with Milo. Milo is billed as "a journal for serious strength athletes." Milo is incredible. Randall Strossen, the owner of IronMind will live forever in fitness lore for publishing Milo. Milo is honest, gritty, homegrown, and one of a very few legitimate journals in the fitness world. We wouldn't trade a single issue of Milo for all the popular fitness magazines in the world. You'll also want to get catalogs from the vendors we've mentioned here for your shelf. They are collectively a fine source of motivation and ideas. In a future edition we will make recommendations for material to flesh out your fitness library.

The final touch (in reality you'll never finish, which is cool) is artwork. Throw your favorite sport or athlete into "google" (www.google.com) along with the words "poster" and you'll be likely to find a poster that will be both entertaining and inspirational. If you don't know where to start just put "sport posters" into google and start surfing. You'll find more than you've time to look at.

"Look What You've Done"



Don't let the fact that your garage is only 400 square feet or so deter you. CrossFit's gym is approximately 1,200 square feet and we routinely operate with three trainers and three to six athletes at one time. The typical garage is perfectly sized for an elite strength and conditioning program servicing a family or individual and friends. In truth, some of our friends have built their gyms in less than 200 square feet!

It needs to be explained that your home gym doesn't aspire to be as good or complete as a commercial facility; your gym has the potential to be much, much, better. State-of-the-art strength and conditioning technology, like CrossFit, is more readily facilitated in a well-appointed garage than in a Gold's Gym, World's Gym, Family Fitness Center, 24-Hour Nautilus, or Balley's. These chains and gyms like them cannot support elite professional programming; you can.

It bears repeating: the commercial model is predicated on simple movements requiring little or no coaching and inexperienced low-paid staff. This is the only reason bodybuilding practices permeate these facilities. Where lives and livelihoods depend on fitness this model is woefully lacking. The professional strength and conditioning facility requires different equipment, cheaper and less equipment, but professional staff and instruction. CrossFit, through the CrossFit Journal will provide that expertise. We know it can be done; we've done if for thousands through our website.

CrossFit endeavors to lead a revolution in fitness training, a radical departure from the ineffectual, non-functional prevailing bodybuilding model of the commercial gyms and towards the professional strength and conditioning model of the university, pro sports franchise, and military. Your needs, regardless of your current fitness, differ from the professional or elite athlete's by degree not kind. We're waging this revolution in your home. That's the only place it can be won.

If cost is an objection you may consider reevaluating your priorities. If your living room, bedrooms, kitchen, or dining room are well appointed there's no substance to the argument that you cannot afford your own gym, unless your health and fitness are lesser priorities than your leisure and entertainment.

The satisfaction derived from building your own gym and sharing it with your friends is sure to surprise you. Those that have gone this route find that with each modification or additional piece of equipment their enjoyment and pride increase.

Garage Gym Equipment Shopping Checklist

- ☐ **Mats**
  Recommended source: local feed & grain store
- ☐ **Olympic Bar**
  Recommended source: Bigger, Faster, Stronger (BFS) (www.biggerfasterstronger.com)
- ☐ **Olympic Bumper Plates**
  Recommended source: Bigger, Faster, Stronger (BFS) (www.biggerfasterstronger.com)
- ☐ **Dumbells**
  Recommended source: York Barbell Company (www.yorkbarbell.com)
- ☐ **Pull-up Bar**
  Recommended source: Power Systems (www.power-systems.com)
- ☐ **Dip Station**
  Recommended source: Power Systems (www.power-systems.com)
- ☐ **Flat Bench**
  Recommended source: Iron Mind (www.ironmind.com)
- ☐ **Squat Racks**
  Recommended source: Iron Mind (www.ironmind.com)
- ☐ **Portable Power Racks**
  Recommended source: Iron Mind (www.ironmind.com)
- ☐ **Rower**
  Recommended source: Concept II (www.concept2.com)
- ☐ **Parallettes**
  Recommended source: American Athletic, Inc. (AAI) (http://www.gymnasticproducts.com/parallel.htm)
- ☐ **Still Rings**
  Recommended source: American Athletic, Inc. (AAI) (http://www.gymnastics-equipment.com/rings.html)
- ☐ **Landing Mats**
  Recommended source: American Athletic, Inc. (AAI) (http://www.gymnasticproducts.com/mats.htm)
- ☐ **Rope**
  Recommended source: American Athletic, Inc. (AAI) (http://www.gymnasticproducts.com/training_accessories.htm)
- ☐ **Climbing Holds**
  Recommended source: (various) (http://www.metoliusclimbing.com/megapacks.asp; http://www.juggernet.com/prodsvs.htm; http://www.shopslms.com/climbingholds.html)
- ☐ **Campus Board**
  Recommended source: Metolius (http://www.metoliusclimbing.com/)
- ☐ **Peg Board**
  Recommended source: Wolverine Sports (http://www.wolverinesports.com/fitness15.html)
- ☐ **Glute-Ham Developer**
  Recommended source: Sorinex (http://www.sorinex.com/Products2.htm)
- ☐ **Ab Mat**
  Recommended source: Abmat (http://www.abmat.com/intro.htm)

(con't.)

(Equip. Checklist, con't.)

- ☐ **Ab Bench**
  Recommended source: Home Gym Warehouse (http://store.yahoo.com/homegym/homeabbench.html)
- ☐ **Plyometrics Boxes**
  Recommended source: Bigger, Faster, Stronger (BFS) (www.biggerfasterstronger.com)
- ☐ **Kettlebells**
  Recommended source: Dragon Door Enterprises (http://www.dragondoor.com/p10.html)
- ☐ **Jump Rope**
  Recommended source: Power Systems (www.power-systems.com)
- ☐ **Medicine Balls**
  Recommended source: Dynamax Medicine Balls (http://www.medicineballs.com/)
- ☐ **"Just Jump or Run"**
  Recommended source: KBA Coaching (http://www.kbacoach.com/index.html)
- ☐ **Block and Tackle**
  Recommended source: Harken (http://www.harken.com)
- ☐ **Harness**
  Recommended source: Sala (651.388.8282)
- ☐ **Ankle Straps**
  Recommended source: Power Systems (www.power-systems.com)
- ☐ **Road or Mountain Bike**
  Recommended source: n/a
- ☐ **Digital Video Camera**
  Recommended source: n/a
- ☐ **Stop Watch**
  Recommended source: Seiko S052 Interval Timing Stopwatch (http://www.bodytronics.com/mcart/index.cgi?&task=show&cat=Seiko+Stopwatches)
- ☐ **Marker Board**
  Recommended source: local lumberyard
- ☐ **AV System**
  Recommended source: n/a
- ☐ **Fitness library**
  Recommended source: n/a
- ☐ **Inspirational Art Work**
  Recommended source: n/a



"mess you up"

THE CrossFit Journal

IN THIS ISSUE:

CrossFit's Three Standards of Fitness
Sickness, Wellness, and Fitness as Measures of Health
Aerobics and Anaerobics
Gymnastics, Weightlifting, and Sprinting

FEATURE ARTICLE:

WHAT IS FITNESS?

What Is Fitness and Who Is Fit?

Outside Magazine crowned triathlete Mark Allen "the fittest man on earth" (http://web.outsidemag.com/magazine/0297/9702fefit.html). Let's just assume for a moment that this famous six-time winner of the IronMan Triathlon is the fittest of the fit, then what title do we bestow on the decathlete Simon Poelman (http://www.decathlon2000.ee/english/legends/poelman.htm) who also possesses incredible endurance and stamina, yet crushes Mr. Allen in any comparison that includes strength, power, speed, and coordination?

Perhaps the definition of fitness doesn't include strength, speed, power, and coordination though that seems rather odd. Merriam Webster's Collegiate Dictionary defines "fitness" and being "fit" as the ability to transmit genes and being healthy. No help there. Searching the Internet for a workable, reasonable definition of fitness yields disappointingly little (http://www.google.com/search?hl=en&ie=UTF-8&oe=UTF-8&q=fitness+definition). Worse yet, the NSCA, the most respected publisher in exercise physiology, in their highly authoritative Essentials of Strength Training and Conditioning doesn't even attempt a definition.

Crossfit's Fitness

For CrossFit the specter of championing a fitness program without clearly defining what it is that the program delivers combines elements of fraud and farce. The vacuum of guiding authority has therefore necessitated that CrossFit's directors provide their own definition of fitness. That's what this issue of CrossFit Journal is about, our "fitness."

Our pondering, studying, debating about, and finally defining fitness have played a formative role in CrossFit's successes. The keys to understanding the methods and achievements of CrossFit are perfectly imbedded in our view of fitness and basic exercise science.

It will come as no surprise to most of you that our view of fitness is a contrarian view. The general public both in opinion and in media holds endurance athletes as exemplars of fitness. We do not. Our incredulity on learning of Outside's awarding a triathlete title of "fittest man on earth" becomes apparent in light of CrossFit's standards for assessing and defining fitness.

CrossFit makes use of three different standards or models for evaluating and guiding fitness. Collectively, these three standards define the CrossFit view of fitness. The first is based on the ten general physical skills widely recognized by exercise physiologists. The second standard, or model, is based on the performance of athletic tasks, while the third is based on the energy systems that drive all human action.

Each model is critical to the CrossFit concept and each has distinct utility in evaluating an athlete's overall fitness or a strength and conditioning regimen's efficacy. Before explaining in detail how each of these three perspectives works, it warrants mention that we are not attempting to demonstrate our program's legitimacy through scientific principles. We are but sharing the methods of a program whose legitimacy has been established through the

World-Class Fitness in 100 Words:

■ Eat meat and vegetables, nuts and seeds, some fruit, little starch and no sugar. Keep intake to levels that will support exercise but not body fat.

■ Practice and train major lifts: Deadlift, clean, squat, presses, C&J, and snatch. Similarly, master the basics of gymnastics: pull-ups, dips, rope climb, push-ups, sit-ups, presses to handstand, pirouettes, flips, splits, and holds. Bike, run, swim, row, etc, hard and fast.

■ Five or six days per week mix these elements in as many combinations and patterns as creativity will allow. Routine is the enemy. Keep workouts short and intense.

■ Regularly learn and play new sports.

testimony of athletes, soldiers, cops, and others whose lives or livelihoods depend on fitness.

Crossfit's First Fitness Standard

There are ten recognized general physical skills. They are cardiovascular/respiratory endurance, stamina, strength, flexibility, power, coordination, agility, balance, and accuracy. (See "General Physical Skills", pg. 4, for definitions.) You are as fit as you are competent in each of these ten skills. A regimen develops fitness to the extent that it improves each of these ten skills.

Importantly, improvements in endurance, stamina, strength, and flexibility come about through training. Training refers to activity that improves performance through a measurable organic change in the body. By contrast improvements in coordination, agility, balance, and accuracy come about through practice. Practice refers to activity that improves performance through changes in the nervous system. Power and speed are adaptations of both training and practice.

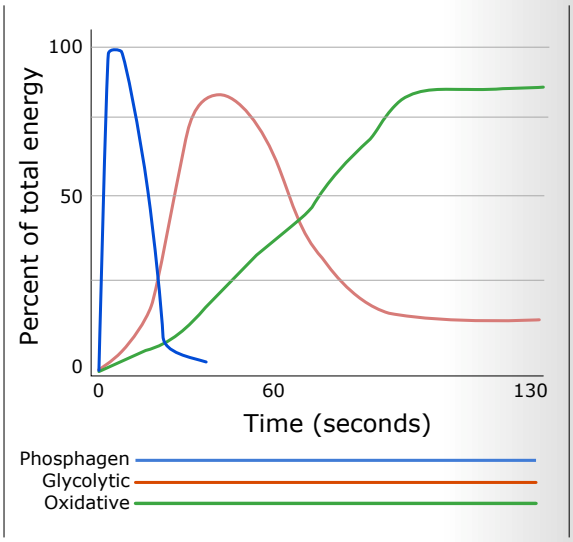
Crossfit's Second Fitness Standard

The essence of this model is the view that fitness is about performing well at any and every task imaginable. Picture a hopper loaded with an infinite number of physical challenges where no selective mechanism is operative, and being asked to perform fetes randomly drawn from the hopper. This model suggests that your fitness can be measured by your capacity to perform well at these tasks in relation to other individuals.

The implication here is that fitness requires an ability to perform well at all tasks, even unfamiliar tasks, tasks combined in infinitely varying combinations. In practice this encourages the athlete to disinvest in any set notions of sets, rest periods, reps, exercises, order of exercises, routines, periodization, etc. Nature frequently provides largely unforeseeable challenges; train for that by striving to keep the training stimulus broad and constantly varied.

Crossfit's Third Fitness Standard

There are three metabolic pathways that provide the energy for all human action. These "metabolic engines" are known as the phosphagen pathway, the glycolytic pathway, and the oxidative pathway. The first, the phosphagen, dominates the highest-powered activities, those that last less than about ten seconds. The second pathway, the glycolytic, dominates moderate-powered activities, those that last up to several minutes. The third pathway, the oxidative, dominates low-powered activities, those that last in excess of several minutes. Here's an excellent reference for additional information: http://predator.pnb.uconn.edu/beta/virtualtemp/muscle/exercise-folder/muscle.html

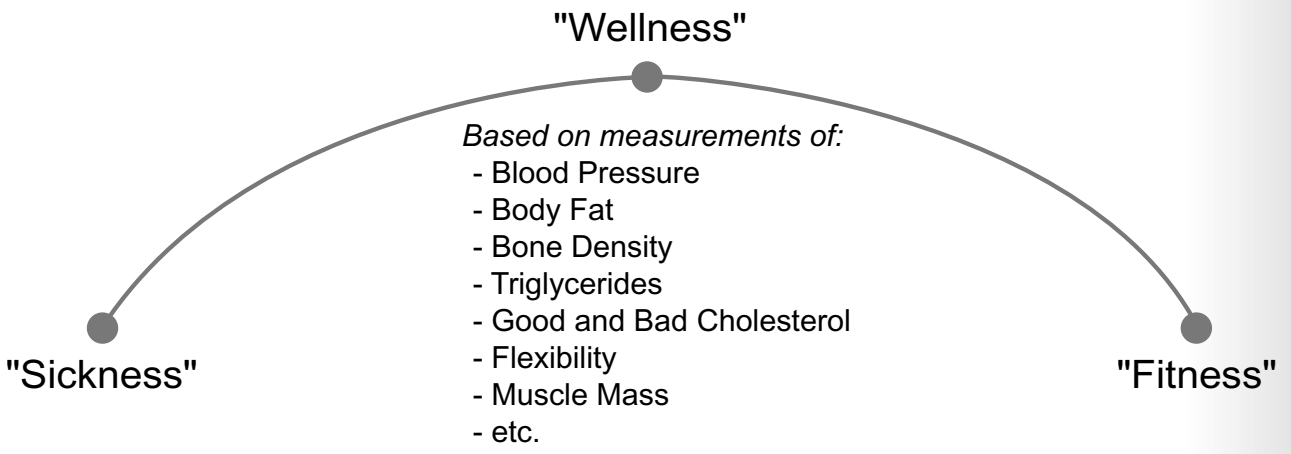


Total fitness, the fitness that CrossFit promotes and develops, requires competency and training in each of these three pathways or engines. Balancing the effects of these three pathways largely determines the how and why of the metabolic conditioning or "cardio" that we do at CrossFit.

Favoring one or two to the exclusion of the others and not recognizing the impact of excessive training in the oxidative pathway are arguably the two most common faults in fitness training. More on that later.

Common Ground

The motivation for the three standards is simply to ensure the broadest and most general fitness possible. Our first model evaluates our efforts against a full range of general physical adaptations, in the second the focus is on breadth and depth of performance, with the third the measure is time, power and consequently energy systems. It should be fairly clear that the fitness that CrossFit advocates and develops is deliberately broad, general, and inclusive. Our specialty is not specializing. Combat, survival, many sports, and life reward this kind of fitness and, on average, punish the specialist.



Our assumption is that if everything we can measure about health will conform to this continuum then it seems that sickness, wellness, and fitness are different measures of a single quality: health.

Sickness, Wellness, and Fitness

There is another aspect to the CrossFit brand of fitness that is of great interest and immense value to us. We have observed that nearly every measurable value of health can be placed on a continuum that ranges from sickness to wellness to fitness. See table above. Though tougher to measure, we would even add mental health to this observation. Depression is clearly mitigated by proper diet and exercise, i.e., genuine fitness.

For example, a blood pressure of 160/95 is pathological, 120/70 is normal or healthy, and 105/55 is consistent with an athlete's blood pressure; a body fat of 40% is pathological, 20% is normal or healthy, and 10% is fit. We observe a similar ordering for bone density, triglycerides, muscle mass, flexibility, HDL or "good cholesterol", resting heart rate, and dozens of other common measures of health. Many authorities (e.g. Mel Siff, the NSCA) make a clear distinction between health and fitness. Frequently they cite studies that suggest that the fit may not be health protected. A close look at the supporting evidence invariably reveals the studied group is endurance athletes and, we suspect, endurance athletes on a dangerous fad diet (high carb, low fat, low protein).

Done right, fitness provides a great margin of protection against the ravages of time and disease. Where you find otherwise examine the fitness protocol, especially diet. Fitness is and should be "super-wellness." Sickness, wellness, and fitness are measures of the same entity. A fitness regimen that doesn't support health is not CrossFit.

(As a note of interest, Mel Siff PhD, whom we often respect and admire, holds his atherosclerotic disease and subsequent heart attack as anecdotal evidence of the contention that fitness and health are not necessarily linked because of his regular training and "good diet". When we researched his dietary recommendations we discovered that he advocates a diet ideally structured for causing heart disease – low fat/high carb. Siff has fallen victim to junk science!)

Implementation

Our fitness, being "CrossFit", comes through molding men and women that are equal parts gymnast, Olympic weightlifter, and multi-modal sprinter or "sprintathlete." Develop the capacity of a novice 800-meter track athlete, gymnast, and weightlifter and you'll be fitter than any world-class runner, gymnast, or weightlifter. Let's look at how CrossFit incorporates metabolic conditioning ("cardio"), gymnastics, and weightlifting to forge the world's fittest men and women.

Metabolic Conditioning, or "Cardio"

Biking, running, swimming, rowing, speed skating, and cross-country skiing are collectively known as "metabolic conditioning." In the common vernacular they are referred to as "cardio." CrossFit's third fitness standard, the one that deals with metabolic pathways,

GENERAL PHYSICAL SKILLS

If your goal is optimum physical competence then all the general physical skills must be considered:

1. Cardiovascular/respiratory endurance - The ability of body systems to gather, process, and deliver oxygen.

2. Stamina - The ability of body systems to process, deliver, store, and utilize energy.

3. Strength - The ability of a muscular unit, or combination of muscular units, to apply force.

4. Flexibility - the ability to maximize the range of motion at a given joint.

5. Power - The ability of a muscular unit, or combination of muscular units, to apply maximum force in minimum time.

6. Speed - The ability to minimize the time cycle of a repeated movement.

7. Coordination - The ability to combine several distinct movement patterns into a singular distinct movement.

8. Agility - The ability to minimize transition time from one movement pattern to another.

9. Balance - The ability to control the placement of the bodies center of gravity in relation to its support base.

10. Accuracy - The ability to control movement in a given direction or at a given intensity.

(*Ed. - Thanks to Jim Crawley and Bruce Evans of Dynamax, www.medicineballs.com*\)

contains the seeds of the CrossFit "cardio" prescription. To understand the CrossFit approach to "cardio" we need first to briefly cover the nature and interaction of the three major pathways.

Of the three metabolic pathways the first two, the phosphagen and the glycolytic, are "anaerobic" and the third, the oxidative, is "aerobic." We needn't belabor the biochemical significance of aerobic and anaerobic systems; suffice it to say that the nature and interaction of anaerobic exercise and aerobic exercise is vital to understanding conditioning. Just remember that efforts at moderate to high power and lasting less than several minutes are anaerobic and efforts at low power and lasting in excess of several minutes are aerobic. As an example the sprints at 100, 200, 400, and 800 meters are largely anaerobic and events like 1,500 meters, the mile, 2,000 meters, and 3,000 meters are largely aerobic.

Aerobic training benefits cardiovascular function and decreases body fat – all good. Aerobic conditioning allows us to engage in low power extended efforts efficiently (cardio/respiratory endurance and stamina). This is critical to many sports. Athletes engaged in sports or training where a preponderance of the training load is spent in aerobic efforts witness decreases in muscle mass, strength, speed, and power. It is not uncommon to find marathoners with a vertical leap of only several inches! Furthermore, aerobic activity has a pronounced tendency to decrease anaerobic capacity. This does not bode well for most athletes or those interested in elite fitness.

Anaerobic activity also benefits cardiovascular function and decreases body fat! In fact, anaerobic exercise is superior to aerobic exercise for fat loss! (http://www.cbass.com/FATBURN.HTM) Anaerobic activity is, however, unique in its capacity to dramatically improve power, speed, strength, and muscle mass. Anaerobic conditioning allows us to exert tremendous forces over brief time intervals. One aspect of anaerobic conditioning that bears great consideration is that anaerobic conditioning will not adversely affect aerobic capacity. In fact, properly structured, anaerobic activity can be used to develop a very high level of aerobic fitness without the muscle wasting consistent with high volumes of aerobic exercise!! The method by which we use anaerobic efforts to develop aerobic conditioning is "interval training."

Basketball, football, gymnastics, boxing, track events under one mile, soccer, swimming events under 400 meters, volleyball, wrestling, and weightlifting are all sports that require the vast majority of training time spent in anaerobic activity. Long distance and ultra endurance running, cross country skiing, and 1500+ meter swimming are all sports that require aerobic training at levels that produce results unacceptable to other athletes or the individual concerned with total conditioning and optimal health.

We strongly recommend that you attend a track meet of nationally or internationally competitive athletes. Pay close attention to the physiques of the athletes competing at 100, 200, 400, 800 meters, and the milers. The difference you're sure to notice is a direct result of training at those distances.

Interval Training

The key to developing the cardiovascular system without an unacceptable loss of strength, speed, and power is interval training. Interval training mixes bouts of work and rest in timed intervals. Figure 3 (pg. 5) gives guidelines for interval training. We can control the dominant metabolic pathway conditioned by varying the duration of the work and rest interval and number of repetitions. Note that the phosphagen pathway is the dominant pathway in intervals of 10-30 seconds of work followed

by rest of 30-90 seconds (load:recovery 1:3) repeated 25-30 times. The glycolytic pathway is the dominant pathway in intervals of 30-120 seconds work followed by rest of 60-240 seconds (load: recovery 1:2) repeated 10-20 times. And finally, the oxidative pathway is the dominant pathway in intervals of 120-300 seconds work followed by rest of 120-300 seconds (load:recovery 1:1). The bulk of metabolic training should be interval training.

Interval training need not be so structured or formal. One example would be to sprint between one set of telephone poles and jog between the next set alternating in this manner for the duration of a run.

	Sprint	*Mid-Distance*	*Distance*
Primary Energy System	Phophagen	Glycolytic	Oxidative
Duration of work (in seconds)	10 - 30	30 - 120	120 - 300
Duration of recovery (in seconds)	30 - 90	60 - 240	120 - 300
Load:Recovery ratio	1 : 3	1 : 2	1 : 1
Repetitions	25 - 30	10 - 20	3 - 5

Figure 3.

One example of an interval that CrossFit makes regular use of is the Tabata Interval, which is 20 seconds of work followed by 10 seconds of rest repeated six to eight times (http://www.cbass.com/INTERVAL.HTM). Dr. Izumi Tabata published research that demonstrated that this interval protocol produced remarkable increases in both anaerobic and aerobic capacity.

It is highly desirable to regularly experiment with interval patterns of varying combinations of rest, work, and repetitions.

One of the best Internet resources on interval training comes from Dr. Stephen Seiler (http://home.hia.no/~stephens/interval.htm). This article on interval training and another on the time course of training adaptations (http://home.hia.no/~stephens/timecors.htm) contain the seeds of CrossFit's heavy reliance on interval training. The article on the time course of training adaptations explains that there are three waves of adaptation to endurance training. The first wave is increased maximal oxygen consumption. The second is increased lactate threshold. The third is increased efficiency. In the CrossFit concept we are interested in maximizing first wave adaptations and procuring the second systemically through multiple modalities, including weight training, and avoiding completely third wave adaptations. Second and third wave adaptations are highly specific to the activity in which they are developed and are detrimental to the broad fitness that we advocate and develop. A clear understanding of this material has prompted us to advocate regular high intensity training in as many training modalities as possible through largely anaerobic efforts and intervals while deliberately and specifically avoiding the efficiency that accompanies mastery of a single modality. It is at first ironic that this is our interpretation of Dr. Seiler's work for it was not his intention, but when our quest of optimal physical competence is viewed in light of Dr. Seiler's more specific aim of maximizing endurance performance our interpretation is powerful.

Dr. Seiler's work, incidentally, makes clear the fallacy of assuming that endurance work is of greater benefit to the cardiovascular system than higher intensity interval work. This is very important: with interval training we get all of the cardiovascular benefit of endurance work without the attendant loss of strength, speed, and power.

Gymnastics

Our use of the term "gymnastics" not only includes the traditional competitive sport that we've seen on TV but all activities like climbing, yoga, calisthenics, and dance where the aim is body control. It is within this realm of activities that we can develop extraordinary strength (especially upper body and trunk), flexibility, coordination, balance, agility, and accuracy. In fact, the traditional gymnast has no peer in terms of development of these skills.

CrossFit uses short parallel bars, mats, still rings, pull-up and dip bars, and a climbing rope to implement our gymnastics training. (See CrossFit Journal, September 2002, "The Garage Gym" for recommended equipment and vendors.)

The starting place for gymnastic competency lies with the well-known calisthenic movements: pull-ups, push-ups, dips, and rope climb. These movements need to form the core of your upper body strength work. Set goals for achieving benchmarks like 20, 25, and 30 pull-ups; 50, 75, and 100 push-ups; 20, 30, 40, and 50 dips; 1, 2, 3, 4, and 5 consecutive trips up the rope without any use of

the feet or legs.

At fifteen pull-ups and dips each it is time to start working regularly on a "muscle-up." The muscle-up is moving from a hanging position below the rings to a supported position, arms extended, above the rings. It is a combination movement containing both a pull-up and a dip. Far from a contrivance the muscle-up is hugely functional. With a muscle-up you'll be able to surmount any object on which you can get a finger hold – if you can touch it you can get up on it. The value here for survival, police, fire fighter, and military use is impossible to overstate. We will in future issues be covering the details of this great movement. The key to developing the muscle-up is pull-ups and dips.

While developing your upper body strength with the pull-ups, push-ups, dips, and rope climb, a large measure of balance and accuracy can be developed through mastering the handstand. Start with a headstand against the wall if you need to. Once reasonably comfortable with the inverted position of the headstand you can practice kicking up to the handstand again against a wall. Later take the handstand to the short parallel bars or parallettes (http://www.american-gymnast.com/technically_correct/paralletteguide/titlepage.html) without the benefit of the wall. After you can hold a handstand for several minutes without benefit of the wall or a spotter it is time to develop a pirouette. A pirouette is lifting one arm and turning on the supporting arm 90 degrees to regain the handstand then repeating this with alternate arms until you've turned 180 degrees. This skill needs to be practiced until it can be done with little chance of falling from the handstand. Work in intervals of 90 degrees as benchmarks of your growth – 90, 180, 270, 360, 450, 540, 630, and finally 720 degrees.



Our use of the term "gymnastics" includes all activities where the aim is body control.

Walking on the hands is another fantastic tool for developing both the handstand and balance and accuracy. A football field or sidewalk is an excellent place to practice and measure your progress. You want to be able to walk 100 yards in the handstand without falling.

Competency in the handstand readies the athlete for handstand presses. There is a family of presses that range from relatively easy, ones that any beginning gymnast can perform to ones so difficult that only the best gymnasts competing at national levels can perform. Their hierarchy of difficulty is bent arm/bent body (hip)/bent leg; straight arm/bent body/bent leg; straight arm/bent body/straight leg, bent arm/straight body/straight leg, and finally the monster: straight arm/straight body/straight leg. It is not unusual to take ten years to get these five presses!

The trunk flexion work in gymnastics is beyond anything you'll see anywhere else. Even the beginning gymnastic trunk movements cripple bodybuilders, weightlifters, and martial artists. In a future issue of CFJ (CrossFit Journal) we'll cover in great detail many of the better trunk/ab exercises, but until then the basic sit-up and "L" hold are the staples. The "L" hold is nothing more than holding your trunk straight, supported by locked arms, hands on bench, floor, or parallel bars, and hips at 90 degrees with legs straight held out in front of you. You want to work towards a three minute hold in benchmark increments of 30 seconds – 30, 60, 90, 120, 150, and 180 seconds. When you can hold an "L" for three minutes all your old ab work will be silly easy.

We recommend Bob Anderson's Stretching. This is a simple no nonsense approach to flexibility. The science of stretching is weakly developed and many athletes like gymnasts who demonstrate great flexibility receive no formal instruction. Just do it. Generally, you want to stretch in a warm-up to establish safe, effective range of motion for the ensuing activity and stretch during cool down to improve flexibility.

There's a lot of material to work with here. We highly recommend an adult gymnastics program if there is one in your area. Our friends at www.drillsandskills.com have a gymnastics-conditioning page with enough material to keep you busy for years (http://www.drillsandskills.com/skills/cond). This is among our favorite fitness sites.

Every workout should contain regular gymnastic/calisthenic movements that you've mastered and other elements under development. Much of the rudiments of gymnastics come only with great effort and frustration – that's O.K. The return is unprecedented and the most frustrating elements are most beneficial -long before you've developed even a modicum of competency.

Weightlifting

"Weightlifting" as opposed to "weight lifting", two words, and "weight training" refers to the Olympic sport, which includes the "clean and jerk" and the "snatch." Olympic weightlifting, as it is often referred to, develops strength (especially in the hips), speed, and power like no other training modality. It is little known that successful weightlifting requires substantial flexibility. Olympic weightlifters are as flexible as any athletes.

The benefits of Olympic weightlifting don't end with strength, speed, power, and flexibility. The clean and jerk and the snatch both develop coordination, agility, accuracy, and balance and to no small degree. Both of these lifts are as nuanced and challenging as any movement in all of sport. Moderate competency in the Olympic lifts confers added prowess to any sport.



Fit or Grotesque?

The Olympic lifts are based on the deadlift, clean, squat, and jerk. These movements are the starting point for any serious weight-training program. In fact they should serve as the core of your resistance training throughout your life.

Why the deadlift, clean, squat, and jerk? Because these movements elicit a profound neurodendocrine response. That is, they alter you hormonally and neurologically. The changes that occur through these movements are essential to athletic development. Most of the development that occurs as a result of exercise is systemic and a direct result of hormonal and neurological changes.

Curls, lateral raises, leg extensions, leg curls, flyes and other body building movements have no place in a serious strength and conditioning program primarily because they have a blunted neuroendocrine response. A distinctive feature of these relatively worthless movements is that they have no functional analog in everyday life and they work only one joint at a time. Compare this to the deadlift, clean, squat, and jerk which are functional and multi-joint movements.

Start your weightlifting career with the deadlift, clean, squat, and jerk then introduce the "clean and jerk" and snatch. There are many excellent sources for learning the deadlift, clean, squat, and jerk but for the clean and jerk and the snatch we know of only one outstanding source and that is a couple of videotapes produced by World Class Coaching LLC (http://www.worldclasscoachingllc.com/) These tapes are not only the best instruction available anywhere they are as good as any instructional tape we've seen on any subject. Much of the material on the tapes, both in terms of pedagogy and technical understanding, is unique to the producers. You need both tapes, "The Snatch" and "The Clean and Jerk."

Much of the best weight training material on the Internet is found on "powerlifting" sites. Powerlifting is the sport of three lifts: the bench press, squat, and deadlift. Powerlifting is a superb start to a lifting program followed later by the more dynamic clean and the jerk and finally the "clean & jerk" and the "snatch".

The movements that we are recommending are very demanding and very athletic. As a result they've kept athletes interested and intrigued where the typical fare offered in most gyms (bodybuilding movements) typically bores athletes to distraction. Weightlifting is sport; weight training is not.

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Throwing

Our weight training program includes not only weightlifting and powerlifting but also throwing work with medicine balls. The medicine ball work we favor provides both physical training and general movement practice. We are huge fans of the Dynamax medicine ball (www.medicineballs.com) and the throwing exercises elaborated in the Dynamax training manual that comes with their balls. The medicine ball drills add another potent stimulus for strength, power, speed, coordination, agility, balance, and accuracy.

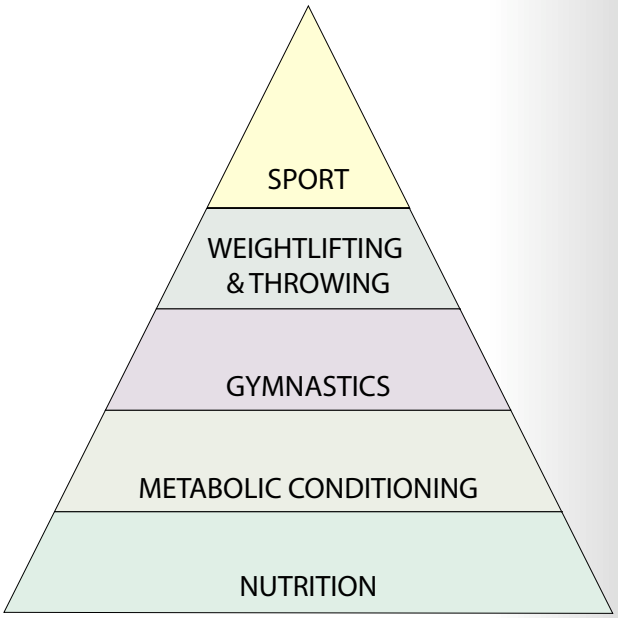
There is a medicine ball game known as Hoover Ball. It is played with an eight-foot volleyball net and scored like tennis. This game burns three times more calories than tennis and is great fun. The history and rules of Hoover Ball are available from the Internet (http://www.hooverassoc.org/hooverballrules.htm).

Nutrition

Nutrition plays a critical role in your fitness. Proper nutrition can amplify or diminish the effect of your training efforts. Effective nutrition is moderate in protein, carbohydrate, and fat. Forget about the fad high carbohydrate, low fat, and low protein diet. 70% carbohydrate, 20% protein, and 10% fat may work for your rabbit, but it won't do anything for you except increase your risk of cancer, diabetes, and heart disease or leave you weak and sickly. Balanced macronutrient and healthy nutrition looks more like 40% carbohydrate, 30 % protein, and 30% fat. Dr. Barry Sears' Zone Diet (http://www.drsears.com/) still offers the greatest precision, efficacy, and health benefit of any clearly defined protocol. The Zone diet does an adequate job of jointly managing issues of blood glucose control, proper macronutrient proportion, and caloric restriction the three pillars of sound nutrition whether your concern is athletic performance, disease prevention and longevity, or body composition. We recommend that every one read Dr. Sears book Enter the Zone. We will cover nutrition in great detail in an upcoming issue of the CFJ.

Sport

Sport plays a wonderful role in fitness. Sport is the application of fitness in a fantastic atmosphere of competition and mastery. Training efforts typically include relatively predictable repetitive movements and provide limited opportunity for the essential combination of our ten general physical skills. It is, after all, the combined expression, or application, of the ten general skills that is our motivation for their development in the first place. Sports and games like soccer, martial arts, baseball, and basketball in contrast to our training workouts have more varied and less predictable movements. But, where sports develop and require all ten general skills simultaneously, they do so slowly compared to our strength and conditioning regimen. Sport is better, in our view, at expression and testing of skills than it is at developing these same skills. Both expression and development are crucial to our fitness. Sport in many respects more closely mimics the demands of nature than does our training. We encourage and expect our athletes to engage in regular sports efforts in addition to all of their strength and conditioning work.



A Theoretical Heirarchy of Development

A theoretical hierarchy exists for the development of an athlete. It starts with nutrition and moves to metabolic conditioning, gymnastics, weightlifting, and finally sport. This hierarchy largely reflects foundational dependence, skill, and to some degree, time ordering of development. The logical flow is from molecular foundations, cardiovascular sufficiency, body control, external object control, and ultimately mastery and application. This model has greatest utility in analyzing athletes' shortcomings or difficulties.

We don't deliberately order these components but nature will. If you have a deficiency at any level of "the pyramid" the components above will suffer.

Integration

"…. strive to blur distinctions between "cardio" and strength training. Nature has no regard for this distinction."

Every regimen, every routine contains within its structure a blueprint for its deficiency. If you only work your weight training at low reps you won't develop the localized muscular endurance that you might have otherwise. If you work high reps exclusively you won't build the same strength or power that you would have at low rep. There are advantages and disadvantages to working out slowly, quickly, high weight, low weight, "cardio" before, cardio after, etc.

For the fitness that we are pursuing, every parameter within your control needs to be modulated to broaden the stimulus as much as possible. Your body will only respond to an unaccustomed stressor; routine is the enemy of progress and broad adaptation. Don't subscribe to high reps, or low reps, or long rests, or short rests, but strive for variance (http://www.cbass.com/EvolutionaryFitness.htm).

So then, what are we to do? Work on becoming a better weightlifter, stronger-better gymnast, and faster rower, runner, swimmer, cyclist is the answer. There are an infinite number of regimens that will deliver the goods.



Strong, lean, capable across a broad range of athletic activities - Eva Twardokens, U.S. Olympic Ski Champion

Generally, we have found that three days on and one day off allows for a maximum sustainability at maximum intensities. One of our favorite workout patterns is to warm-up and then perform three to five sets of three to five reps of a fundamental lift at a moderately comfortable pace followed by a ten-minute circuit of gymnastics elements at a blistering pace and finally finish with two to ten minutes of high intensity metabolic conditioning. There is nothing sacred in this pattern. The magic is in the movements not the routine. Be creative.

Another favorite is to blend elements of gymnastics and weightlifting in couplets that combine to a dramatic metabolic challenge. An example would be to perform five reps of a moderately heavy back squat followed immediately by a set of max reps pull-ups repeated three to five times.

On other occasions we'll take five or six elements balanced between weightlifting, metabolic conditioning, and gymnastics and combine them in a single circuit that we blow through three times without a break.

We can create routines like this forever. In fact our archives (http://www.crossfit.com/misc/arc.html) contain four or five hundred daily workouts consciously mixed and varied in this manner. Perusing them will give you an idea of how we mix and modulate our key elements.

We've not mentioned here our penchant for jumping, kettlebells, odd object lifting, and obstacle course work. The recurring theme of functionality and variety clearly suggest the need and validity for their inclusion though.

Finally, strive to blur distinctions between "cardio" and strength training. Nature has no regard for this distinction or any other, including our ten physical adaptations. We'll use weights and plyometrics training to elicit a metabolic response and sprinting to improve strength.

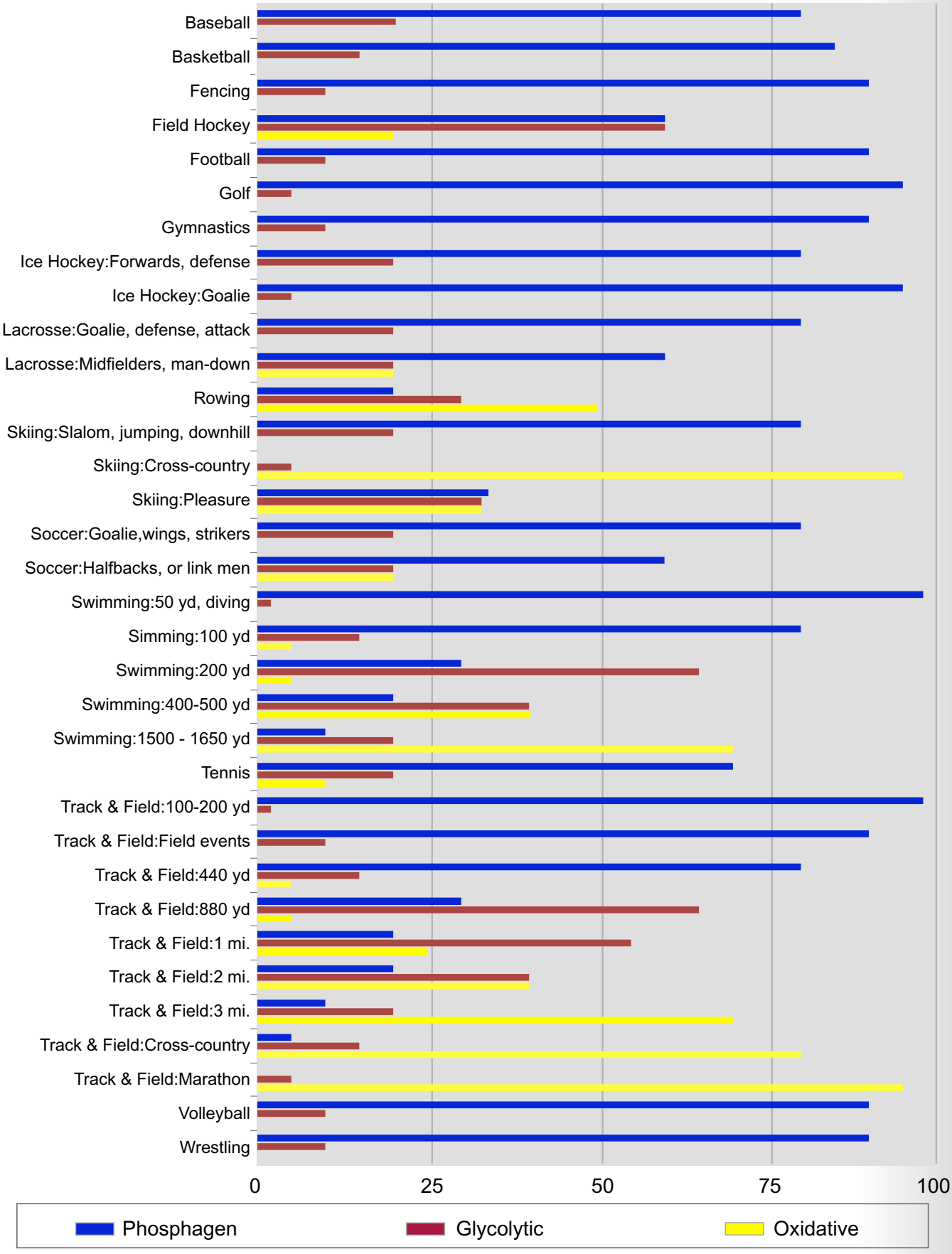
Scalability and Applicability

The question regularly arises as to the applicability of a regimen like CrossFit's to older and deconditioned or detrained populations. The needs of an Olympic athlete and our grandparents differ by degree not kind. One is looking for functional dominance the other for functional competence. Competence and dominance manifest through identical physiological mechanisms.

We've used our same routines for elderly individuals with heart disease and cage fighters one month out from televised bouts. We scale load and intensity; we don't change programs.

We get requests from athletes from every sport looking for a strength and conditioning program for their sport. Firemen, soccer players, triathletes, boxers, and surfers all want programs that conform to the specificity of their needs. While admitting that there are surely needs specific to any sport, the bulk of sport specific training has been ridiculously ineffective. The need for specificity is nearly completely met by regular practice and training within the sport not in the strength and conditioning environment. Our terrorist hunters, skiers, mountain bikers and housewives have found their best fitness from the same regimen.

Typical Percentage of Training Time Spent in Each Pathway for Various Sports





"mess you up"

THE CrossFit® Journal

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The Muscle-up



The muscle-up is astonishingly difficult to perform, unrivaled in building upper body strength, a critical survival skill, and most amazingly of all, virtually unknown.

This movement gets you from under things to on them. Let your imagination run.

Though containing a pull-up and a dip, its potency is due to neither. The heart of the muscle-up is the transition from pull-up to dip - the agonizing moment when you don't know if you're above or below.

That moment - the transition - can last from fractions to dozens of seconds. At low, deliberate speeds, the muscle-up takes a toll physically and psychologically that can only be justified by the benefit. No other movement can deliver the same upper body strength. Period.

This Frankenstein's monster combination of pull-up and dip gives the exercise advantages that render it supreme among exercises as fundamental as the pull-up, rope climb, dips, push-ups, and even the almighty bench press.

We do our muscle-ups from rings chiefly because that's the hardest place possible.

Here's how to do a muscle-up on the rings:

1. Hang from a false grip
2. Pull the rings to your chest or "pull-up"
3. Roll your chest over the bottom of the rings
4. Press to support or "dip"

It's that simple. Steps 1 and 3 are where you'll have trouble if you do.

From a normal grip, roll the meat of the hand over the ring, leaving the thumb on the starting side until the wrist opposite the thumb is in full contact with the ring - this is a false grip. It shortens the forearm, greatly improving strength.

The false grip is difficult simply because it's a sufficiently odd feeling that the beginner rarely believes is what's expected.

No false grip, no muscle-up. When an athlete can't get it, 50% of the time they've got too much hand on the thumb's side of the ring. This part is really very, very easy. On the other hand, rolling your chest over the bottom of the rings is very, very hard.

Here are some tips for rolling your chest over the bottom of the rings.

1. Stick your nose as far over the rings as possible
2. Drive your elbows from down in front of you to up and behind you

3. Keep the rings as close to your body as possible
4. Tighten your gut
5. Have the meat of the thumb trace a line from collarbone to the armpit, just above the nipple

Ultimately, none of this really helps; you just have to struggle with it until you get it.

Assuming the grip is O.K. - you'll know it is if you get deep bruises on the wrist opposite the thumb - there are two other common barriers to the muscle-up.

First, not being strong enough. Here's the litmus: if you can do fifteen good pull-ups and fifteen good dips then you're strong enough. If you can't, work your pull-ups and dips overtime until you can do the muscle-up.

If you can do the pull-ups and dips, your grip is good (you're getting bruised wrists) and you're still unable to get above rings, then you're either letting the rings wander away from your body or you aren't trying hard enough.

The muscle-up gets noticeably harder with every quarter inch the ring moves away from the body. Keep the rings in as close to your body as you can. Only a buddy can tell you if they're wandering or not. Typically the struggler has no sense of where he is.

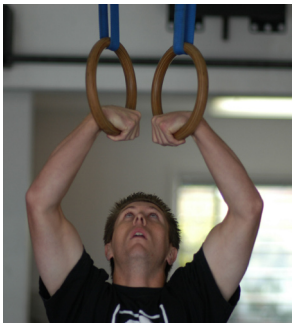
As weird as it sounds, not trying hard enough is common among even the most accomplished athletes. Don't give up on each attempt until you've struggled for ten seconds with the rings at the chest. This part is very hard.

How hard? Not very, really. Gymnastics moves are graded "A" through "E," "A" being easiest and "E" hardest. The muscle-up is an "A" move. That's right, easiest. So it's easy for gymnasts and nearly impossible for most everyone else.

But, once you get it, anything you can get a finger hold on, you can surmount. You'll be able to jump for something, catch it with only two fingers, pull in two more, choke up to the false grip and, "boom!" - you're on top. Military, police, and firefighter applications are too obvious to mention.

Less obvious are the martial applications where alternately pulling and pushing from awkward angles is routine. Our Jiu-jitsu guys recognize at once the utility of strength along these bodylines, as well as the strength and advantage of the false grip.

You can assist the muscle-up with an easy push under the rump during the transition. It's important for the spotter to push gently, and straight up. The athlete's legs will typically



1. Note the "false grip." Without this you don't have a chance



5. Watch the elbow's migration from pointing down and in front to pointing back then slightly up



2. The hands come together down the sternum to below the collarbones where they separate and move towards the armpits



6. Notice Loyd Lewis leaning foward through the transition - sticking his nose out over the rings



3. The closer the rings are kept to the body the easier the muscle-up



7. The head travels from looking up to foward to down to up again



4. Note the rings rotation from adjacent in two parallel planes to parallel in one plane back to parallel in two planes through a rotation of 180 degrees



8. It's not readily apparent but the muscle-up involves a rather potent ab contraction that "hollows" the trunk. This makes rolling over the rings much easier. The motion reminds us of dodging a "high-in-side" pitch

rise leaving him in a near-seated position from which directing a push “up” and not “out” will be easy.

An effective workout would be for two athletes, regardless of ability to perform the muscle-up - alternately assisting and working - in sets of five reps. Thirty muscle-ups, each complete to lockout, is a good workout for most people. Fifty will cover the needs of even elite barbarians.

If you still don’t have rings, you’re running out of excuses. There are options for every budget and workout facility. See “Ring Buyer’s Guide.”

Rings were a regular feature of gymnasiums until modern times. Strangely, this perfect tool for perfecting upper body development has fallen to newer fashions and a disregard for challenging or even slightly technical elements.

Help reverse this trend and you’ll benefit immensely. So buy some rings, set them up, and use them - starting with the muscle-up.



Garth Taylor is being assisted by a “Delta No-Tangle Harness, Vest Style” by Sala (651.388.8282) connected overhead to a block and tackle assembly with a 4:1 purchase by Harken. This allows for a near perfect assistance – the line of action is not altered by the assistance (compare to Loyd Lewis).
In assisting the muscle-up the key is to gently and slowly aid the transition. The challenge is to keep the athlete moving through the transition but slowly. The Sala vest and block and tackle provide for a method that not only doesn’t alter the line of action but also gives fantastic tactile feedback to the spotter. You can, by this method, assist perfectly without even looking at the athlete – the sticking point can be easily felt.



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the CrossFit JOURNAL ARTICLES

Glycemic Index

Greg Glassman

For several decades now, bad science and bad politics have joined hands to produce what is arguably the most costly error in the history of science—the low-fat diet. This fad diet has cost millions unnecessary death and suffering from heart disease, diabetes, and, it increasingly seems, a host of cancers and other chronic and debilitating illnesses.

Gary Taubes, the esteemed science writer, has written two brilliant and highly regarded pieces on exactly this subject. The first appeared in *Science* Magazine in 1999 and the second in the *New York Times* just this summer (July 7, 2002).

A new age is dawning in nutrition: one where the culprit is seen not as dietary fat but as excess consumption of carbohydrate—particularly refined or processed carbohydrate. In fact, there's an increasing awareness that excess carbohydrates play a dominant role in chronic diseases such as obesity, coronary heart disease, many cancers, and diabetes. This understanding comes directly from current medical research. Amazingly, the near-universal perception that dietary fat is the major culprit in obesity has no scientific foundation. (See Taubes, above.)

There's a family of popular diets and diet books based on decreasing carbohydrate consumption. Most of them are excellent.

Chief among these books are Barry Sears's *Enter the Zone*, Michael and Mary Dan Eades's *Protein Power*, Robert Atkins's *Dr. Atkins' Diet Revolution*, Loren Cordain's *The Paleo Diet*, and Heller's *The Carbohydrate Addict's Diet*. Each of these is an honest and accurate chronicling of the effects of the low-fat, fad diet, and each offers a rational, effective regimen for avoiding dietary ills. For those technically inclined, the mechanism by which excess carbohydrate causes disease state is known as hyperinsulinemia. Hyperinsulinemia is the chronic and acute elevation of insulin as a result of habitual consumption of excess carbohydrate.

The list of ills linked to hyperinsulinemia is staggering and growing. Just recently, colorectal cancer was added to the probable list of hyperinsulinemia-mediated diseases. The evidence linking excess carbohydrate consumption to hyperinsulinemia and coronary heart disease is compelling, if not overwhelmingly convincing.

Additionally, excess consumption of carbohydrate may soon be shown to be linked to Alzheimer's, aging, cancers, and other disease through a process known as glycosylation. At any rate, a search on Google for "hyperinsulinemia" reveals hundreds of ills linked to this metabolic derangement. The rapidly growing awareness of the consequences of elevated blood sugar is one of the more promising avenues of medical advancement today.

Though frightening, the diseases brought about through hyperinsulinemia can easily be avoided by minimizing carbohydrate consumption—specifically carbohydrate that gives substantial rise to blood sugar and consequently insulin levels.

There is a singular measure of carbohydrate that gives exactly this information: the glycemic index. Glycemic index is simply a measure of a food's propensity to raise blood sugar. Avoid high-glycemic-index foods and you'll avoid many, if not most, of the ills associated with diet.

David (Rick) Mendosa has published one of the most complete glycemic indices available anywhere, with a listing of over 750 common food

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Glycemic Index

...continued

items giving values based on glucose's score of 100.

We can increase the ease and utility of such a list by dividing commonly eaten foods into two groups—one of high-glycemic foods, "bad foods," and one of low-glycemic foods, or "good" foods. This is the rationale behind the CrossFit Shopping List, at right.

You may notice that the "good" foods are typically meats, vegetables, fruits, nuts, and seeds, whereas the bad foods include many manmade or processed foodstuffs. There are some notable exceptions, but the trend is certainly instructive.

High-glycemic, or "bad foods," are typically starchy, sweet, or processed foods such as bread, pasta, rice, potato, grains, and desserts.

More than a few observers have pointed out that low-glycemic foods have limited shelf life and are found on the perimeter of the grocery store, whereas high-glycemic foods have a longer shelf life and are typically found within the grocery store's aisles.

Though this approach is an oversimplification of much of nutritional science, it has the power to deliver nearly all of the benefits offered by more detailed and elaborate regimens such as those by Sears, the Eadeses, Cordain, Atkins, and the Hellers. Eat more of the "good " foods and less of the "bad" ones and you'll garner much of what the more responsible eating plans offer. Many of our friends and clients have radically transformed their health through this single tool.

"Good" Foods Low-Gylcemic		"Bad" Foods High-Gylcemic	
Water	Apple	Acorn Squash	Cereal
Oatmeal	Grapes	Baked Beans	Cornstarch
Eggs	Plum	Beets	Croissant
Protein Powder	Shrimp	Black-eyed Peas	Croutons
Peanut Butter	Mayonnaise	Butternut Squash	Doughnut
Tahini	Plain Yogurt	Cooked Carrots	English Muffin
Olives	Deli Meat	Corn	Granola
Beef	Ham	French Fries	Grits
Cheese	Soy Milk	Hubbard Squash	Melba Toast
Salsa	Spirulina	Lima Beans	Muffin
Black Beans	Tempeh	Parsnips	Noodles
Kidney Beans	Egg Substitute	Peas	Instant Oatmeal
Ground Turkey	Oil	Pinto Beans	Pancake
Soy Sausage	Peanuts	Potato	Popcorn
Chicken	Swordfish	Refried Beans	Rice
Turkey Sausage	Tuna Steak	Sweet Potato	Rolls
Salmon	Tomato Sauce	Turnip	Taco Shell
Turkey	Spinach	Banana	Tortilla
Canned Tuna	Carrots	Cranberries	Udon Noodles
Canned Chicken	Orange	Dates	Waffle
Soy Burgers	Pear	Fig	BBQ Sauce
Cottage Cheese	Pineapple	Guava	Ketchup
Almonds	Brussels Sprouts	Mango	Cocktail Sauce
Macadamia Nuts	Eggplant	Papaya	Honey
Avocado	Sauerkraut	Prunes	Jelly
Tofu	Hot Dogs	Raisins	Sugar
Tomato	Chickpeas	Fruit Juice	Maple Syrup
Lettuce	Lamb	Vegetable Juice	Teriyaki Sauce
Onion	Pork	Bagel	Chocolate
Mushrooms	Dill Pickles	Biscuit	Corn Chips
Cucumber	Soy Beans	Bread Crumbs	Ice Cream
Blueberries	Asparagus	Bread	Potato Chips
Milk	Cantaloupe	Steak Sauce	Pretzels
Broccoli	Strawberries	Bulgur	Saltine Crackers
Zucchini	Peach	Sweet Relish	Molasses

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"mess you up"

THE CrossFit Journal

Strategies for a Seven Minute 2K on the Concept II Rower

Our purpose here is to show specifically how a simple goal, like rowing a seven-minute two thousand meters, can not only be systematically and deliberately approached from multiple protocols, but can generally encourage similar thinking in pursuing other fitness milestones.

Set the rowing ergometer for two thousand meters, row, and note the time at completion. Repeated regularly, the time to complete the two thousand meters will fall. Eventually, you may pass under the seven-minute mark and become one of the "better rowers." This is one obvious and common approach to training for a 7 minute 2K on a rower (2K/7).

Let's look at another approach. Set the rower for seven minutes and row, and note the distance on completion. Gradually, the distance for the seven minutes will increase. Eventually, you may pass the two thousand meter mark and become one of the "better rowers."

The two approaches, "distance priority vs. time priority," represent distinct yet converging processes for reaching the 2K/7.

These two approaches suggest a third: hold the rate constant for as much time or as many meters as possible. With the "rate priority" efforts, you would hold the 500 meter pace at 1:45 and note when the average 500 meter pace fell under 1:45 by either time or distance. Eventually, you may carry the 1:45 average 500 meter pace for seven minutes at which point you've again become one of the "better rowers."

Three different roads to the same end - two thousand meters in seven minutes. Each of these methods occurs at different intensities and within different time domains, and therefore in terms of bioenergetics, they cross-train for the singular goal of 2K/7. (The order of increasing intensity is "distance priority," "time priority," and "pace priority.")

Three metabolically distinct yet convergent paths to the seven-minute goal offer great psychological and physiological advantage over any of the individual approaches alone.

Slightly more complicated but extremely effective would be an interval approach where the two thousand meters is rowed in ten intervals of 42 seconds. Set the rower for intervals of 42 seconds of work followed by 30 seconds of rest. If you row 10 of these intervals and get 200 meters in each you'll have experienced the 2K at the seven-minute pace with the advantage of nine 30-second breaks that stopped the clock.

On the next attempt you could set the rest for only 25 seconds while leaving the work at 42 seconds and see if you can get 200 meters in each of ten intervals. You've now rowed the 2K at the seven-minute pace again, but this time you reduced your resting time by 45 seconds.

With each successful run where you manage the 200 meters in each of ten intervals you can drop the rest time by 5 seconds on the next workout. Eventually, you'll be able to eliminate the rest. At that point you've achieved the 2K/7, this time by the interval approach.

Here's yet another interval regimen towards the 2K/7. Start with 42 intervals of 10 seconds each followed by thirty seconds rest. If you're able to manage 48 meters in each of the 42 intervals, in your next workout try 35 intervals of 12 seconds each followed by thirty seconds rest. If you're able to manage 57 meters in each of the 35 intervals, then you're

ready for the next interval in the progression where the work interval increases, the number of intervals diminishes and the rest remains thirty seconds. The following table shows the progression from easy to tough.

Number of Intervals	Duration of Work (Seconds)	Duration of Rest (Seconds)	Meters in Each Interval	Total Time for Workout (min:sec)
42	10	30	48	27:30
35	12	30	57	24
30	14	30	67	21:30
28	15	30	71	20:30
21	20	30	95	17
20	21	30	100	16:30
15	28	30	133	14
14	30	30	143	13:30
12	35	30	166	13
10	42	30	200	11:30
7	60	30	286	10
6	70	30	333	9:30
5	84	30	400	9
4	105	30	500	8:30
3	140	30	667	8
2	210	30	1000	7:30

More important than the particulars of any approach is the variety or breadth of stimulus in moving towards your target. You're limited only by your imagination and will power. Each distinct approach adds a unique advantage to your overall strategy.

This particular goal of two thousand meters in seven minutes is a prominent benchmark in an athlete's development. The Concept II Rowing Ergometer is particularly amenable to interval training because of its marvelously flexible console, allowing for customizable inputs for intervals. However, don't lose sight of the more general lesson of incremental, metabolically distinct, and converging methods contributing to an efficient strategy for success.

THE CrossFit® Journal

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"mess you up"

Fast Food



One of the more common explanations for bad diet is being "too busy to eat right." On the face of it this may seem plausible. There are a multitude of things that we are each too busy to do. It seems logical that there are more things that we don't have time for than we do have time for because there are an infinite number of things to do, but we can only experience a finite number of them.

But because eating is not optional, the important question is not how much time it takes to eat right but whether it takes longer to eat right than to eat wrong? We thought an experiment was in order.

We sent two teams out at lunchtime. Team A, the "too busy to eat right" team, headed for Dairy Queen and Team B, the "not too busy to eat right" team, went to the local grocery store, "Nob Hill Foods."

The eatery is right across the street from the grocery company so differences in travel time was not a factor in timing the two approaches.

We instructed our "too busy to eat right" team, Team A, to order a meal that was not "right," simply because the "too busy to eat right team" doesn't "eat right" by definition. We are of the opinion that even the worst eatery can be made better by better choices, but that is the stuff of another article.

Team B was instructed to select for nutrition and convenience.

Again, our chief concern was about time to serving because we're testing the claim that eating poorly is quicker than eating properly. But, we couldn't help wonder, what are the cost differences and how profound can the nutritional choices be?



The fast food team, Team A, the one that was too busy to eat right, got their food in 17 minutes and 45 seconds from leaving the gym to food in hand.

The grocery store team, Team B, the one with the extra time to eat right, got their food in 14 minutes and 23 seconds, beating the busy guys by 3 minutes and 22 seconds.

The fast food - Dairy Queen - was a double cheeseburger, large fries, and a chocolate shake. The cost was $6.12.

The grocery store food – Nob Hill Foods – was 6 ounces of turkey breast from the deli counter, two Fuji apples, and 1 ounce of roasted cashews. The cost was $5.39, edging out the Dairy Queen by 73 cents.



“Good Food”



“Bad Food”



Taster’s Choice

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"mess you up"

Squat Clinic

Why Squat?

The squat is essential to your well-being. The squat can both greatly improve your athleticism and keep your hips, back, and knees sound and functioning in your senior years.

Not only is the squat not detrimental to the knees it is remarkably rehabilitative of cranky, damaged, or delicate knees. In fact, if you do not squat, your knees are not healthy regardless of how free of pain or discomfort you are. This is equally true of the hips and back.



The squat is no more an invention of a coach or trainer than is the hiccup or sneeze. It is a vital, natural, functional, component of your being.

The squat, in the bottom position, is nature's intended sitting posture (chairs are not part of your biological make-up), and the rise from the bottom to the stand is the biomechanically sound method by which we stand-up. There is nothing contrived or artificial about this movement.

Most of the world's inhabitants sit not on chairs but in a squat. Meals, ceremonies, conversation, gatherings, and defecation are all performed bereft of chairs or seats. Only in the industrialized world do we find the need for chairs, couches, benches, and stools. This comes at a loss of functionality that contributes immensely to decrepitude.

Frequently, we encounter individuals whose doctor or chiropractor has told them not to squat. In nearly every instance this is pure ignorance on the part of the practitioner. When a doctor that doesn't like the squat is asked, "by what method should your patient get off of the toilet?" they are at a loss for words.

In a similarly misinformed manner we have heard trainers and health care providers suggest that the knee should not be bent past 90 degrees. It's entertaining to ask proponents of this view to sit on the ground with their legs out in front of them and then to stand without bending the legs more than 90 degrees. It can't be done without some grotesque bit of contrived movement. The truth is that getting up off of the floor involves a force on at least one knee that is substantially greater than the squat.

Our presumption is that those who counsel against the squat are either just repeating nonsense they've heard in the media or at the gym, or in their clinical practice they've encountered people who've injured themselves squatting incorrectly.

It is entirely possible to injure yourself squatting incorrectly, but it is also exceedingly easy to bring the squat to a level of safety matched by walking. In the accompanying article we explain how that is done.

On the athletic front, the squat is the quintessential hip extension exercise, and hip extension is the foundation of all good human movement. Powerful, controlled hip extension is necessary and nearly sufficient for elite athleticism. "Necessary" in that without powerful, controlled hip extension you are not functioning anywhere near your potential. "Sufficient" in the sense that everyone we've met with the capacity to explosively open the hip could also run, jump, throw, and punch with impressive force.

Secondarily, but no less important, the squat is among those exercises eliciting a potent neuroendocrine response. This benefit is ample reason for an exercise's inclusion in your regimen.

How to Squat

Here are some valuable cues to a sound squat. Many encourage identical behaviors.

1. Start with the feet about shoulder width apart and slightly toed out.
2. Keep your head up looking slightly above parallel.
3. Don't look down at all; ground is in peripheral vision only.
4. Accentuate the normal arch of the lumbar curve and then pull the excess arch out with the abs.
5. Keep the midsection very tight.
6. Send your butt back and down.
7. Your knees track over the line of the foot.
8. Don't let the knees roll inside the foot.
9. Keep as much pressure on the heels as possible.
10. Stay off of the balls of the feet.
11. Delay the knees forward travel as much as possible.
12. Lift your arms out and up as you descend.
13. Keep your torso elongated.
14. Send hands as far away from your butt as possible.
15. In profile, the ear does not move forward during the squat, it travels straight down.
16. Don't let the squat just sink, but pull yourself down with your hip flexors.
17. Don't let the lumbar curve surrender as you settle in to the bottom.
18. Stop when the fold of the hip is below the knee – break parallel with the thigh.
19. Squeeze glutes and hamstrings and rise without any leaning forward or shifting of balance.
20. Return on the exact same path as you descended.
21. Use every bit of musculature you can; there is no part of the body uninvolved.
22. On rising, without moving the feet, exert pressure to the outside of your feet as though you were trying to separate the ground beneath you.
23. At the top of the stroke stand as tall as you possibly can.

The Air Squat

All our athletes begin their squatting with the "air squat," that is, without any weight other than body weight. As a matter of terminology when we refer to the "squat" we are talking about an unladen, bodyweight only squat. When we wish to refer to a weighted squat we will use the term back squat, overhead squat, or front squat referring to those distinct weighted squats. The safety and efficacy of training with the front, back, and overhead squats, before the weightless variant has been mastered retards athletic potential.

When has the squat been mastered? This is a good question. It is fair to say that the squat is mastered when both technique and performance are superior. This suggests that none of the twenty-three points above are deficient and fast multiple reps are possible. Our favorite standard for fast multiple reps would be the Tabata Squat (20 seconds on/10 seconds off repeated 8 times) with the weakest of eight intervals being between 18-20 reps. Don't misunderstand - we're looking for 18-20 perfect squats in twenty seconds, rest for ten and repeat seven more times for a total of eight intervals.

The most common faults to look for are surrendering of the lumbar curve at the bottom, not breaking the parallel plane with the thighs, slouching in the chest and shoulders, looking down, lifting the heels, and not fully extending the hip at the top. Don't even think about weighted squats until none of these faults belong to you.

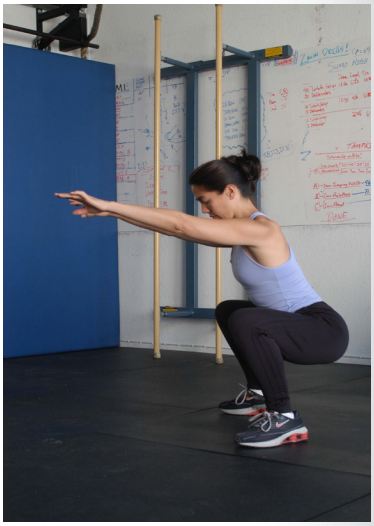
Common Faults or Anatomy of a Bad Squat



Not Breaking the Parallel Plane



Rolling Knees Inside Feet



Dropping Head



Losing Lumbar Extension
(rounding the back - this may be the worst)



Dropping the Shoulders



Heels Off the Gound

A relatively small angle of hip extension (flat back), while indicative of a beginner's or weak squat, and caused by weak hip extensors is not strictly considered a fault as long as the lumbar spine is in extension.

Therapies for Common Faults

Causes of the Bad Squat



Not Finishing the Squat - not completing hip extension

1. Weak gluteshamstrings. The glutes and hams are responsible for powerful hip extension, which is the key to the athletic performance universe.
2. Poor engagement, weak control, and no awareness of glute and hamstring. The road to powerful, effective hip extension is a three to five year odyssey for most athletes.
3. Resulting attempt to squat with quads. Leg extension dominance over hip extension is a leading obstacle to elite performance in athletes.
4. Inflexibility. With super tight hamstrings you're screwed. This is a powerful contributor to slipping out of lumbar extension and into lumbar flexion – the worst fault of all.
5. Sloppy work, poor focus. This is not going to come out right by accident. It takes incredible effort. The more you work on the squat the more awareness you develop as to its complexity.

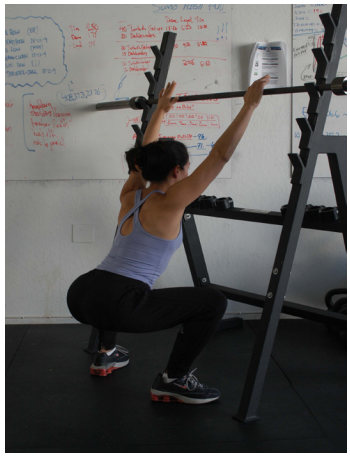
Bar Holds: Grab a bar racked higher and closer than your normal reach at bottom of squat, then settle into perfect bottom with chest, head, hands, arms, shoulders, and back higher than usual. Find balance, let go, repeat closer and higher, etc. Lifts squat (raises head, chest, shoulders, and torso) putting more load on heels and glute/hams. This immediately forces a solid bottom posture from which you have the opportunity to feel the forces required to balance in good posture. This is a reasonable shoulder stretch but not as good as the overhead squat. See below. This is a very effective therapy.



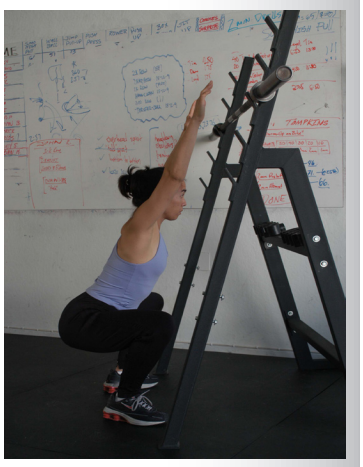


Box squatting: Squat to a ten inch box, rest at bottom without altering posture, then squeeze and rise without rocking forward. Keep perfect posture at bottom. This is a classic bit of technology perfected at the Westside Barbell Club. See their site and links.









Faults	Causes	Therapies
Not going to parallel (not deep enough)	Weak hip extensors, laziness, quad dominance	Bottom to bottoms, Bar Holds, Box Squatting
Rolling knees inside feet.	Knee-stabilization issues, cheat to quads	Push feet to outside of shoe, deliberately adduct (attempt to stretch floor apart beneath feet.)
Dropping head	Lack of focus, weak upper back, lack of upper back control	Bar Holds, Overhead squats,
Losing lumbar extension	Lack of focus, tight hamstrings, cheat for balance due to weak glute/hams	Bar Holds, Overhead squats
Dropping shoulders	Lack of focus, weak upper back, lack of upper back control, tight shoulders	Bar Holds, Overhead squats
Heels off ground	Cheat for balance due to weak glute/hams	Focus, Bar Holds
Incomplete hip extension	Cheating, sets wrong neurological pattern avoiding most important part of squat	String Touch

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Ergometer Scores & Hall of Fame Workouts

Greg Glassman

Rowing ergometer times are dominated by heavier athletes. Check out the Concept II rankings for lightweight and heavyweights at every distance. Ergometer rowing is a heavyweight's game!

The reasons for this are a complex blend of physics and physiology, and the influences differ from one type of ergometer to another and from shorter to longer distances. In fact, the science of rowing and ergometers gives ample opportunity to brush up on a lot of basic physiology, physics, and mathematics.

Tim Granger of Cambridge University has developed an algorithm that allows us to compare rowing scores at different weights. There are some inherent limitations, and Tim explains these on his site, but overall this is an excellent method to handicap rowing scores so that we can compare achievements.

For instance, using this algorithm we find that a 220-pound (100-kg) male with a 7-minute 2,000 meters equates to a 165-pound (75-kg) male rowing a 7:30 2,000 meters.

It is important to note that Dr. Granger developed this algorithm from looking at the mathematical relationships of world record erg times at varying distances. The significance here is that we are comparing individuals at varying weights by models that reflect the relationships found among individuals who've nearly optimized human performance.

This algorithm makes one of CrossFit's more effective and challenging tools, the Concept II indoor rower, into an even more practical and meaningful experience by offering a level playing field.

Here are some great sites on rowing science:

Weight/sex/age adjusted ergo ladder (http://archive.comlab.ox.ac.uk/other/rowing/ergo-ladder.html).

Rowperfect's unique design (http://www.rowperfect.com.au/physics.html) and compensation for weight (http://www.rowperfect.com.au/fair_rower_comparision.html).

From Oxford University, the basic physics of rowing (http://www.atm.ox.ac.uk/rowing/physics/basics.html#section5).

From Oxford University, the physics of ergometers (http://www-atm.atm.ox.ac.uk/rowing/physics/ergometer.html).

Rowing physiology and performance from a renowned exercise physiologist and rowing coach, Dr. Stephen Seiler (http://home.hia.no/~stephens/rowing.htm).

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Hall of Fame Workouts

What these three workouts have in common is that each is complete in that they are simple, demanding, and effective. We can't think about them without laughing. (They also each use the rower.)

The first is our famous **"Fight Gone Bad"** workout. In this workout you move from each of five stations after a minute. This is a five-minute round from which a one-minute break is allowed before repeating. We've used this in 3 and 5 round versions.

The stations are:

1. Wall-ball – 20 pound ball, 8 ft target.
2. Sumo deadlift high-pull – 75-pounds
3. Box jump – 20" box
4. Push press – 75 pounds
5. Row – calories

The clock does not reset or stop between exercises. On call of "rotate," all athletes must move to next station immediately.

One point is given for each rep, except on the rower, where each calorie is one point.

With this workout we can give an integer value to metabolic preparedness for mixed-modal high intensity efforts matched to professional fight parameters (UFC).

The second is the **"Tabata This"** workout where the Tabata Interval of 20 seconds of work followed by 10 seconds of rest repeated 8 times is applied in turn to the squat, rower, pull-ups, sit-ups, and push-ups with a one-minute rotation break between exercises.

Each exercise is scored by the weakest number of reps (calories on the rower) in each of the eight intervals. During the one-minute rotation/rest time, the clock is not stopped but kept running. The score is the total of the scores from the five stations.

This workout stands the Tabata interval concept on its head but is so potent in impact that it stands remembered as a favorite by our crew.

A third classic CrossFit workout is the elegant **"row/thruster/pull-up"** workout featuring a 1,000-meter row, 45 pound – fifty-rep thruster (deep front squat/push-pres), and 30 pull-ups. This pit bull of a workout is scored by the time to complete all exercises. Play with different orders of the three exercises and compare times.

These three workouts can each be used to quantify your capacity in a manner that reflects the CrossFit model for fitness.

◇

Greg Glassman is the Founder of CrossFit, Inc. and Crossfit Santa Cruz and is the publisher of the CrossFit Journal. He is a former competitive gymnast and has been a fitness trainer and conditioning coach since the early 1980s.

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Interview: Coach Greg Glassman

CFJ: What's wrong with fitness training today?

Coach Glassman: The popular media, commercial gyms, and general public hold great interest in endurance performance. Triathletes and winners of the Tour de France are held as paradigms of fitness. Well, triathletes and their long-distance ilk are specialists in the word of fitness, and the forces of combat and nature do not favor the performance model they embrace. The sport of competitive cycling is full of amazing people doing amazing things, but they cannot do what we do. They are not prepared for the challenges that our athletes are.

The bodybuilding model of isolation movements combined with insignificant metabolic conditioning similarly needs to be replaced with a strength and conditioning model that contains more complex functional movements with a potent systemic stimulus. Sound familiar? Senior citizens and U.S. Marine Combatant Divers both will most benefit from a program built entirely from functional movement.

CFJ: What about aerobic conditioning?

Coach Glassman: I know you're messing with me – trying to get me going. Look, why is it that a 20-minute bout on the stationary bike at a heart rate of 165 bpm is held by the public to be good cardiovascular work, whereas a mixed-mode workout keeping athletes between 165 and 195 bpm for twenty minutes inspires the question, "What about aerobic conditioning?"

For the record, the aerobic conditioning developed by CrossFit is not only high-level, but, more importantly, it is more useful than the aerobic conditioning that comes from regimens composed entirely of monostructural elements like cycling, running, or rowing. Now that should start some fires!

Put one of our guys in a gravel shoveling competition with a pro cyclist and our guy smokes the cyclist. Neither guy trains by shoveling gravel, so why does the CrossFit guy dominate? Because CrossFit's workouts better model high-demand functional activities. Think about it – a circuit of wall ball, lunges, and deadlift high pulls at max heart rate better matches a larger range of activities than does cycling at any heart rate.

CFJ: How many times should someone do the Workout of the Day (WOD)?

Coach Glassman: Yeah, we actually get this question every once in a while. When it comes up we know for a fact that either they've not tried the workouts or they've tried them at a leisurely pace. Done right, they have a horrific impact; they're designed that way. No one comes out standing much less looking for another one later.

What the WOD does allow for is learning and practice of sports. Juggling sport and the WOD requires careful modulation of the intensity of the WOD or overtraining is a certainty.

CFJ: What is your message for law enforcement and military special op's trainers?

Coach Glassman: Make sure that the mission's requirements don't exceed the training stimulus. If

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you're working a program where your men and women are running on M, W, F and working upper-body weight training on T-Th, like we've seen so often, your product is not optimally prepared.

Arrest and control is not aerobic like the Tour de France; it's anaerobic like cage fighting.

CFJ: What is the best way to start CrossFit?

Coach Glassman: If you are not intimate with the elements of the CrossFit routines (squat, deadlift, clean, pull-up, push-up, box jump, etc) then gaining familiarity has to be the first step.

If you are unfamiliar or less than very confident with the elements, then nearly any regimen with the singular focus of learning the sound mechanics of basic movements is a perfect prescription for the first month or two.

For those new to the CrossFit method it will be necessary to establish consistency with the Workout of the Day before increasing the intensity of the workouts. The workouts exceed the capacity of the fittest men on earth. Be careful.

CFJ: What about nutrition?

Coach Glassman: Meat and vegetable, nuts and seeds, some fruit, little starch, no sugar. End of subject.

CFJ: What are your favorite exercises?

Coach Glassman: Cleans, push-ups (across 180 degrees – from handstand push-up to dip), squats, jumps, running, deadlifts, rowing, cycling, pull-ups, muscle-ups, presses, presses to handstand, wall ball, dumbbell and kettlebell swings, lunges, snatches, rope-climbing (and other non-technical climbing), sit-ups (and gymnastic variations on the sit-up theme).

CFJ: Do you have a program for...?

Coach Glassman: This is another question that I see daily. We are asked for workouts for baseball, karate, swimming, dance, boxing, but they all get the same thing – CrossFit.

The athletes, firefighters, soldiers, and cops that we work with have benefited most from increased practice within their disciplines and better general fitness.

We design and deliver a broad-based general fitness. The need for specificity in sport is nearly perfectly met within the training and practice of the sport. There's a strong and mistaken belief that every sport requires a separate and distinct strength and conditioning prescription. The notion is nonsense.

CFJ: Why the *CrossFit Journal*?

Coach Glassman: Why is there nothing in the popular media that both the professional athlete and dedicated fitness enthusiast could find useful? That's the niche we're trying to fill.

The idea behind the *CrossFit Journal* is simply to support and expand the CrossFit community by offering information that, like our workouts, is potent and brief. The rest is a distraction.

CFJ: Why gymnastics, weightlifting, and sprinting?

Coach Glassman: Gymnasts have no peer in trunk and hip flexion, upper-body strength in multiple joint angles, agility, accuracy, balance, coordination. Their domain is body control.

Weightlifters are masters of power, speed, and hip and leg strength. Powerful hip extension is the most critical element of human performance and none have the capacity of the weightlifters.

Sprinters have enormous physical potential due to their metabolic competency across anaerobic and aerobic pathways and because of the speed, power, and total conditioning that sprinting demands.

Blending workouts from each domain gives us a total greater than the sum of the parts – a gorgeous hybrid.



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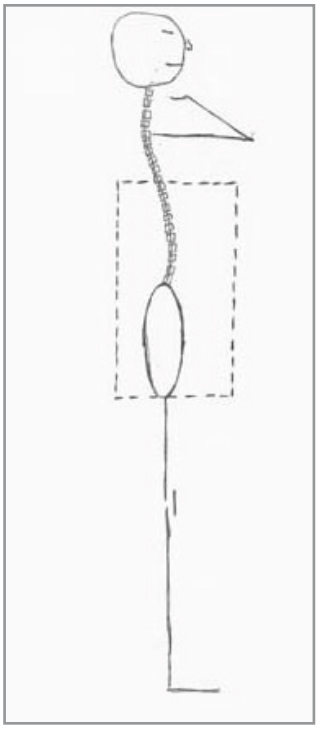
A Postural Error

A Costly Biomechanical Fault: Muted Hip Function (MHF)

Greg Glassman

The Problem

The most powerful forces that can be generated by the human body are initiated, controlled, and dominated by the hip. Unfortunately, in the majority of trainees, some degree of hip dysfunction creates postures and mechanics that reduce power and stability and are generally unsound. The faulty mechanics arise from inadequate training and insufficient practice of critical hip movements. We've named this widespread fault "muted hip function" or "MHF."



Who's Got It?

MHF is evident to some degree in all but the most accomplished athletes or those who've trained to avoid it. We tell our best athletes that it will typically take three to five years to fully develop the hip's explosive capacity where there are no sign of MHF postures or tendencies.

MHF is squatting where hip extension is retarded while leg extension is not. We see it best in the dip and drive of a bad push press, where the knees jut forward while the pelvis rolls back pushing the belly forward. In fact the push press is the best way to conjure up this fault even in people who otherwise may have a beautiful squat and seem immune to this curse. A load that can be push-pressed for a max of twenty reps will typically induce this fault for the final four or five reps. More athletes will do it than not – including many good ones.

Elements of MHF

The causes and consequences of MHF include but are not limited to:

- structurally disadvantaged spinal posture
- low glute recruitment
- low hamstring recruitment
- pelvis abandoning the spine and chasing the legs

The Mechanics

MHF is, ultimately, the postures resulting from the legs compensating for the hip's failure – specifically, and foremost, using leg extension to compensate for weak or nonexistent hip extension.

- center of gravity shifting dramatically backward
- center of balance shifting toward toes
- knee experiencing unsound shear force
- leg extension being the only productive effort
- hip extension not being possible with low hip angle
- pelvis rotating the wrong way

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The most important effect of all these elements—and of MHF overall—is a marked decrease in stability, balance, and power.

The Damage

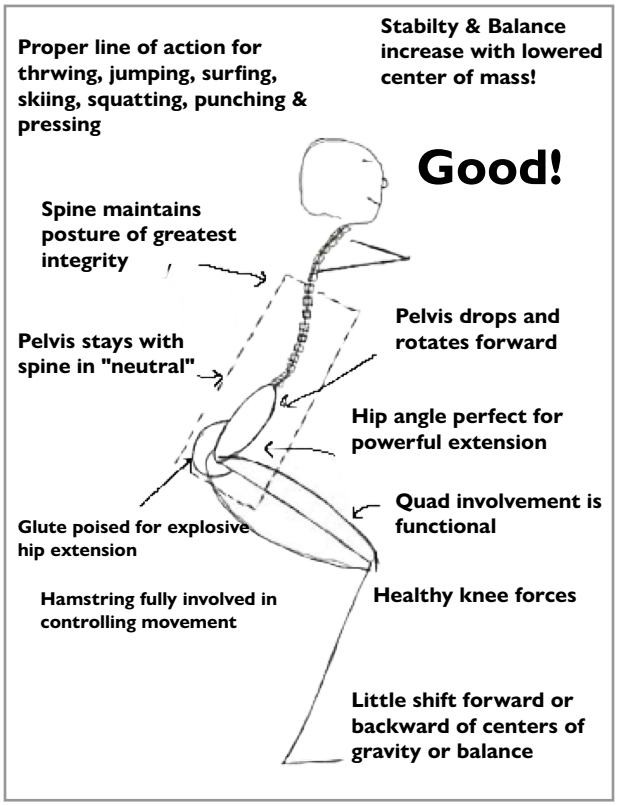
The degree of MHP varies from mild to severe. In severe cases everything the athlete attempts is rocked by instability and low power. In mild cases power loss and instability occur only while under great physical stress. In combat and elite performance, even mild MHF can lose the day.

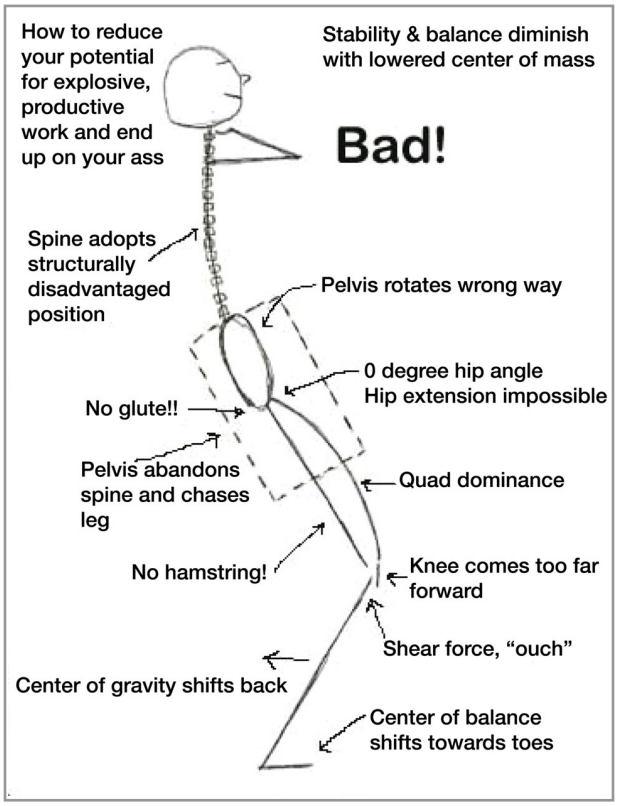
For physical performance what could be worse than low power and instability?

The Solution

Deliberate and focused training and practice of demanding hip extension movements is the only way to eliminate the effects of MHF. Again, it will typically take three years or more to eliminate all tendencies toward MHF.

No exercise offers as much opportunity to correct MHF tendencies as perfect-form, high-rep push press. MHF is evident within the first .01 of a second of a bad push press.





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The Odd Lifts

Greg Glassman

There are movements that will never make it to your local gym and they include some of the best exercises ever known. There is a collection of them known as "the odd lifts." It would be foolish to ignore these lifts. It would be even more foolish to approach them with other than extreme caution.

There are competitions with the odd lifts and they have an association - the United States All-Round Weightlifting Association (USAWA) The USAWA's web site covers the rules of the competitions and lifts.

We review the odd lifts with a mix of humor and awe. The humor is a juvenile humor because it finds its roots in the discomfort and injury of others – like kids' cartoons. Imagine the damage you could do with the Roman chair bench press alone. Or, how about the two-man clean and jerk?

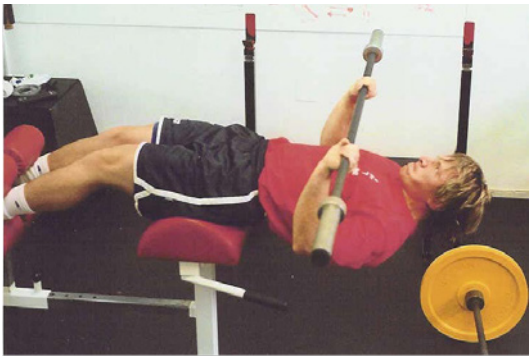
The awe comes in recognition of the tremendous difficulty and discomfort many of these lifts engender at even moderate loads.

If you try these lifts, start light, real light.

Some of these lifts place enormous demands on stabilizing muscle; others are very functional. Some are as demanding of cardiorespiratory function as running, while others train for teamwork or coordination.

Here is a list of some of our favorites:

The Inman Mile: Traverse 1 mile with 150 percent of your body weight on your shoulders. Gait optional! Refreshments allowed!! Not only is this a perfectly functional movement but an exciting component to overall fitness.





Roman Chair Extensions: Weighted hip extensions with weight in crook of elbows. Not necessarily functional but an education in hip extension and extensors!

Roman Chair Bench Press: This is a bench press from the face-up, parallel to the floor, extended position on a Roman Chair. The bench press is just a distraction to keep your mind off of your gut.

Allen Lift: A sit-up from the ground with arms locked overhead holding weight. If the bar moves inside a straight line from hip to shoulders or arms bend, the lift is disqualified. This has to be the all-time mother of hip

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flexor exercises.

Abdominal Raise: A sit-up with a barbell held behind the neck. Done on the ground or on a Roman Chair. Why don't we see more weighted sit-ups? Give this a try.

Two Person Cheat Curl: Very cool curl!

Two Person Clean and Jerk: This is a great source of amusement (try a tall guy and a short one, or one strong and one weak) but may develop teamwork.

Two Person Snatch: Same as above.

Steinborn Lift: From a loaded bar on the ground the lifter stands the bar on end, takes a "position against the bar" (squatting?) and lets the bar fall to one shoulder and pivot to the other from which position the athlete squats on command.

Actually, very functional. You wouldn't have to hang out at a construction site too long before you'd see this done.

Zercher Lift: Deadlift to knees, rest barbell on knees, and then bring barbell to crook of elbows and finish deadlift.

Middle Fingers Clean and Press: You guessed it, clean and press with two middle fingers only. This one is great for you grip junkies.

Zeigler Clean: This is a clean while balancing a plate on your head. Lift is complete only if plate doesn't fall.



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Judd Clean and Jerk: One-legged clean and jerk.

Two-Person, Two-Hand Team Press: This one will get you a free year at 24-Hour Nautilus; just try it.

Repetition Snatches with Body Weight: This exercise and the Repetition Clean and Jerk with Bodyweight have reasonable claim to be the best overall conditioning drill ever.

Repetition Cleans with Bodyweight: Yeah! The greatest single weightlifting movement turned into a cardiorespiratory nightmare for those strong enough.

Repetition Clean and Jerk with Body Weight: Same as above.

Repetition Jerk with Bodyweight: Outstanding exercise.

One-Hand Snatch: One-handed versions of big weight movements are very demanding of the transverse axis and consequently strengthen the trunk. There's also a neurological benefit to the greater control demands of one-handed movements.

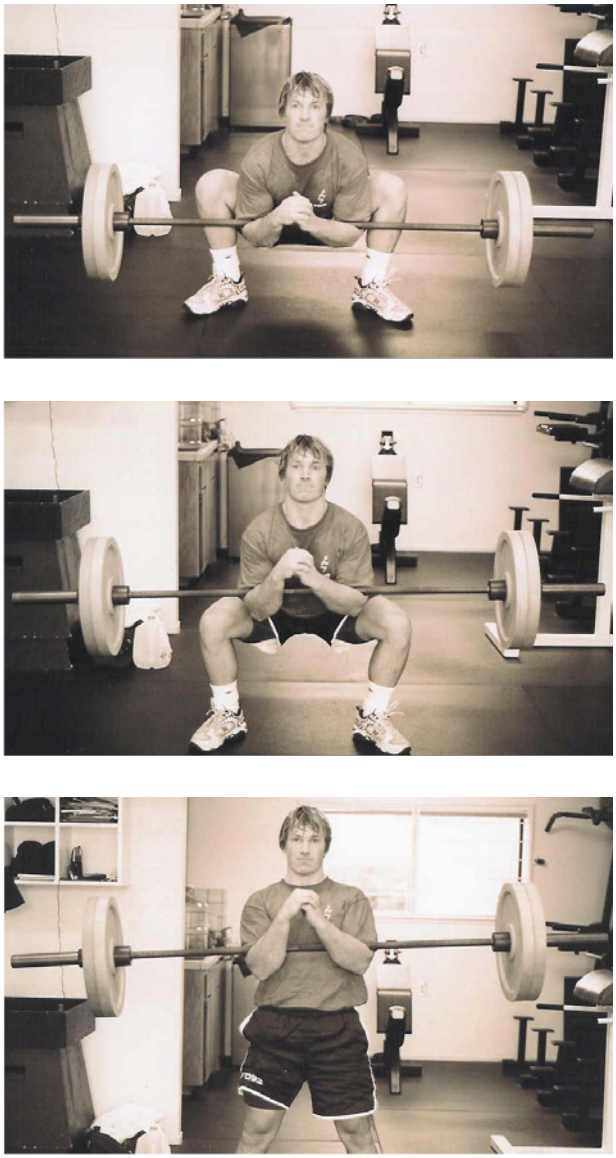
One-Hand Clean and Jerk: Same as One-Hand Snatch.

Continental Clean: This is an anything-goes-except-standing-the-bar-on-end clean. The bar can touch the body anywhere the lifter chooses! You can even put knee or butt to the ground.

This may be a good way to teach the efficiency of the normal clean. Ouch!

Wrestler's Bridge, Pullover, and Press: From Wrestler's Bridge, pull a barbell overhead to chest and then do presses to lockout. No points other than head and feet may touch ground during lift. (A two-inch pad for the head is OK!)

This takes a classic exercise, the Wrestler's Bridge, and adds weight. Beautiful!



The Zercher Lift

Greg Glassman is the Founder of CrossFit, Inc. and Crossfit Santa Cruz and is the publisher of the CrossFit Journal. He is a former competitive gymnast and has been a fitness trainer and conditioning coach since the early 1980s.

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"mess you up"

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Shoulder Press, Push Press, Push Jerk – The Overhead Lifts

Introduction

Learning the progression of lifts that moves from the shoulder press, to the push press, to the push jerk has long been a staple of the CrossFit regimen. This progression offers the opportunity to acquire some essential motor recruitment patterns found in sport and life (functionality) while greatly improving strength in the "power zone" and upper body. In terms of power zone and functional recruitment patterns, the push press and push jerk have no peer among the other presses like the "king" of upper body lifts, the bench press.

As the athlete moves from shoulder press, to push press, to push jerk, the importance of core to extremity muscle recruitment is learned and reinforced. This concept alone would justify the practice and training of these lifts. Core to extremity muscular recruitment is foundational to the effective and efficient performance of athletic movement. The most common errors in punching, jumping, throwing, and a multitude of other athletic movements typically express themselves as a violation of this concept.

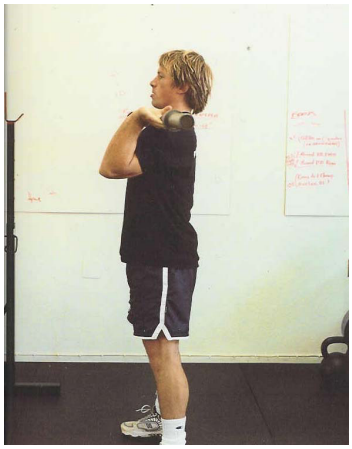
Because good athletic movement begins at the core and radiates to the extremities, core strength is absolutely essential to athletic success. The region of the body from which these movements emanate, the core, is often referred to as the "power zone." The muscle groups comprising the "power zone" include the hip flexors, hip extensors (glutes and hams), spinal erectors, and quadriceps. These lifts are enormous aids to developing the power zone.

Additionally, the advanced elements of the progression, the push press and jerk, train for and develop power and speed. Power and speed are "king" in sport performance. Coupling force with velocity is the very essence of power and speed. Some of our favorite and most developmental lifts lack this quality. The push press and jerk are performed explosively – that is the hallmark of speed and power training.

Finally, mastering this progression gives ideal opportunity to detect and eliminate a postural/mechanical fault that plagues more athletes than not – the pelvis "chasing" the leg during hip flexion. (See article) This fault needs to be searched out and destroyed. The push press performed under great stress is the perfect tool to conjure up this performance wrecker so it can be eliminated.

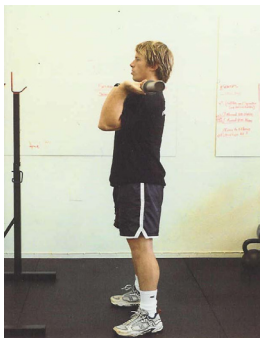
Mechanics

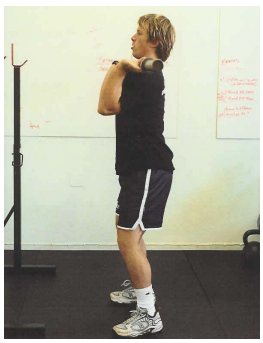
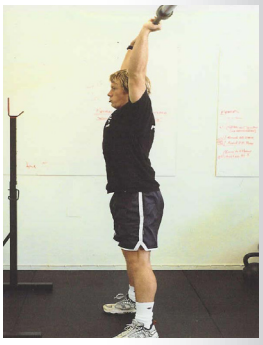
1. The Shoulder Press
    a. Set-up: Take bar from supports or clean to racked position. The bar sits on the shoulders with the grip slightly wider than shoulder width. The elbows are below and in front of bar. Stance is approximately shoulder width. Head is tilted slightly back allowing bar to pass.
    b. Press: Press the bar to a position directly overhead.





2. The Push Press
    a. Set-up: The set-up is the same as the shoulder press.
    b. Dip: Initiate the dip by bending the hips and knees while keeping the torso upright. The dip will be between 1/5 and 1/4 of a squat in depth.
    c. Drive: With no pause at the bottom of the dip, the hips and legs are forcefully extended.
    d. Press: As the hips and legs complete extension the shoulders and arms forcefully press the bar overhead until the arms are fully extended.



3. The Push Jerk:
    a. Set-up: The set-up is the same as for the shoulder press and push press.
    b. Dip: The dip is identical to the push press
    c. Drive: The drive is identical to the push press
    d. Press and Dip: This time instead of just pressing, you press and dip a second time simultaneously, catching the bar in a partial squat with the arms fully extended overhead.
    e. Finish: Stand or squat to fully erect with bar directly overhead identical to terminal position in push press and shoulder press.



The Role of the Abs in the Overhead Lifts

Athletically, the abdominals' primary role is midline stabilization, not trunk flexion. They are critical to swimming, running, cycling, and jumping, but never is their stabilizing role more critical than when attempting to drive loads overhead, and, of course, the heavier the load the more critical the abs' role becomes. We train our athletes to think of every exercise as an ab exercise but in the overhead lifts it's absolutely essential to do so. It is easy to see when an athlete is not sufficiently engaging the abs in an overhead press – the body arches so as to push the hips, pelvis, and stomach ahead of the bar. Constant vigilance is required of every lifter to prevent and correct this postural deformation.

Summary

From shoulder press to push jerk the movements become increasingly more athletic, functional, and suited to heavier loads. The progression also increasingly relies on the power zone. In the shoulder press the power zone is used for stabilization only. In the push press the power zone provides not only stability, but also the primary impetus in both the dip and drive. In the push jerk the power zone is called on for the dip, drive, second dip, and squat. The role of the hip is increased in each exercise.

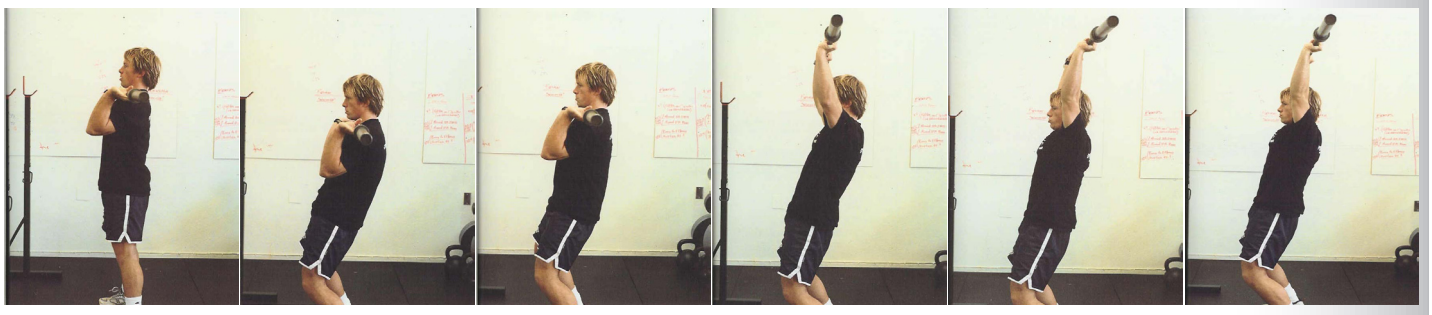
With the push press you will be able to drive overhead as much as 30% more weight than with the shoulder press. The push jerk will allow you to drive as much as 30% more overhead than you would with the push press.

In effect the hip is increasingly recruited through the progression of lifts to assist the arms and shoulders in raising loads overhead. After mastering the push jerk you will find that it will unconsciously displace the push press as your method of choice when going overhead.

The second dip on the push jerk will become lower and lower as you both master the technique and increase the load. At some point in your development, the loads will become so substantial that the upper body cannot contribute but a fraction to the movement at which point the catch becomes very low and an increasing amount of the lift is accomplished by the overhead squat.

Common push press flaw

On both the push press and jerk the “dip” is critical to the entire movement. It may come as a surprise to some that the dip is not a relaxed fall but an explosive dive. The stomach is held very tightly and the resultant turn around from dip to drive is sudden, explosive, and violent.



Try This:

Start with 95 pounds and push press or jerk 15 straight reps rest thirty seconds and repeat for total of five sets of 15 reps each. Go up in weight only when you can complete all five sets with only thirty seconds rest between each and do not pause in any set.

And This:

Repetition one: shoulder press, repetition two: push press, repetition three: push jerk. Repeat until shoulder press is impossible then continue until push press is impossible then five more push jerks. Start with 95 pounds and go up only when the total reps exceed thirty.

Check out this site for more push press technique:

http://www.exrx.net/WeightExercises/OlympicLifts/PushPress.html

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A Theoretical Template for CrossFit's Programming

Greg Glassman

Introduction

The October 2002 issue of *The CrossFit Journal* entitled "What is Fitness?" explores the aims and objectives of our program. Most of you have a clear understanding of how we implement our program through familiarity with the Workout of the Day (WOD) from our website. What is likely less clear is the rationale behind the WOD or more specifically what motivates the specifics of CrossFit's programming. It is our aim in this issue to offer a model or template for our workout programming in the hope of elaborating on the CrossFit concept and potentially stimulating productive thought on the subject of exercise prescription generally and workout construction specifically.

So what we want to do is bridge the gap between an understanding of our philosophy of fitness and the workouts themselves, that is, how we get from theory to practice.

At first glance the template seems to be offering a routine or regimen. This may seem at odds with our contention that workouts need considerable variance or unpredictability, if not randomness, to best mimic the often unforeseeable challenges that combat, sport, and survival demand and reward. We've often said, "What your regimen needs is to not become routine." But the model we offer allows for wide variance of mode, exercise, metabolic pathway, rest, intensity, sets, and reps. In fact, it is mathematically likely that each three-day cycle is a singularly unique stimulus never to be repeated in a lifetime of CrossFit workouts.

The template is engineered to allow for a wide and constantly varied stimulus, randomized within some parameters, but still true to the aims and purposes of CrossFit as described in the "What is Fitness?" issue. Our template contains sufficient structure to formalize or define our programming objectives while not setting in stone parameters that must be left to variance if the workouts are going to meet our needs. That is our mission – to ideally blend structure and flexibility.

It is not our intention to suggest that your workouts should or that our workouts do fit neatly and cleanly within the template, for that is absolutely not the case. But, the template does offer sufficient structure to aid comprehension, reflect the bulk of our programming concerns, and not hamstring the need for radically varying stimulus. So as not to seem redundant, what we are saying here is that the purpose of the template is as much descriptive as prescriptive.

Template Macro View

In the broadest view we see a three-day-on, one-day-off pattern. We've found that this allows for a relatively higher volume of high-intensity work than the many others that we've experimented with. With this format the athlete can work at or near the highest intensities possible for three straight days, but by the forth day both neuromuscular function and anatomy are hammered to the point where continued work becomes noticeably less effective and impossible without reducing intensity.

The chief drawback to the three-day-on, one-day-off

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Table 1 - Template Macro View

3 days on, 1 day off

Day	1	2	3	4	5	6	7	8	9	10	11	12
	M	G W	M G W	OFF	G	W M	G W M	OFF	W	M G	W M G	OFF

5 days on, 2 days off

Day	1	2	3	4	5	6	7
wk 1	M	G W	M G W	M G	W	OFF	OFF
wk 2	G	W M	G W M	G W	M	OFF	OFF
wk 3	W	M G	W M G	W M	G	OFF	OFF

Modalities

M = monostructural metabolic conditioning or "cardio"

G = gymnastics, bodyweight exercises

W = weightlifting, powerlifting and olympic lifts

regimen is that it does not sync with the five-day-on, two-day-off pattern that seems to govern most of the world's work habits. The regimen is at odds with the seven-day week. Many of our clients are running programs within professional settings, often academic, where the five-day workweek with weekends off is de rigueur. Others have found that the scheduling needs of family, work, and school require scheduling workouts on specific days of the week every week. For these people we have devised a five-days-on, two-days-off regimen that has worked very well.

The workout of the day was originally a five-on, two-off pattern and it worked perfectly. But the three-on, one-off pattern was devised to increase both the intensity and recovery of the workouts and the feedback we've received and our observations suggest that it was successful in this regard.

If life is easier with the five-on, two-off pattern, don't hesitate to employ it. The difference in potential between the two may not warrant restructuring your entire life to accommodate the more effective pattern. There are other factors that will ultimately overshadow any disadvantages inherent in the potentially less effective regimen, such as convenience, attitude, exercise selection, and pacing.

For the remainder of this article the three-day cycle is the one in discussion, but most of the analysis and discussion applies perfectly to the five-day cycle.

...the model we offer allows for wide variance of mode, exercise, metabolic pathway, rest, intensity, sets, and reps.

Elements by Modality

Looking at the Template Macro View (Table 1) it can readily be seen that the workouts are composed of three distinct modalities: metabolic conditioning ("M"), gymnastics ("G"), and weightlifting ("W"). The metabolic conditioning is monostructural activities commonly referred to as "cardio," the purpose of which is primarily to improve cardiorespiratory capacity and stamina. The gymnastics modality comprises body weight exercises/elements or calisthenics and its primary purpose is to improve body control by improving neurological components

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Table 2 - Exercises by Modality

Gymnastics	Metabolic Conditioning	Weightlifting
Air Squat	Run	Deadlifts
Pull-up	Bike	Cleans
Push-up	Row	Presses
Dip	Jump Rope	Snatch
Handstand Push-up		Clean and Jerk
Rope Climb		Medicine Ball Drills
Muscle-Up		Kettlebell Swing
Press to Handstand		
Back Extension		
Sit-up		
Jumps		
Lunges		

like coordination, balance, agility, and accuracy, and to improve functional upper body capacity and trunk strength. The weightlifting modality comprises the most important weight training basics, Olympic lifts and powerlifting, where the aim is primarily to increase strength, power, and hip/leg capacity.

Table 2 gives the common exercises used by our program, separated by modality, in fleshing out the routines.

For metabolic conditioning the exercises are run, bike, row, and jump rope. The gymnastics modality includes air squats, pull-ups, push-ups, dips, handstand push-ups, rope climb, muscle-ups, presses to handstand, back/hip extensions, sit-ups, and jumps (vertical, box, broad, etc.). The weightlifting modality includes deadlifts, cleans, presses, the snatch, the clean and jerk, medicine ball drills and throws, and kettlebell swings.

The elements, or exercises, chosen for each modality were selected for their functionality, neuroendocrine response, and overall capacity to dramatically and broadly impact the human body.

Workout Structure

The workouts themselves are each represented by the inclusion of one, two, or three modalities for each day. Days 1, 5, and 9 are each single modality workouts whereas days 2, 6, and 10 include two modalities each, and finally, days 3, 7, and 11 use three modalities each. In every case each modality is represented by a single exercise or element, i.e., each M, W, and G represents a single exercise from metabolic conditioning, weightlifting, and gymnastics modalities respectively.

When the workout includes a single exercise (days 1, 5, and 9) the focus is on a single exercise or effort. When the element is the single "M" (day 1) the workout is a single effort and is typically a long, slow, distance effort. When the modality is a single "G" (day 5) the workout is practice of a single skill and typically this skill is sufficiently complex to require great practice and may not be yet suitable for inclusion in a timed workout because performance is not yet adequate for efficient inclusion. When the modality is the single "W" (day 9) the workout is a single lift and typically performed at high weight and low rep. It is worth repeating that the focus on days 1, 5, and 9 is single efforts of "cardio" at long distance, improving high-skill more complex gymnastics movements, and single/low rep heavy weightlifting basics, respectively. This is not the day to work sprints, pull-ups, or high rep clean and jerk - the other days would be more appropriate.

On the single-element days (1, 5, and 9), recovery is not a limiting factor. For the "G" and "W" days rest is long and deliberate and the focus is kept clearly on improvement of the element and not on total metabolic effect.

For the two-element days (2, 6, and 10), the structure is typically a couplet of exercises performed alternately

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Table 3 - Workout Structure

Days	Single-Element Days (1, 5, 9)	Two-Element Days (2, 6, 10)	Three-Element Days (3, 7, 11)
Priority	Element Priority	Task Priority	Time Priority
Structure (set structure)	M: Single Effort G: Single Skill W: Single Lift	Couplet repeated 3-5 times for time	Triplet repeated for 20 minutes for rotations
(intensity)	M: Long, Slow Distance G: High Skill W: Heavy	Two moderately to intensely challenging elements	Three lightly to moderately challenging elements
Work Recovery Character	Recovery not a limiting factor	Work/rest interval management critical	Work/rest interval marginal factor

until repeated for a total of 3, 4, or most commonly 5 rounds and performed for time. We say these days are "task priority" because the task is set and the time varies. The workout is very often scored by the time required to complete five rounds. The two elements themselves are designed to be moderate to high intensity and work-rest interval management is critical. These elements are made intense by pace, load, reps or some combination. Ideally the first round is hard but possible, whereas the second and subsequent rounds will require pacing, rest, and breaking the task up into manageable efforts. If the second round can be completed without trouble, the elements are too easy.

For the three-element days (3, 7, and 11), the structure is typically a triplet of exercises, this time repeated for 20 minutes and performed and scored by number of rotations completed in twenty minutes. We say these

Table 4 - Workout Examples

Days		
1	**M**	Run 10K
2	**GW**	(5 handstand push-ups/225 x 5 deadlifts + 20 lbs/round) x 5 for time
3	**MGW**	Run 400m/10 pull-ups/"Thruster" 50% BW x 15 for 20 min for rotations
4		OFF
5	**G**	Practice handstands for 45 minutes
6	**WM**	(Bench press 75% BW x 10/Row 500m) x 5 for time
7	**GWM**	Lunges 100ft./push-press 50% BW x 15/row 500 m for 20 min for rotations
8		OFF
9	**W**	Deadlift 5-3-3-2-2-2-1-1-1 reps
10	**MG**	(Run 200m/box jump 30 in x 10) x 5 for time
11	**WMG**	Clean 50% BW x 20/bike 1 mile/15 push-ups for 20 min for rotations
12		OFF

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workouts are "time priority" because the athlete is kept moving for a specified time and the goal is to complete as many cycles as possible. The elements are chosen in order to provide a challenge that manifests only through repeated cycles. Ideally the elements chosen are not significant outside of the blistering pace required to maximize rotations completed within the time (typically 20 minutes) allotted. This is in stark contrast to the two-element days, where the elements are of a much higher intensity. This workout is tough, extremely tough, but managing work-rest intervals is a marginal factor.

Each of the three distinct days has a distinct character. Generally speaking, as the number of elements increases from one to two to three, the workout's effect is due less to the individual element selected and more to the effect of repeated efforts.

Application

The template in discussion did not generate our Workout of the Day, but the qualities of one, two, and three element workouts motivated the template's design. Our experience in the gym and the feedback from our athletes following the WOD have demonstrated that the mix of one, two, and three element workouts are crushing in their impact and unrivaled in bodily response. The information garnered through your feedback on the WOD has given CrossFit an advantage in estimating and evaluating the effect of workouts that may have taken decades or been impossible without the Internet.

Typically our most effective workouts, like art, are remarkable in composition, symmetry, balance, theme, and character. There is a "choreography" of exertion that draws from a working knowledge of physiological response, a well-developed sense of the limits of human performance, the use of effective elements, experimentation, and even luck. Our hope is that this model will aid in learning this art.

The template encourages new skill development, generates unique stressors, crosses modes, incorporates quality movements, and hits all three metabolic pathways. It does this within a framework of sets and reps and a cast of exercises that CrossFit has repeatedly tested and proven effective. We contend that this template does a reasonable job of formally expressing many CrossFit objectives and values.

Greg Glassman is the founder of CrossFit, Inc. and CrossFit Santa Cruz and is the publisher of the CrossFit Journal. He is a former competitive gymnast and has been a fitness trainer and conditioning coach since the early 1980s.

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Hoover Ball

Greg Glassman



Coach,

Just thought I would let you know about a little PT session we had. We played Hoover Ball with a 12lb TKO medicine ball, 5 players per side, 6 games to 10 points. It took 55 minutes and everyone was wiped out.

Sincerely,

SSgt Frank Ollis

U.S. Marines

We found Hoover Ball when we were on the Internet looking for something more competitive and sporting for the medicine ball. It has a distinguished history (http://www.mob.net/~jabalino/hoover/history.html), looked promising as a conditioning tool, and sounded fun so we suggested it on the WOD page and got the response above from Frank Ollis.

We know Frank well enough to know that if he thinks it's tough, it's tough.

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The game is officially a game of catch played with a medicine ball under a volleyball net on a tennis court and with tennis scoring. The official rules are here: http://www.hooverassociation.org/hooverballrules.html. There are even regularly scheduled games (http://www.hooverball.org/) and an annual Hooverball competition (http://www.hooverassociation.org/hooverfest.html).

The official game is played with a four or six pound ball. We had to give it that CrossFit flavor so we played on sand with a twenty-pound ball and an aggressive ball snapping Pit bull. It was indeed hard; everyone was tired, and one well known Brazilian Jiu-jitsu Black Belt got bit.

We experimented with two, three, and four men per side. The two-man version is a very athletic game and played well with an 8 lb. ball. The best throws were thrown underhand while the back is turned towards the net with a beautiful hip snap like a clean or kettlebell swing.

The following day a number of the athletes were sore in the trunk and back. As important, the crew has been asking to play again since that afternoon.









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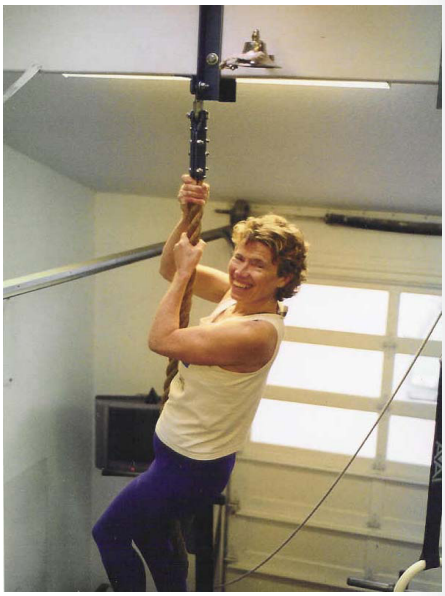
"mess you up"

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Seniors and Kids

We get email asking about the appropriateness of our program for your kids but even more concerning your parents and grandparents – our seniors. Let's start with them.



The needs of the elderly and professional athletes vary by degree, not kind. Where one needs functional competency to maintain independence, the other needs functional mastery to maintain dominance. Improved hip capacity will help a pro ball player's throw to first; it will also reduce the chances of grandpa falling in the tub. The squat is the perfect tool for both.

Our kids and our seniors squat, deadlift, push-press, push-jerk, clean and jerk, snatch, pull-up, dip, push-up, bench press, back/hip extend, sit-up, and rope climb. The workout that challenges a prizefighter will have a toned down equivalent for anyone else. Less weight, fewer reps, more rest, whatever is required to allow exposure to the movements at a challenging but tolerable and intensity is all that is needed to accommodate most special needs.

We eventually put old ladies up the rope and max deadlift test them. They get stronger, their bones become more dense, their postures improve, and their attitudes brighten.

Three movements, the squat, deadlift, and push-press, are our starting point with nearly everyone. In the case of the elderly, these movements have functional analogs necessary for independent living. The marginal capacity to stand is another way to look at the squat. At any age it can be moved away from incapacity and towards greater function. There is nothing at our disposal with greater positive impact on the elderly than effective strength training.



Women with osteoporosis can start their weight lifting careers with a broomstick. We work with a woman who came to us originally with reduced bone mass and an inability to lift her 14-pound granddaughter from the floor. She also couldn't stand from seated without clawing for furniture to assist with her arms. She now - two years later - has a seventy-pound deadlift, but just as important, she also has better than normal bone density. She can also stand (squat) from a ten-inch box without hesitancy or cheating. Her results are not unusual.

We work with kids in much the same way. With an insistence on near perfect mechanics, we start with the squat, deadlift, and push-press. Proper lifting technique is a great tool for imparting grace and control to a wild prepubescent nervous system. We've found that strength and control grow perfectly together.

For both our seniors and kids too much weight is any amount that cannot be lifted with near perfect execution. Practicing with small loads and demanding proper technique builds muscle, bone, and strength sufficient to allow for slightly greater loads. That is the process for everyone.







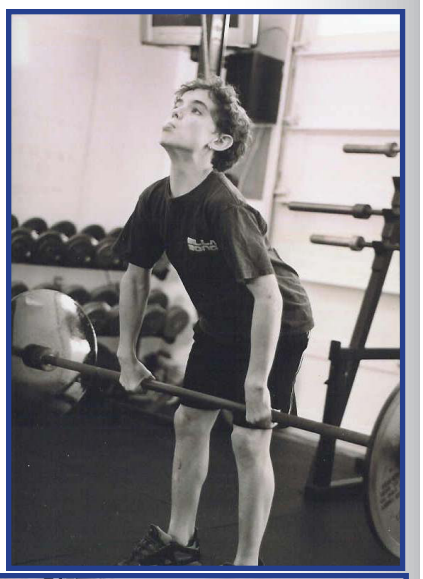




We get all our kids on a plan for more pull-ups and push-ups. The number of kids that can't do pull-ups or push-ups is appalling. It's also entirely unnatural. For seniors we use the Gravitron and try to rehabilitate the pull-up and dip that was, more often than not, once there.

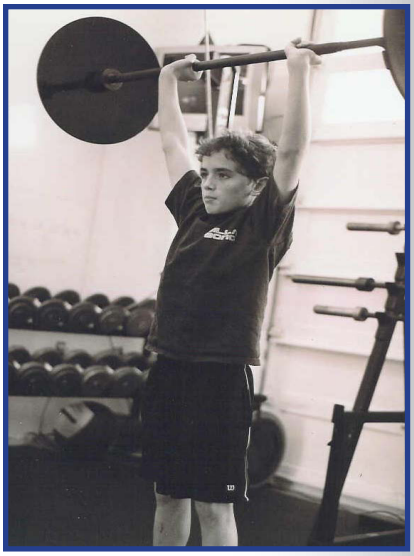
The most important consideration to make with kids and seniors is to be more patient, celebrate the small gains, work towards mastery of the mechanics of all moves, and practice "incrementalism" - that is, establish a baseline of performance and gently, in tiny increments, move upward. This too is our exact advice, by the way, for implementing an Olympic campaign.

The bottom line is that everyone is very different and yet again strikingly similar. Often the genius is to know where to look for similarities and where to look for differences. Everyone needs to deadlift - in that regard we are similar, but not at the same weight - in this regard we are different. We have in large part designed our concept around chasing capacities that are in near universal demand. CrossFit endeavors to train for capacities that are valued regardless of age, gender, or sport. Who doesn't want faster hips, greater balance, and a stronger torso?











THE CrossFit® Journal

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POLICE TRAINING

"The difference between combat and sports is that in combat you bury the guy who comes in second."
-Unidentified Navy SEAL on the Discovery Channel's "U.S. Navy SEALS II," 1999

Introduction

CrossFit's work enhancing sport performance, while exciting and even gratifying, sometimes feels too much like helping adults play children's games. On the other hand, our work with seniors and little kids, while very rewarding, lacks the excitement surrounding elite human performance.

Our recent work and acceptance in the law enforcement, tactical operations, and military special operations communities has been both extremely gratifying and very exciting.

Increasingly, our readers are coming from the ranks of the professional combatant. They have come to CrossFit aware of the reality that, on average, the fitness challenges with which they are most likely to be faced will not be best met by a specialized, narrowly focused fitness. That is the sole domain of the sport athlete.

Incredibly, the fitness needs of professional combatants, police and military, have not been given the same quality analysis, commitment, or even funding that is generally given to sport.

The resulting inadequacies in both police and military training are both technical and financial. But in the case of law enforcement physical training programming, the obstacles to better training are more profound due to a widespread misunderstanding of the physiological needs of police work and the implications this misunderstanding portend for funding police training.

Let's take a look.

CrossFit's Perspective

It is CrossFit's contention that cops and soldiers are professional athletes. In fact, we argue that the physical preparedness required of military combat - and by extension law enforcement - matches and regularly surpasses that required of Olympic athletes. In light of this view, we find it disturbing that few police departments offer formal fitness instruction after academy graduation.

We further contend that a careful examination of the physical demands of police work and the success of CrossFit's training model suggest a remedy to inadequate training even where the obstacles are seen as being primarily financial or administrative.

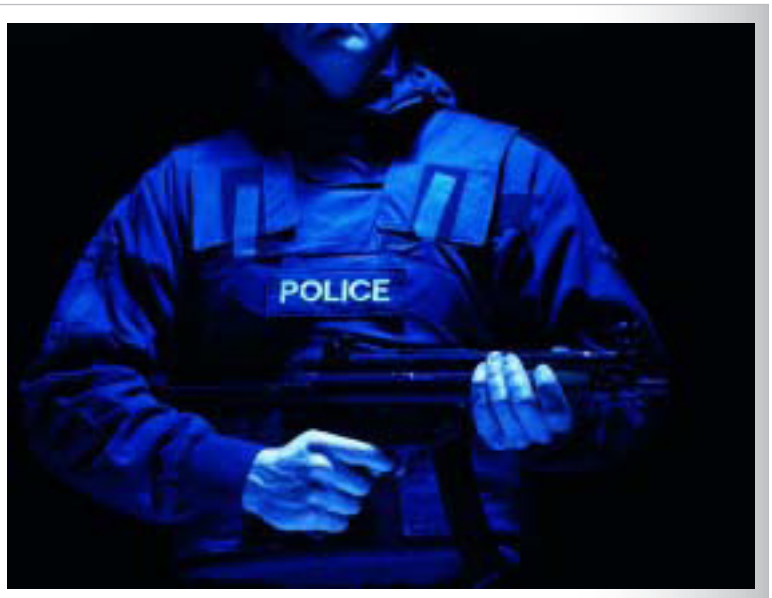
Combat vs. Sport

For ease of discussion and economy of words we refer to the collective physical demands of police work, including defensive tactics and arrest and control, as "combat."

The fitness demands of the modern MMA/NHB (Mixed Martial Arts/No Holds Barred) competitor are extraordinary, but imagine for a moment that we were to change the rules of the competition as follows:

1. The date and time of the fight are to remain secret. The fight is "on" when the opponent(s) appear.
2. The number of opponents is unknown – one, two, three…ten?

3. There'll be no referee.
4. The fight may or may not include weapons.
5. There are no rounds, time limits, etc.
6. No information can be provided regarding the opponent's size, skills, or background.
7. Innocents are present that must not be harmed.
8. Your opponent may be intent on LITERALLY killing you.



Now, we ask, have the physical demands for this "sport" been lessened or heightened? Only the most punch drunk of pugs would fail to recognize at once that both the physical demands and the stakes have been terrifyingly increased, not lessened. This is the nature of combat as compared to sport. Ultimately, we come to see martial arts as tamer subsets of combat.

The fact that the fighter's confrontation is certain whereas the cop's is only probable, only creates the illusion of lesser demand – an illusion borne out of a comfort best seen in grazing zebra: "odds are it won't be me." A police officer so comforted places himself, his partners, and tragically, the public, unnecessarily in harm's way.

The fact that the requirements of combat are marked by largely unforeseeable circumstances and combat not being a game or sport has contributed to the exercise science community's showing little interest in the training needs of police and military personnel. One prominent exercise physiologist, in reference to our training, opined recently in his newsletter that "many of us could easily draw up" a program for Marines, clearly implying that the programming needs of combatants are more easily designed than the needs of the sport competitor. If Olympic medals were awarded for "arrest and control" the coaching community and exercise scientists would be climbing over one another to lend a hand.

Combat Demands

What are the physical demands of combat?

Of the ten general physical skills (See CFJ, October 2002, "What is Fitness") - cardiorespiratory endurance, stamina, strength, flexibility, power, speed, coordination, agility, balance, and accuracy - it can readily be seen that success in combat, i.e., survival, could hinge on any of these ten components.

The physical demands of defensive tactics and arrest and control require a broad based general adaptation. This is not the domain of the specialist. Survival will be awarded on average to those men and women who've secured the most generalized physical capacity. They will, by necessity, be strong, fast, quick reacting, accurate, and flexible. This broad adaptation is well developed, by design, within the CrossFit arena.

Derek Ray of the Florida Police Corps has developed, implemented, and tested (by independent agency) CrossFit protocols and can give ample evidence of CrossFit's successes in battle, on the streets, and in competition/testing.

Essential to our understanding and successes in police training is the understanding that police work is largely anaerobic not aerobic. Though poorly understood, this is, nonetheless, a fact.

Time domain matching of task or sport to training is the first step to effective, legitimate strength and conditioning. Looking at police work, ask yourself, where would an application of a twenty minute max effort be? Is it likely that an officer would wrestle with a suspect for twenty minutes? An officer is about as likely to be struck by lightning as to be engaged in a twenty-minute fight. FBI stats show clearly that it just doesn't happen. Might an officer give chase on foot for twenty minutes? "Perhaps" is the answer but this too remains unlikely and in any case one viable option in this

scenario clearly includes letting the bad guy get away, that is, the situation is less likely to be life threatening to the officer than shorter, more intense, and more threatening encounters. It is the short encounters, those lasting from a few seconds to a few minutes, where an officer will affect most of his arrests and where police officers' lives are tragically lost.



When the men and women charged with training police officers come to terms with the unavoidable reality that police work is by overwhelming preponderance anaerobic, the fitness of police nationwide will begin to improve dramatically.

To give perspective, basketball, wrestling, boxing, and football are each so predominantly anaerobic that the NSCA (National Strength and Conditioning Association), in its epic Essentials of Strength and Conditioning, recommends that nearly 90% of the training time spent in each of these sports should be spent in anaerobic pathways. To do otherwise would be to reduce the strength, speed, and power of these athletes and assure defeat (see CFJ, October 2002, "What is Fitness?"). Police work is substantially more anaerobic than each of these sports we've offered as examples.

Combat offers randomized challenges, that are largely anaerobic, completely functional, and mixed generously among the lower extremities, trunk/core, and upper extremities. Any program that doesn't readily match and train for these demands is woefully lacking.

Flawed Models

It is typical of police academy training to mix bodybuilding style weight training with extended running efforts - the intention being to improve both endurance and strength. While this works it only works in the sense that any exercise is better than none. To a large extent these efforts are counter-productive in that the marginal strength gains incurred through bodybuilding movements are shed by distance running.

A typical client academy, prior to our arrival, has been working in the weight room with upper body isolation type movements in a conventional bodybuilding split program on Tuesdays and Thursdays and running their cadets on Monday, Wednesday, and Friday. While they were getting results, they were functioning at less than half potential.

The model they'd embraced was flawed on many fronts:

1. The program was too predictable. Combat presents unpredictable challenges and rewards those prepared physically and psychologically to deal with unpredictability.
2. It lacked movements that elicit a large neuroendocrine response, which are the most potent tools known for increasing strength.
3. It distinguished between strength and endurance in a manner for which nature has no regard.
4. It lacked functional movements that reinforce common recruitment patterns and efficiently/effectively prepare for any physical contingency.
5. It trained at intensities below the threshold for maximal adaptation. That is, the program was entirely aerobic!!

We've researched the PT (physical training) programs in dozens of police academies and they nearly all share most of these flaws.

Florida's Success

Derek Ray at the Florida Police Corps in Jacksonville, Florida was the first to officially implement the CrossFit model in an academy setting. Florida's program, by contrast to widespread practice:

1. Incorporates workouts each containing singularly unique qualities and demands.
2. Relies entirely on movements demonstrated to elicit a potent neuroendocrine response.
3. Blends traditional elements of strength training and "cardio" training as required for combat.
4. Utilizes functional movements exclusively.
5. Trains at intensities that optimize adaptation, i.e., are nearly entirely anaerobic.
6. Nearly halves workout time.

The net result of Mr. Ray's program is an 80% improvement on cadet physical testing scores. This testing, by the way, was performed by outside, independent agencies - nearly twice the result in half the time.

Incidentally, and importantly, Derek's program has so captured the interest of the participants that a good number of his cadets are returning to the academy for PT after graduation and drawing veteran officers off the street with them.

The efficiency, efficacy, and popularity of Florida's program suggests a possible design for in house, on duty, PT programming in police departments nationwide.

A Modest Proposal



The chief obstacle to on duty PT programming is budgetary. Traditional PT models hold that effective training requires an hour each day, five days per week. This commitment of five additional hours per week per officer ultimately translates to a 12.5% budget increase to deliver the same manpower to the street. Budget, economics, and politics render this kind of program untenable.

More effective programming technologies, like CrossFit, suggest that an in-house PT program comprised of three twenty-minute workouts per week would be more effective. This totals one hour per week or a 2.5% budget increase to deliver the same manpower to the street.

The point must be made clear that expediency played no role in our use of abbreviated workouts. Our single design consideration is maximizing physical capacity – expediency is but a fringe benefit. It is a misapprehension of physiological response that has favored the traditional extended workouts.

Our workouts average twenty-minutes in duration and we have a group with which we've been working only three days per week for several years. The protocol has proven efficacious.

We'd like to see police departments nationwide implement an in-house program supported by a simple web-based application with a database that eventually supportes the officers with:

1. A proven fitness protocol/technology.
2. Each workout assignment.
3. Detailed graphical and textual depictions of fundamental movements.
4. A simple database that both grades performance and allows officers to compare their performance against others by pools partitioned by station, department, state, or nation and could additionally be partitioned by age, gender, weight, etc. for each, any, or all workouts.
5. An attractive interface that returns data in user-friendly scatter plots, pie charts, and bar graphs.
6. A program that offers and encourages challenges and competitions among individual officers, tactical teams, academies, departments, divisions, states, etc.

7. A system that finds and details “chinks” in an officer’s physical capacity.
8. A library of fitness, nutrition, and health material selected and partitioned in manageable weekly doses.
9. A forum where participants would form a community where their achievements, questions, and concerns could be addressed and shared.
10. Motivation to greater participation on the officers own time picking up another two or three days of workout per week, thereby optimizing their fitness.,
11. A method of storing, retrieving, and organizing personal data like resting heart rate, cholesterol levels, blood pressure, body fat, girth, etc.

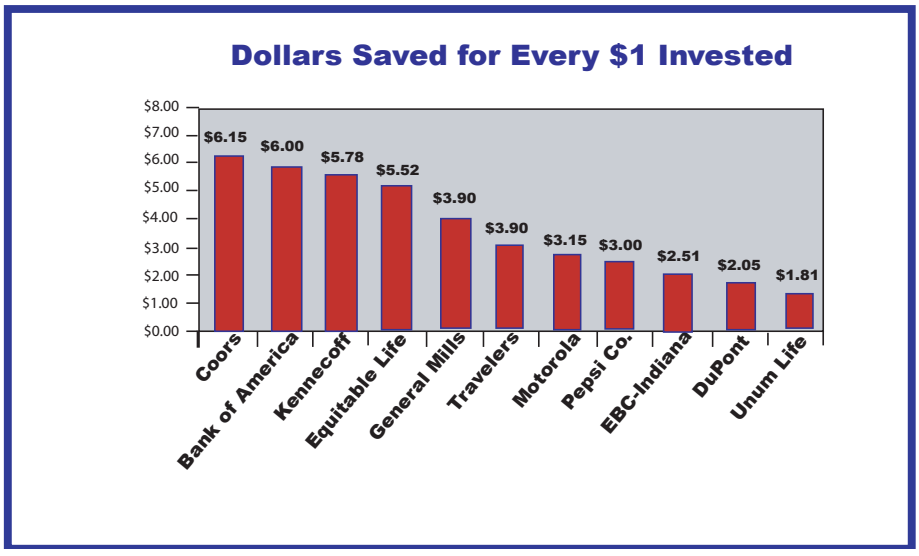
Individuals familiar with our website, www.crossfit.com, and program know that this is clearly feasible. Our work with police training programs nationally also convinces us that implementation could be done inexpensively and incrementally so that the benefits of the program could be touted to justify greater commitment and participation.

Secondary Benefits

Worksite fitness programs have a proven, well documented, history of measurably reducing health care costs, reducing absenteeism, increasing productivity, reducing use of health care benefits, reducing worker’s comp/disability, reducing injuries, and increasing morale and loyalty.

Every study done on worksite fitness programs has shown positive outcomes and of the thirty that have been analyzed for cost outcomes, 29 have proved to be cost effective. Whatever benefit is conferred on factory workers, insurance executives, and office workers, it seems reasonable to expect that the potential benefit for police officers would be even greater given the extraordinary demands and risks of their profession. Coors measured a whopping $6.15 saved for every dollar invested in their program. Programs at Coors, Bank of America, Kennecott, and Equitable Life averaged a return on investment of $5.86 for every dollar invested.

Interestingly, our experience with worksite fitness programs suggests that most of them, while measurably efficacious are far from state-of-the-art in their models for workouts, fitness in general, and nutrition specifically. It should be easy to generate a return on investment that matched or exceeded the benefits found in industry.



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The Push-Up

Greg Glassman



The push-up, long a favorite among junior high school P.E. teachers and Marine Corps drill instructors, is for many, more closely associated with punishment than anything else. Though common to group exercise programs, its use in serious strength and conditioning regimens is infrequent. These days, the push-up, like the jumping jack, tends to be relegated to outdoor programs where the number of exercisers and lack of equipment make it a staple due to necessity.

In an earlier time the push-up was largely regarded as a measure of a man's strength and fitness. In more modern times much of this reputation has been passed on to the bench press, but the push-up's passing misses the great opportunity to master a gateway movement to one of the most developmental progressions in all of fitness.

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The push-up is more a family of movements than a single exercise. In fact, it is a progression that starts from the horizontal, which is the classic "P.E. push-up" and then, through gradually, incrementally, elevating the feet from the floor to a point where the athlete is eventually in a handstand, becomes the handstand push-up.

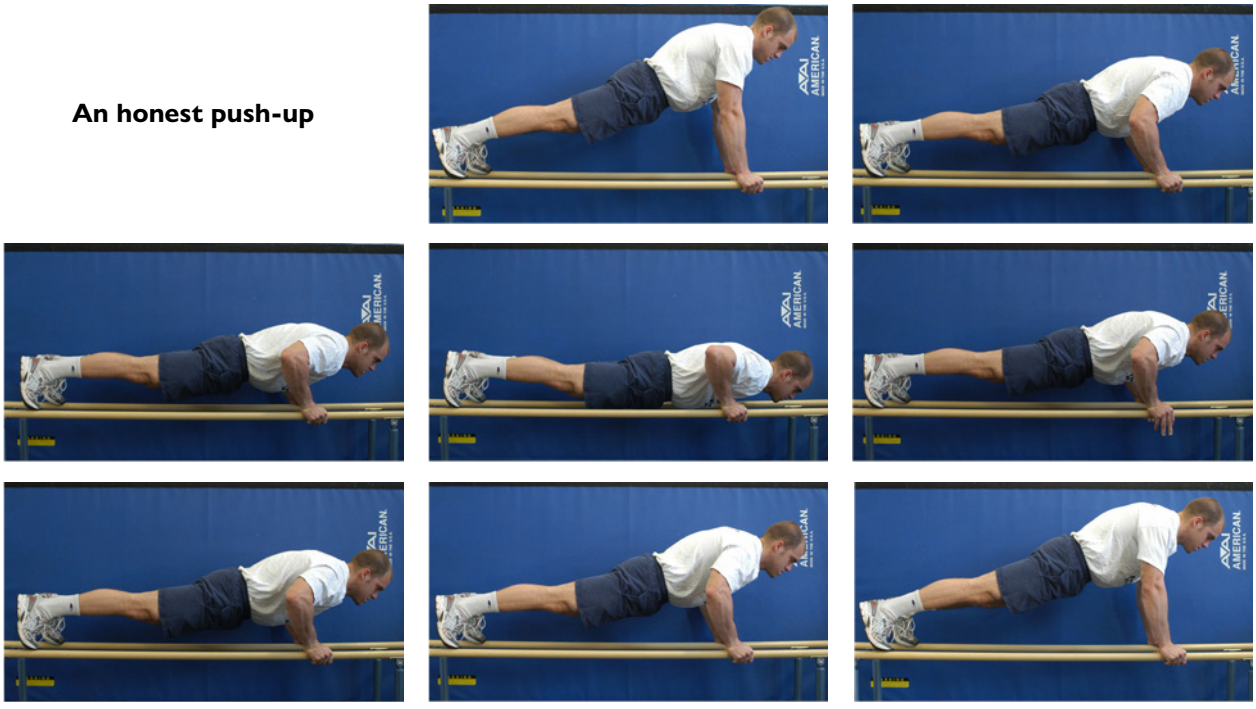
The handstand push-up, at the far end of the progression, is a challenging exercise that, when freed from the wall, becomes an extraordinary feat of strength and balance that has no peer in weightlifting movements. At the moment of performing twenty handstand push-ups without benefit of the wall, the athlete has achieved a level of strength and balance that not one in a hundred thousand gym goers will ever realize. The integration of strength and balance gives the handstand push-up, even though limited to bodyweight, an athletic edge that brings this movement to at least peer status with even the heaviest of presses – whether bench, overhead, or jerk. Twenty handstand push-ups in the middle of the room or on parallel bars, again without the wall, confers, automatically, a single-rep military press of perhaps 150% bodyweight, whereas a 150% bodyweight single-rep military press suggests little or nothing about an athlete's balance.

The possibilities and potentials don't end at twenty, thirty, or even fifty handstand push-ups. Consider for just a moment the hand, finger, and grip strength developed through performing these handstand push-ups on fingertips – at first all five fingers, then four, and eventually three. Then there are the presses to the handstand that will come smoothly, easily, and confidently as a bonus to the handstand push-up, but we're getting years ahead of ourselves here.

Mastery of the basic, entry-level "P.E. push-up" is a prerequisite to the handstand push-up. Very few people have achieved mastery of the push-up though many of you think you have. The test is simple: can you do 100 perfect push-ups? The standard for perfection, though simple, disqualifies nearly everyone. A perfect push-up is slow and deep with a body absolutely perfectly straight and taut. We've listed the most common push-up faults below. Not one in fifty guys with a 300-pound bench press can do 50 honest push-ups!

So, "what is an honest push-up?" An honest push-up moves slowly from full extension to a point of maximum depth without "reaching" for the ground or perturbing the body's taut, rigid, straight-line posture, and then returns rigidly to full extension. Done correctly, the push-up is a super demanding whole-body movement. Engage as many stabilizers as possible.

An honest push-up



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"Reaching for the ground" is trying to find the bottom of the stroke early. The two most common "reaching" cheats are done by craning the neck to find the ground with the nose early or dropping the belly to find bottom early. The ideal is to retard, not advance, the body's parts from finding bottom – nose, chest, belly, thighs, and pelvis are each in a race to see which can reach bottom last, not first.

"Perturbing the body's taut, rigid, straight-line posture" is evident when the butt sticks up or the belly sags toward the floor. By our standards a drop of the middle (belly sagging) or lifting of the butt in the air terminates the set. So does stopping and resting at any point. The standard is tough – super-taut straight body, full range of motion (without "reaching"), and resting only when finished.

We do our push-ups on the floor, parallettes, and parallel bars, but the parallel bars or parallettes are better than the floor because they allow for another six inches of travel.

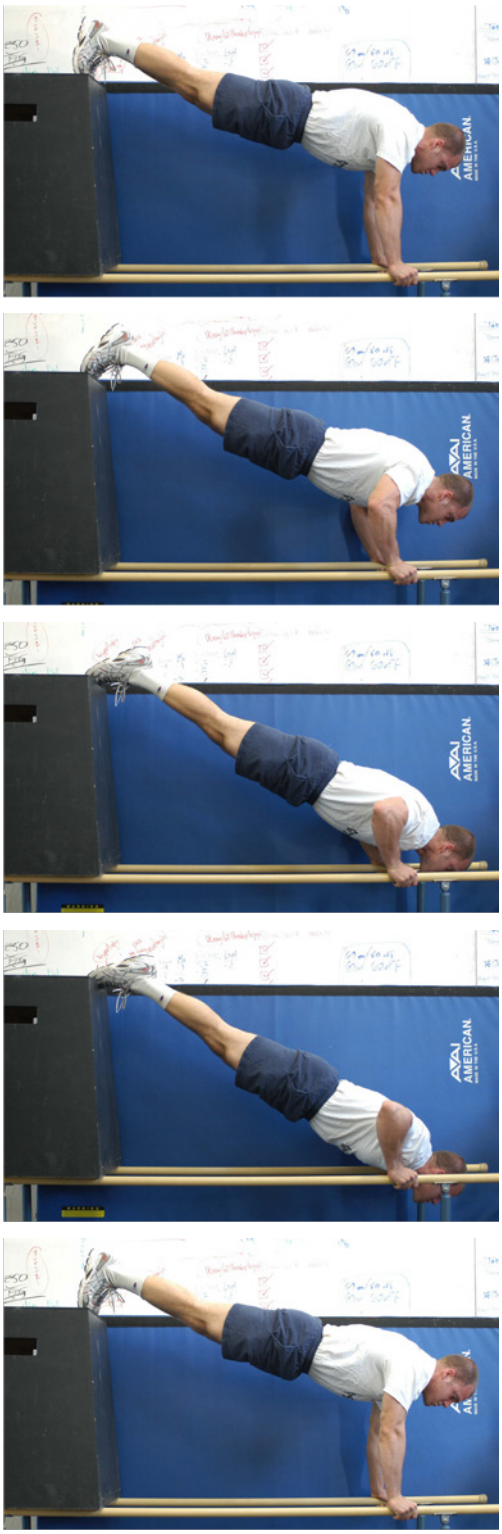
If performing push-ups on the floor we start our athletes from flat on the floor with the nose, chest, pelvis, and thighs – as much of the body as possible – making contact and then begin. The posture on the floor sets the posture for the entire set.

Progressing from the basic push-up to the handstand push-up is a simple matter of elevating the feet in small increments over time. A chair, plyo box, or securely racked bar all make good platforms for elevating the feet.

At first your handstand push-ups will require kicking your heels and posterior against the wall for balance. If you are performing this on the floor, you may want to place a small, flat pillow on the ground, under your head, and lower yourself slowly until the top of your head touches, and then press back up. When you can do half a dozen or so confidently, remove the pillow and the contact point becomes the nose, not the top of the head.

The handstand push-up is very similar in feel and difficulty on the parallettes and on the floor, but on the parallel bars the possible range of depth is several inches lower and consequently much harder.

In future issues we are going to detail the most common presses to a handstand. You'll want to get the upper hand on these presses by improving your push-ups first.



Greg is half way to the handstand push-up

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10 Push-up Milestones and Challenges

Here is a progression that should keep anyone busy for a couple of years.

1. Fifty honest basic push-ups
2. Ten handstand push-ups
3. 100 honest basic push-ups
4. Fifteen handstand push-ups
5. Tabata interval basic push-ups with 20 reps in each of 8 intervals
6. One handstand push-up without use of wall
7. Ten handstand push-ups without use of wall
8. Fifteen handstand push-ups without use of wall
9. Twenty handstand push-ups without use of wall
10. One handstand push-up without use of wall and on fingertips

Push-up Links

1. Push-up records: http://www.recordholders.org/en/list/pushups.html.
2. Charles Linster was an early world record holder with an inspirational story of courage and perseverance: http://www.recordholders.org/en/list/ulysses.html and http://www.disability.uiuc.edu/ARCH/archive/ss/9697/ulysses_yield.html.
3. Here is the ultimate guide to parallettes and an excellent source for some of the coolest parallettes ever. Learn these skills and your fitness will skyrocket! http://www.american-gymnast.com/technically_correct/paralletteguide/titlepage.html.
4. Or, you can make your own parallettes. This is one of our favorite sites on the Internet: http://www.drillsandskills.com/skills/cond. At the end of this list of some beautiful skills and drills are instructions for building a perfectly suitable set of parallettes for practically nothing:

A Cheater's Guide to Lousy Push-ups

Avoid each of these and you are nearly guaranteed an honest push-up.

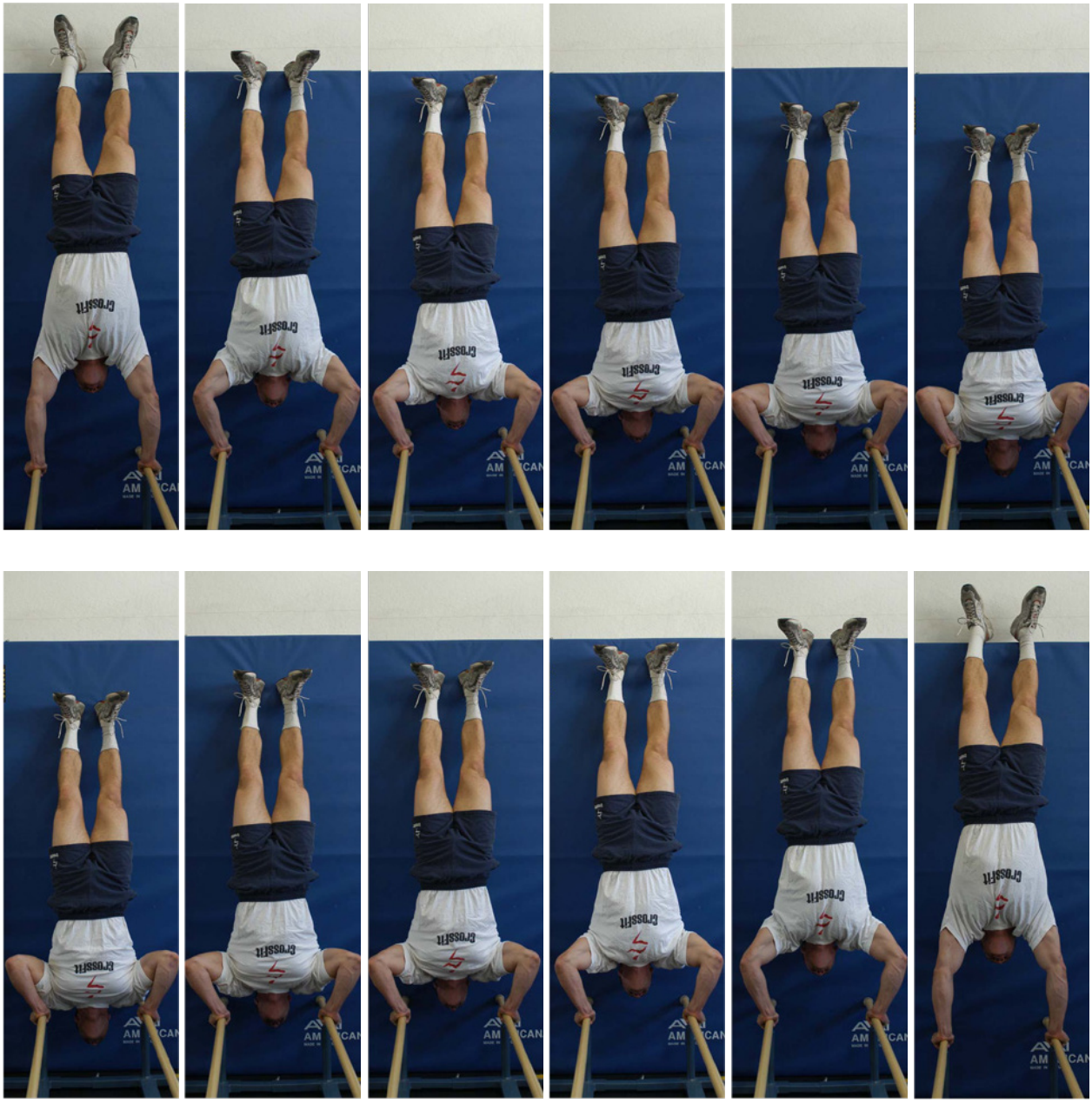
1. Sagging: Dropping the belly in an attempt to hit, or reach bottom early
2. Piking: Sticking the butt up in the air. This is usually accompanying a rest (see resting, below).
3. Resting: Coming to a stop. This is usually tried at the top, often while piking, but may manifest as a collapse at the bottom.
4. Bouncing: This cheat is, exactly as the name implies, bouncing off the floor to rise to top again without effort. This is a big hit with fat guys.
5. Yogaing: With this cheat, the head and neck lead up followed by the chest then belly. It is a dynamic variant of sagging, but often performed as though it were a plus or artistic.
6. Reaching: Reaching's most common form is with the head and neck. Some cheaters can extend their head and neck an extra six inches in an attempt to find bottom early and avoid the pain of a real push-up. Look for the nose a foot below the chest.
7. Speeding: The count should be a slow "one-two" up and "one-two" down unless doing timed efforts like the Tabata Interval. For reps, they have to be slow and controlled.
8. Shorting: This is the worst and most common cheat where the cheater typically doesn't go all the way down. Not rising to the top is less common but still cheating.



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Greg Glassman is the Founder of CrossFit, Inc. and Crossfit Santa Cruz and is the publisher of the CrossFit Journal. He is a former competitive gymnast and has been a fitness trainer and conditioning coach since the early 1980s.

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How Fit Are You?

Greg Glassman

We've long desired to offer a fitness competition consistent with our fitness model (See *CrossFit Journal* October 2002, "What is Fitness?") and have found the task fraught with difficulties.

Early we realized that the logistics of running an on-site fitness competition like STREND are both complicated and ultimately limit the number of participants. The fitness test, or competition, that we offer this month is conducted at a facility and time of the athlete's choosing.

Our initial hope was to design a competition that would not only reflect CrossFit's broad fitness concept but would also accommodate men and women, large and small athletes, the young and seniors, and individuals of all fitness levels. Additionally, we wanted a competition that would motivate and reward fitness improvements among our fittest. Specifically, we set out to motivate an improvement in the absolute strength, relative strength, and gymnastics foundations of all CrossFit participants. Unfortunately this last consideration rendered the design troublesome for many who are other than already very fit and male. So, what we ended up with was a competition where the ability even to complete the test suggests a fairly advanced level of fitness.

Looking at the ten general physical adaptations to exercise (cardiorespiratory endurance, strength, stamina, power, speed, flexibility, agility, accuracy, coordination, and balance) we saw that advanced calisthenic and weightlifting movements present an excellent opportunity to advance neurological skills like agility, accuracy, coordination, and balance. We realized early that any test that pushed the envelope for gymnastics movements was going to eliminate a large segment of the exercising public and indeed some of our dedicated athletes.

In the end we decided that improving these neurological skills and thereby encouraging a greater level of fitness in our participants was more important than offering a test that was universally inclusive. We are, ultimately, a program of elite fitness, and any test of elite fitness will contain elements that cannot be performed by everyone. We also felt that many of our best athletes, while among the fittest people on earth, needed additional motivation for improvements in absolute strength, relative strength, and gymnastic foundations.

While we make no apologies for offering a fitness test that best serves the already very fit, we have developed several strategies whereby others can participate and, more importantly, benefit from practicing for and working toward completion of the test. For every phase of our test we have suggested adaptations for women, juniors, seniors, or anyone else who may not yet be able to complete all of this competition.

Similarly vexing was the difficulty of testing for various capacities simultaneously rather than separately. The origins of this concern arise, you may have guessed, from our oft-repeated contention that the blending and mixing of demands most clearly replicates the demands of nature.

One aspect of athlete testing that remains tricky is balancing elements favorable to larger and smaller athletes. We referee debates between our bigger and smaller athletes almost daily. The big guys want to deadlift, bench press, and throw. The smaller guys want to run, jump, and do pull-ups.

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Our design requirements included but were not limited to the following: quantifiable results; consistency with the CrossFit fitness concept; raising our commitment to improving absolute strength, relative strength, and gymnastic foundations; balancing intrinsic abilities of smaller and larger athletes; emphasizing exercises critical to and foundational to advanced training; mixing training demands within each test and, of course, over the total competition; a design that would identify an athlete's weaknesses and possibly stand as a workout plan for improving overall fitness; and, finally, we wanted to design a competition that would be "hard as hell."

The competition that we've designed comprises five tests. One test is performed for each of five days in the order given.

We've listed within each test description a possible workout that would test for and consequently improve the performance of that test. While designing each test we asked ourselves what kind of fitness might develop from turning the tests into workouts that were repeated to the exclusion of other work and with the sole purpose of improving the tests. The answer in the case of this final product is "elite fitness."

Test 1: Bench Press 1 rep followed by max set of Pull-ups

Performance: Ramp up to a one-rep max and within 30 seconds of racking the lift begin the pull-ups. Any grip is allowed on the pull-ups as long as the range of motion is complete - all the way up and down.

Scoring: Multiply the bench press load in pounds by the number of pull-ups completed.

Modifications: Where needed use an assisted pull-up device such as a "Gravitron."

Character: This tests the upper body for both absolute and relative strength and stamina.

Workout: This test can be practiced as a workout of three to five repetitions of the test, resting between efforts as needed.

Test 2: Clean and Jerk 15 Reps

Performance: There is no time limit, but the weight cannot be rested on the ground. Resting at the hang, rack, or overhead is O.K. At the ground, the athlete must touch and go. Technique is otherwise not critical.

Scoring: The score is exactly the load lifted.

Modifications: There are no modifications needed for this test.

Character: This classic movement is traditionally an excellent test of overall strength, but when performed at 15 reps becomes an extraordinary metabolic challenge as evidenced by max heart and respiratory rate.

Workout: This test can be practiced as a workout by completing the test and then repeating at twelve and nine reps with the same load, resting between efforts as needed.

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Test 3: Tabata Squat followed by 4 minutes of Muscle-ups

Performance: After the eighth Tabata Squat interval the athlete gets ten more seconds of rest and then has 4 minutes to complete as many muscle-ups as possible. The muscle-ups need not be consecutive, i.e., without rest. All squats must be from below parallel to full extension of the hip and leg.

Scoring: The test score is the Tabata Squat score (weakest number of squats in each of eight intervals of twenty seconds of work followed by 10 seconds of rest) multiplied by the number of muscle-ups completed within four minutes. Total time for test: 8 minutes.

Modifications: With regard to the muscle-up, there are two possibilities for adaptation. One is to assist manually - someone pushing the athlete up. The other is to replace the muscle-up with four minutes of pull-ups and dips.

Character: The Tabata Squat is a CrossFit classic testing both athletic hip function as well as aerobic and anaerobic capacity. The muscle-up is arguably the single best upper body exercise. This combination alone is suggestive of an athlete's total fitness.

Workout: This test can be practiced as a workout by completing the test and then repeating after an extended rest.

Test 4: Deadlift 1 RM followed by a max set of Handstand Push-ups

Performance: Ramp up to a one-rep max and within 30 seconds of completing the deadlift begin the handstand push-ups. The handstand push-ups must bring the ears below the hands so they needs to be done on parallel bars, parallettes, or some other raised platform like chairs or books. Using the wall for balance is O.K.

Scoring: Multiply the deadlift load in pounds by the number of handstand push-ups completed.

Modifications: There are two options for modification of this test. The first is to provide manual assistance to the handstand push-ups. Typically, this is done by lifting the athlete by the calves or ankles. Alternately, where even the handstand is a challenge, the substitute exercise is a shoulder press.

Character: This duo represents a reasonable estimate of an athlete's total strength - relative and absolute, upper and lower body.

Workout: This test can be practiced as a workout of three to five repetitions of the test, resting in between efforts as needed.

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Test 5: Run 800 meters, Thrusters 75 lbs x 21 reps, "L" Pull-ups 21 reps

Performance: The thruster must originate from a full squat each rep. The "L" pull-ups are pull-ups with the legs extended straight out in front of the athlete. Any pull-up where the heels fall below the butt or the legs bend other than slightly is disallowed. The thruster and "L" pull-ups need not be performed consecutively, i.e. without breaking. Any grip is O.K. for the pull-up, but the range of motion must be complete.

Scoring: The entire effort is timed from the start of the run to the last pull-up. A time is returned in minutes and seconds.

Modifications: Where necessary, the load for the thrusters may be reduced and the "L" pull-ups can be assisted by gently lifting the heels or allowing a "sloppy L." For those not able to perform a pull-up, an assisted pull-up device may be used.

Character: This test is classic CrossFit. The combination of a monostructural metabolic exercise (running) combined with a high demand weightlifting movement (Thruster: front squat/ push press), and a super demanding bodyweight movement ("L" pull-up), all for time, is distinctly CrossFit and is directly indicative of an athlete's total capacity.

Workout: This test can be practiced as a workout by performing the test and repeating after an extended rest.

Scoring the Tests

This table describes a system of awarding points for each test's score. The total points for all five tests can range from 20 to 100 points. An individual getting 20 points is a reasonably good athlete. Anyone scoring 100 points has credible claim to being one of the fittest men on earth. Don't despair if your score looks like what would be a D- on a sixth grade spelling test – the numbers are just that, numbers.

SCORING TABLE

Points	4 points each	8 points each	12 points each	16 points each	20 points each
Test 1 Bench/Pull-up	6,000-8,124 ex. 300x20 = 6,000	8,125-10,499 ex. 325x25 = 8,125	10,500-13,124 ex. 350x30 = 10,500	13,125-15,999 ex. 375x35 = 13,125	16,000+ ex. 400x40 = 16,000
Test 2 Clean & Jerk	115 - 135	135 - 159	160 - 189	190 - 224	225+
Test 3 Tabata Squat/ Muscle-up	180 - 284 ex. 18x10 = 180	285 - 399 ex. 19x15 = 285	400 - 524 ex. 20x20 = 400	525 - 659 ex. 21x25 = 525	660+ ex. 22x30 = 660
Test 4 Deadlift/ Handstand Push-up	3,500-4,799 ex. 350x10 = 3,500	4,800-6,749 ex. 400x12 = 4,800	6,750-9,999 ex. 450x15 = 6,750	10,000=14,999 ex. 500x20 = 10,000	15,000+ ex. 600x25 = 15,000
Test 5 Run/Thrusters/ "L" Pull-ups	6:00 - 5:31	5:30 - 5:01	5:00 - 4:31	4:30 - 4:01	< 4:00

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"mess you up"

Pull-ups

Interesting, intelligent, useful information about the pull-up is not easy to come by. Here's an interesting article we found from Clarence Bass' site on Pavel's theory of "greasing the groove" (http://www.cbass.com/Synaptic.htm). Find us another. Please! There are internet sites and message boards dedicated to bench press technique, mechanics, routines, and performance, where nothing similar exists for the pull-up.

How can a movement of such enormous import stir such little interest? It doesn't make sense that the pull-up doesn't inspire the same discussion, analysis, and overall attention that so many other movements do like the bench press and squat.

But, first let's back up a little bit and give a definition of the pull-up. We'll use Merriam Webster's definition of "chinning" - "to raise oneself while hanging by the hands until the chin is level with the support" to describe what we call a "pull-up."

Notice that we make no mention of grip, underhand or overhand (supinated or pronated). We don't care, and we don't want you to either. When you can do 40 pull-ups you won't care much if the grip is underhand, overhand, wide, narrow, or mixed – it all starts to feel the same. The lesson is - mix it up.

How significant is the pull-up? In our view the pull-up is:

- At least as important as any other upper body exercise
- An essential part of athletic training
- Perfectly functional
- A gateway exercise to highly developmental gymnastics movements
- Singularly unique and valuable, and so has no replacement ("lat pull-down" is a weak substitute)

The requirements for the CrossFit pull-up are simple yet tough to execute. The pull-up begins from a hang at full arm and shoulder extension and ends, regardless of grip, with the chest pressed tightly to the bar.

Pulling the chest to the bar is very hard but encourages fully "opening the chest" and pulling the shoulders back or "closing the back." In the early stages of developing a pull-up it is acceptable to bring the Adam's apple to the bar instead of the chest, but leading with the shoulders forward rather than back is a fault that needs to be fixed long before you are going to get to 30 pull-ups.

Technically correct pull-ups:

- Go from full hang to chest pressing tightly to the bar
- Lead with the chest up and shoulders way back
- Are visually directed, that is, a sight line is chosen that is shortened as the body rises to the bar
- Synchronize respiration to the pull-up: inhale down, exhale up
- Are motivated by trying to drive the elbows down to the ground, not by trying to flex the arm!

Nearly any surface on which you can get even a fingertip hold and hang is a potential platform for pull-ups, but for regular practice you need a pull-up bar for which there are several options.

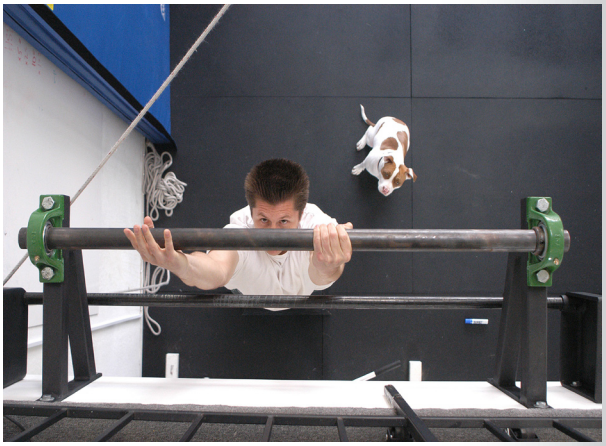
We've had Nick Massman build several pull-up bars for CrossFit including our thick handled, rotating pull-up bar (a CrossFit original). We recommend that you either get a bar from Nick or have a local welder build you a bar that can be permanently mounted to either the wall or a conveniently located overhead beam. The freestanding pull-up and dip towers are by contrast relatively unstable and take up too much valuable floor space for any but the largest facilities.

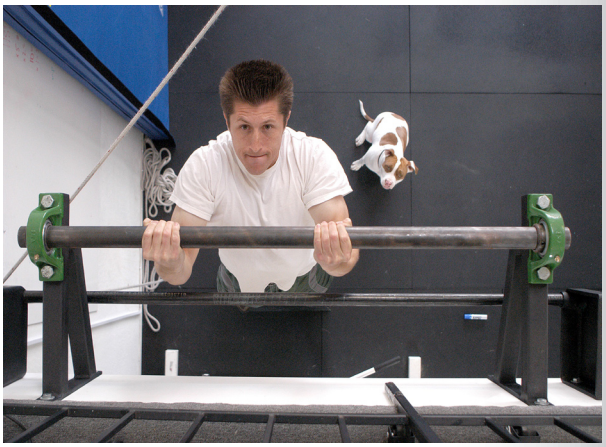
The thick handled, rotating pull-up bar is a grip and forearm developer of the first order. Just hanging from this beast makes you a believer. Your grip doesn't slowly weaken, you just find yourself in free fall.

For road trips and apartment dwellers without garages there are several really cool doorway pull-up bars (and dip bars) that will provide excellent service. The best of them require no hardware for installation - http://www.easydip.com/ & http://befittoday.com/doorgym.htm

For those unable to perform a pull-up (or dip) there are several options. The best option is a pull-up and dip assistance device like StairMaster's Gravitron 2000. Sadly, Stairmaster quit making the Gravitron recently, but internet savvy folks can still find some, new and used. Though this option is best, it is also the most expensive. A new Gravitron is over $2,000 but worth every penny. We have two. There are other manufacturers but the Gravitron is our favorite.

Our second choice is to tie the ends of several lengths of "theraband" to your bar, leaving a loop that hangs down to about mid thigh. By stepping into the loops and experimenting







Loyd on the thick handled-rotating pull-up bar - underhand grip

with the number of therabands, you can develop a natural spotting technique that is inexpensive, simple to build, and assists along functional lines of movements. This method is, though, fraught with one rather significant complication. If the bands are allowed to slip from the foot there exists the possibility of the bands snapping up and seriously injuring the eye. If you adopt this method, keep your head up; don't look at the bands. Otherwise wear protective goggles!

The third choice for assisting pull-ups is the manual spot. This method requires a friend to stand close behind you and grab your sides and mid back and to squat and press in synchronization to your efforts. This is an especially great technique with large groups broken into pairs. The athlete being assisted is engaged in one of the world's best pulling movements and the spotter is engaged in a classic bit of hip extension and push. Between both efforts the activity is whole body and very complete. Competing teams racing toward 100 pull-ups combined per team is fantastic work.

The goal in your pull-up work is "more." You want, you need, more pull-ups. The more you can do the stronger you become. Muscular endurance, absolute strength, relative strength, whatever you want to define and measure gets better.

With the goal being high reps, regular exposure is critical. We placed both the Better Warm-up article and the Pull-up article as a two front effort to encourage more frequent fundamental bodyweight movements (and better warm-ups) in all our athletes. Gymnastic movements are eventually well tolerated at frequencies never recommended for weight training exercises.

We've known athletes to hang a pull-up bar in the bathroom doorway and obligating themselves to performing ten pull-ups every time they came out. It works. A rugby player friend performed max set of pull-ups for every beer he drank and managed to stay drunk and arrive at 30 pull-ups. We recommend incorporating the pull-up into your warm-up routine. Try not to favor a grip. If there is a discrepancy in your number with the overhand versus the underhand grip, give emphasis to the weaker grip. With increasing competency the difference between the two grips in feel, muscle recruitment and development approaches zero.







Greg on the thick handled-rotating pullup bar - overhand grip

Every personal best pull-up is an event worthy of celebration. You're going to live to be 100 but you'll not get that many pull-ups, so treat the new ones like birthdays.

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A Better Warm-up

Greg Glassman

Introduction

In commercial gyms everywhere, warming up constitutes little more than spending fifteen or twenty minutes on a bike, treadmill, or stair climber. While better than nothing, this approach to warming up is largely a waste of time in that it will not improve flexibility, does not involve the whole body or major functional movements, misses an ideal opportunity for reinforcing and practicing some critical exercises, and poorly prepares an athlete for rigorous athletic training.

We need a warm-up that will increase body temperature and heart rate, provide some stretching, stimulate the entire body and major biomechanical functions, provide practice for basic movements, and finally, prepare for rigorous athletic training.

We offer here a favorite CrossFit warm-up and compare the advantages that it has over riding a stationary bike for fifteen minutes. The CrossFit warm-up satisfies our needs whereas the traditional warm-up only leaves us with an elevated body temperature and heart rate.

The essential features of our warm-up are that they include a stretch and major hip/leg extension, trunk/hip extension and flexion, and pushing and pulling movements. The combinations are limitless and might include more challenging movements like good mornings, hollow rocks, rope climb, or handstand push-ups in place of back extensions, sit-ups, pull-ups, and dips. The movements used will largely depend on your athletic development, but over time the more challenging movements can be included without being a whole workout.

CrossFit Warm-up	Traditional Warm-up
Samson Stretch Overhead Squat Sit-up Back Extension Pull-up Dip	20 minute bike



The Samson Stretch

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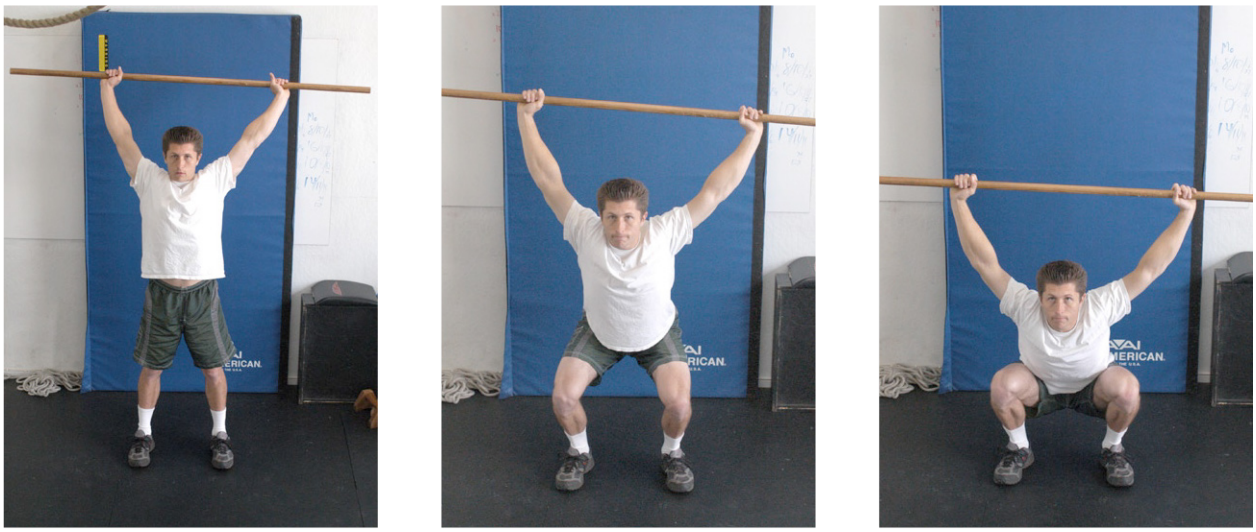
Benefits	CrossFit Warm-up	Traditional Warm-up
Elevates body temperature	+	+
Elevates cardiorespiratory rate	+	+
Incorporates stretching	+	-
Develops critical functions/movements	+	-
Works whole body	+	-
Prepares for rigorous athletic movements	+	-

A warm-up like the one we are describing can quite easily become more than a warm-up. In fact, it can serve as a workout for any athlete if so constructed. The idea is to compose the essential features into a fifteen-minute circuit that challenges but does not unduly tax. Over time the regimen can be toughened to the point where three rounds of squats, sit-ups, back extensions, pull-ups and dips, even at 15 reps requires similar exertion to riding the stationary bike casually for fifteen minutes and produces a similar heart rate.

If initially you need to use the Gravitron or some similar device to assist the pull-ups and dips, fine. Over time you'll give yourself less and less assistance until you can do the pull-ups and dips without assistance and still find the work load consistent with a warm-up. It may be that you want or need to start with one pull-up and one dip per round and add a rep every other week in order to get used to the load. Incrementalism, patience, and practice will make the basic calisthenic movements as easy as riding a bike and provide wildly greater benefit.

One consequence of a warm-up like this is that bigger numbers of pull-ups, push-ups, sit-ups, and other calisthenic movements will ensue. Before anyone gets 25 pull-ups, three sets of 10 will have to be a breeze. Your max set of pull-ups, sit-ups, push-ups, dips, rope climb (fastest climb/most consecutive trips), and handstand push-ups will be a multiple of the number that doesn't tax you beyond a warm-up. Some coaches have called this "synaptic facilitation", Pavel called it "greasing the groove"; we call it "practice". (It is our contention that all exercises have a stronger neurological component than is commonly recognized.)

In any case, success with high- rep calisthenic movements like the pull-up, squat, dip, and sit-up will make you



Overhead Squat Stretch

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stronger, improve your stamina, and won't come to be without regular practice. Not all of that practice need be max rep but it will need to be regular and the warm-up is the perfect place for that practice.

The "Samson" stretch:

1. Lace fingers and turn palms outward locking arms
2. Push arms and hands out to horizontal
3. Push hands forward and head back getting nose as far away from hands as possible
4. Keep gaze straight ahead
5. Push arms to overhead
6. Push hands hard towards ceiling
7. Keep arms perpendicular to floor
8. Keep palms turned to ceiling
9. Close space between head and arms by raising shoulders
10. Lunge as far forward as possible with one leg
11. Let trailing leg's knee settle to ground
12. Push hips forward feeling stretch in front leg and back
13. Maintain push to ceiling, perpendicular arms, closed arm-head gap, gaze forward
14. Hold for 30 seconds
15. Repeat with other leg



Greg Glassman is the Founder of CrossFit, Inc. and Crossfit Santa Cruz and is the publisher of the CrossFit Journal. He is a former competitive gymnast and has been a fitness trainer and conditioning coach since the early 1980s.

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3 Important Ab Exercises

Greg Glassman

Glute-ham Developer Sit-up

This situp is performed on the glute-ham developer. The range of motion is from as far back in hip and back extension as you are comfortable up to where you can touch the pads above the shin and instep.

Aerobics instructors and gym trainers typically disavow sit-ups like these because of a reputed harm to the lumbar spine by the tugging on the spine of the iliopsoas (http://www.rad.washington.edu/atlas2/iliopsoas.html). It is further argued that this movement largely misses the abdominals because the primary mover is the hip flexors and not the abdominals. While correct that the primary mover of this sit-up is the hip flexors the notion that this is ineffective abdominal training is more gym-trainer rot. When not accustomed to glut-ham sit-ups a single exposure of several sets yields an ab soreness that is truly impressive. This experience should hopefully dispel the notion that strong hip flexion sit-ups don't target the abs.

Though the hip flexors (iliopsoas and rectus femoris) are the primary movers the abs play a strong role in stabilizing the torso to prevent hyperextension of the spine. (This is, in our opinion, a more functional role for the abs than trunk flexion.) We encourage the abdomi-nal's role in the glute ham sit-up by cueing the athlete to begin the movement by curling the torso upward.

The contention that these sit-ups are irritating or otherwise injurious to the lumbar spine is a somewhat complicated story. We will concede at once that those who are predisposed to lumbar pain may find this sit-up irritating, but carefully introduced and practiced it is a potent tool for reeducating the athlete to use the hip flexors more efficaciously and safely. In fact, the movement can be used to improve functionality of the hip flexors and reduce if not eliminate the low back irritation that may accompany hip flexion.



For people predisposed to low back pain and injury the problem with this sit-up is in large part due to deficiencies in their muscle recruitment for hip flexion. Specifically, over reliance on the iliopsoas and little or no innervation of the rectus femoris (http://www.rad.washington.edu/atlas2/rec tusfemoris.html) places an undue share of the load on the lumbar spine.

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3 Important Ab Exercises (continued...)

The iliopsoas attaches to both the pelvis and the lumbar spine and if left to perform the bulk of hip flexion, especially under large loads like this sit-up presents, pulls the torso up in large part by the lumbar spine. The rectus femoris by contrast attaches to the pelvis only and when engaged lifts the torso (flexes the hip) by pulling from the pelvis.

The problem arises because few people have learned to fully engage the rectus femoris when powerfully flexing the hip. We've used this sit-up to teach our athletes how to fully engage this muscle to improve the quality of hip flexion, greatly assisting the iliopsoas and consequently reducing the load and sheer forces placed on the spine.

We teach powerful recruitment of the rectus femoris by cueing the athlete to attempt to extend the leg, though already extended, and to drive the leg into the pad above the shin and instep. Typically, the athlete will claim that this is what they are doing already, but when they finally "get it" the epiphany is profound and the motion clearly looks different. The coach's trained eye can readily distinguish between the torso's rising by being pulled from the spine as opposed to from the pelvis.

With regular practice, focus on proper recruitment, and incremental dosage an athlete who once complained of lower back discomfort on performing even a few reps of this sit-up will either find the discomfort occurs at increasingly higher reps or diminishes altogether.

The glute ham developer sit-up is a gateway exercise to our "medicine ball throw sit-up" which has proven to be a monster exercise for even the best trained midsections like those found on Olympic throwers. We know one Olympic javelin thrower who offered that the medicine ball throw sit-up was the "toughest ab exercise ever."

The fact that the glute-ham sit-up is not practiced and held in low regard is another one of the ridiculous bits of malpractice common to most gyms. The hip flexors are extremely powerful muscles and potentiating their development has played a role in our athletes' dominance.







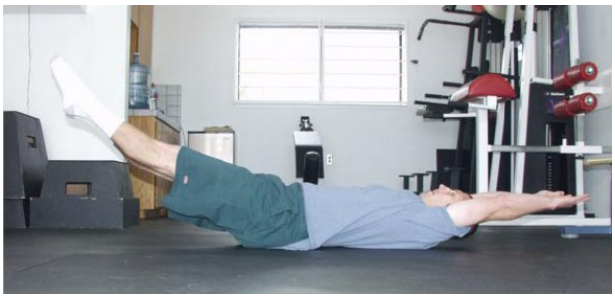


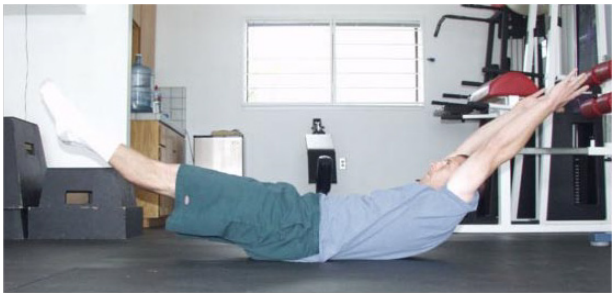
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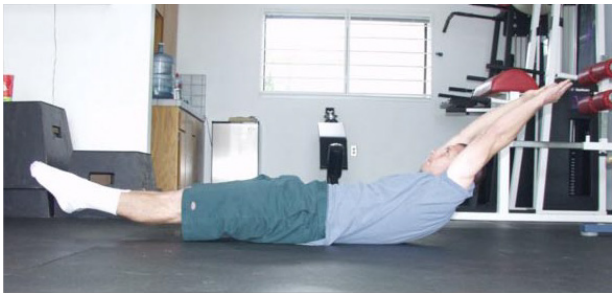
The Hollow Rock

A seemingly innocuous little exercise, the hollow rock is a staple of gymnastics conditioning and excruciatingly tough when performed correctly.

To perform the hollow rock lay face up on the ground with your arms stretched overhead and legs out straight. Raise your arms and legs about one foot off of the floor and attempt to assume the shape of a rocker on a rocking chair, then gently, slowly, teeter back and forth.







The critical part of this movement is to pull the lordotic curve (lumbar arch) from the back so that the entire back is rounded from shoulders to butt. Initially, you will find that the rocking is rough because of a flat spot in the lower back. This is a perfect measure of both a weakness in and inability to innervate the lower abs.

The role of the hip flexors is fairly insignificant in the hollow rock but the role of the lower rectus (lower abs) is dramatic. (Recent evidence suggests that the obliques play a major role in lumbar flexion http://www.pponline.co.uk/encyc/0689.htm)

For many people the hollow rock is so hard that no matter how hard they try they "clunk" on each rocking as they come to level and the flat spot caused by insufficient lumbar flexion smacks the floor. This "clunking" is a perfect measure of ones lack of lower ab recruitment.

Lower ab recruitment is the toughest part of ab training and never well developed by most athletes. It is so common as to be a visual cliché that the aerobics instructor who teaches "ab classes" at your local gym can do thousands of crunches but still has a lower abdominal pooch as though three months pregnant. Activation, full recruitment, and development of the lower abs require enormous concentration and focus over months if not years. The hollow rock is a near perfect tool to both test and develop low ab capacity.

You can practice the innervation/recruitment required to engage the lower abs/flex the lumbar spine and perform the hollow rock by standing with your back, feet, and head against the wall and pressing hard against the wall at the shoulders and slowly rolling the contact point from the shoulders down to the mid-back, down to the lumbar spine and ending with the butt pushed hard against the wall. You will notice that making hard contact with the wall through the region of the low back is exceedingly hard and requires an anterior to posterior roll of the pelvis and deep low ab contraction. You can test the contact by having someone place a rolled up magazine in the region of the lumbar curve while you try to pinch it against the wall as they attempt to slide it out. Done right, this produces a distinctive pulling above the pubic bone. That's your lower abs working. Repeating this ten times is a great low ab conditioning drill.

Practice the hollow rock even if it gives you enormous difficulties. Start by trying to rock continuously for two minutes regardless of the quality of the movement. Avoid raising the hands and feet to maintain the rocking motion as best you can.

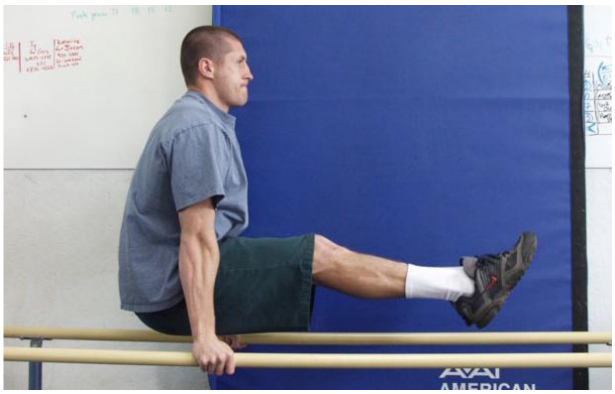
When mastered, the body is dished out flat, the hands and feet are low, and the impetus for the rocking is nearly undetectable. When you can do this smoothly – no flat spot – for two minutes you'll have the best abs in town.

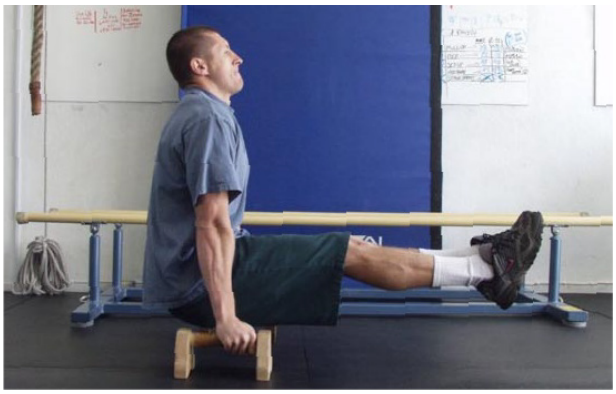
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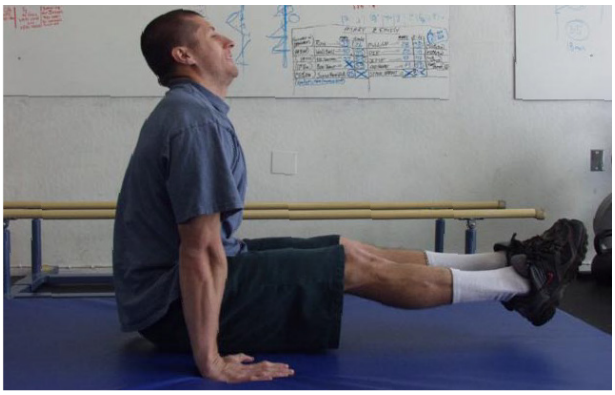
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The L-Sit







This exercise is remarkable from several perspectives. It is isometric, functional, and highly effective. Relatively unknown outside of the gymnastics community this exercise may be the most effective abdominal exercise we know of!

The L-sit is performed by supporting the body entirely by the arms and holding the legs straight out in front. The body forms an "L" thus the name L-sit. The exercise (we can hardly call it a movement) is isometric, i.e., it involves no joint movement. Being isometric, we quantify its performance not in reps but by time.

We not only contend that the L-sit is functional but that it is the most functional of all abdominal exercises.

Our justification for this contention lies in our view that the dominant role of the abdominals is midline stabilization not trunk flexion. Though trunk flexion is certainly important, midline stabilization is more important both to everyday living and athletic movement. The leg's posture in the L-sit places an enormous, if not unbearable, moment or torque about the hip that must be counteracted by the abdominals to keep both the legs up and the spine from hyperextending.

As for efficacy, the L-sit may have no peer among abdominal exercises. We make this claim not on the basis of our position on abdominal muscle functionality but on the simple observation that athletes who have developed their L-sit to the point where they can hold it for three minutes subsequently find all other ab work easy. The gymnasts' unrivaled capacity at hip and trunk flexion is in large part due to their constant training and practice of this exercise.

We mentioned early the ubiquitous phenomenon of the ab class instructor with the lower abdominal pooch – they cannot hold an L-sit. In fact, if you test the ab class instructor with the lower abdominal pooch for hip flexion strength you'll find they are super deficient in this regard. You can perform a simple hip flexion strength test by asking the subject being tested to stand on one leg and raise the other knee to hip level while you press down on the knee to see how much, or little, force it takes to push the knee back down. Individuals with the lower abdominal pooch always have super weak hip flexors. We can drive their knee down with one finger. Try this test with someone who has developed the L-sit and you'll find that they will tip over before the knee will drop. You will not find a three minute L-sit and a lower abdominal pooch in the same person, yet the world abounds with people who can perform thousands of crunches and sit-ups and still keep the pooch. It's that simple.

Practice of the L-sit is for some very tough – they just can't seem to find the muscles that raise and hold the legs. The key is to keep trying. Two successful approaches for working up to the L-sit include hanging from a pull-up bar and raising locked legs as far as possible and

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holding or working the L-sit by holding one leg at a time alternately in the L posture.

Though the L-sit can be performed from nearly any horizontal surface we recommend parallel bars, paral-lettes, and the floor as platforms for this exercise. The L-sit is hardest from the floor because the floor comes up quickly as the legs sag even a little bit. We use the parallettes for the very reason that it allows practice at less than perfectly horizontal leg position for the beginner, but measuring and competing at the L-sit should be done from the floor.

Measure your progress in the L-sit in 15-second increments. Give your self one point for every fifteen seconds you can hold the "L". Twelve points is your goal and with regular training and practice you should be able to get to 12 points, or three minutes, within six months. During warm-up and cool-down is the natural place to play with this movement although the dedicated gymnast will find uncountable surfaces and opportunities to play with this superb exercise.

Abs and Hip Flexors

The superstition, confusion, and fraud surrounding abdominal development are rampant. Much of this distortion, especially among "experts", comes from completely misunderstanding the vital role of the hip flexors in controlling and motivating athletic movement and specifically missing the complex interrelationship between the hip flexors and the abdominal muscles. The immediate result of this misunderstanding is the

belief that hip flexion exercises are avoided or maligned by most trainers. This is where the "crunch" came from. We put "crunch" into Google and got 990,000 hits compared to 138,000 for "sit-up"; this largely reflects the sit-up's demise and crunches dominance. While the crunch is a good exercise the idea that it is somehow safer or superior to the sit-up is laughable.

The U.S. Navy SEALS abandoned the sit-up in favor of the crunch and found a rather precipitous rise in running times as a result (http://www.abmat.com/navy1.htm). The rise in running time was eventually traced back to weak hip flexors and the adoption of the crunch. The crunch had been initially adopted because the sit-up was linked to lower back injury. Dr. Fred Koch developed the "Abmat" in a rather brilliant analysis of the sit-up (http://www.abmat.com/intro.htm). While the abmat sit-up is a great exercise and a dramatic improvement on the traditional sit-up we believe Dr. Koch' may have missed the vital role of the hip flexors in abdominal training. We are also of the opinion that the Navy's problems with the original sit-up were due to the violent nature of the old sit-up's biphasic movement (notice sit-ups usually have a violent 1,2 count as the abs throw the load to the hip flexors as described in the above link.) and the near total lack of hip extensor training in traditional Navy SEAL physical training and not solely because of the hip flexors dominance in the older movement.

CrossFit's position is that the Navy made the right, if not brilliant, move in replacing the biphasic traditional sit-up with the abmat sit-up but still doesn't fully appreciate the hip flexor's role in athletic training - and the need to balance ab exercises with hip extension movements like the squat and deadlift. The current synthesis is indeed an improvement but not the last word in ab training by any means. We've found it easy to convince anyone of this view in just a few months of training.



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"mess you up"

A Beginner's Routine

Dear CrossFit,

I don't have a medicine ball, kettlebell, rings, rope, place to do pull-ups or dips, or any of the other stuff you use, there isn't a gym within 100 miles of my house, I don't know most of the movements in your workout, and I'm very out of shape. Can you give me a workout that I can do?

Thanks,
Joe Keepitsimpl

We are routinely challenged to provide workouts for individuals with little workout experience and very limited resources. That's not our first choice of circumstances, but the exercise seems worthy. The challenge then is to see how much fitness we could motivate around the following parameters:

- Require a minimal amount of equipment
- Doesn't necessitate gym membership
- Requires minimal coaching
- Low technical requirements for movements
- Fixed, easy to follow regimen
- Accessible to nearly every fitness level
- Unlimited in potential for development

We realize that to go at once from limited resources and experience to building a home gym with a rower, rings, Olympic weight set, kettlebells, medicine balls, pull-up bar, mats, and to start out on a course of self instruction requires undaunted courage and a considerable leap of faith. Our hope is that a graduated regimen involving a few simple exercises would provide sufficiently dramatic gains in fitness as to inspire greater interest and participation in more advanced programming.

With this in mind we designed a regimen that would perhaps be accessible to the likes of our untrained mothers or fathers. In this light we worked out a twelve-week program built around four highly functional, indispensable exercises. The total equipment required, excluding workout wear, is an Olympic bar and plates.

Resources for the Beginner's Routine

Equipment:

-Bigger, Faster, Stronger (www.biggerfasterstronger.com) is an excellent source for the training plates and Olympic bar and plates.

-You may save some money in shipping by buying your Olympic bar and plates from a local fitness retailer but you're unlikely to find the training plates in a retail store.

The Deadlift:

-Here's a video clip of a simple deadlift. http://www.ballyfitness.com/rapid_results/expert_advice/video_clips/video.asp?27

-Here from Charles Staley is a good description of the deadlift. http://www.dolfzine.com/page362.htm

The Squat:

-The December '02 issue of the CrossFit Journal (https://store.crossfit.com/cgi-bin/cp-app.cgi?usr=51F5044990&rnd=9520118&rrc=N&affl=&cip=66.65.204.244&act=&aff=&pg=prod&ref=cfj004&cat=cfjbak&catstr=HOME:cfjbak) is a good resource for the Squat.

-Here from CrossFit is the Tabata Squat; an advanced protocol, but the form is very good. http://www.crossfit.com/cf-video/sample2tabata.wmv

The Push Press:

-The January '03 issue of the CrossFit Journal (https://store.crossfit.com/cgi-bin/cp-app.cgi?usr=51F5044990&rnd=9520118&rrc=N&affl=&cip=66.65.204.244&act=&aff=&pg=prod&ref=cfj005&cat=cfjbak&catstr=HOME:cfjbak) is a good resource for the Push press.

-Here's a good push press, small image though. http://www.exrx.net/WeightExercises/OlympicLifts/PushPress.html

Running:

-Learn how Michael Johnson, the world record holder of the 400 meter sprint does it http://www.sprint.r2.ru/400_johnson.html

-Here's an excellent reference on sprinting technique. http://www.brianmac.demon.co.uk/sprints/

The exercises are:

- Walk/jog/run
- Deadlift
- Push press
- Squat

The regimen is a five-day per week program that requires a commitment of less than thirty minutes per day. The time and frequency parameters mesh in our experience with the willingness and capacities of the target audience.

We have included links to resources for both instruction in the mechanics of the exercises and purchase of the weight equipment in a sidebar. We could have engineered a program that obviated the need for weights but this would have demanded considerably greater starting fitness in order to include pull-ups, dips, and other body weight exercises and yielded substantially less fitness in the end.

We recommend that you buy an Olympic bar and plates from a local retailer and training plates and bumper plates from one of the vendors we list.

You can either lug your weights to a local high school or college track or map out a 400-meter course in your neighborhood and workout from home. In mapping a 400-meter course use your car's odometer and find a point just a little over one tenth of a mile from home. Running to that point and back will be approximately 400 meters.

The guidelines for the program are as follows:

- Practice and study the deadlift, push press, and squat for a week before beginning the routines with light to moderate weight where the purpose is to learn good technique
- Start with the greatest weight with which you are both comfortable and can execute perfect form on both the deadlift and the push press
- Generally attempt to increase the load by approximately five pounds per week on the deadlift
- Generally attempt to increase the load for the push press by approximately five pounds every other week
- One more lap is added on Tuesday's and Thursday's workouts every two weeks
- Increase loads only when the last workout was completed successfully
- Time Tuesday's and Thursday's runs with a stopwatch
- From weeks 3-12, Tuesday's and Thursday's workouts are multiple efforts at 400 meters where the rest between efforts is precisely equal to the preceding run's time
- From week 4-12, Monday's, Wednesday's, and Friday's workouts are timed from beginning to end
- From week 6-12, endeavor to maintain or decrease workout times on Monday's, Wednesday's, and Friday's workouts
- Attempt to decrease 400 meter times for Tuesday's and Thursday's workouts throughout all twelve weeks
- Saturday and Sunday are rest days
- Let the intensity of your effort build gradually with each week
- Start comfortably; take it easy the first few weeks

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	Deadlift 15, 12, 9	Run 400 m	Push Press 15, 12, 9	Run 400 m	Squat 15, 12, 9
Week 2	Deadlift 18,15,12	Run 400 m	Push Press 18, 15, 12	Run 400 m	Squat 18, 15, 12
Week 3	Deadlift 15, 12, 9	Run 400 m x 2	Push Press 15, 12, 9	Run 400 m x 2	Squat 21, 18, 15
Week 4	Deadlift x12 Run 400 m Deadlift x 12	Run 400 m x2	Push Press x 12 Run 400 m Push Press x 12	Run 400 m x 2	Squat x 18 Run 400 m Squat x 18
Week 5	Deadlift x 12 Run 400 m Deadlift x 12	Run 400 m x 3	Push Press x 12 Run 400 m Push Press x 12	Run 400 m x 3	Squat x 21 Run 400 m Squat x 21
Week 6	Deadlift x 12 Run 400 m Deadlift x 12 Run 400 m Deadlift x 12	Run 400 m x 3	Push Press x 12 Run 400 m Push Press x 12 Run 400 m Push Press x 12	Run 400 m x 3	Squat x 21 Run 400 m Squat x 21 Run 400 m Squat x 21
Week 7	Deadlift x 12 Run 400 m Deadlift x 12 Run 400 m Deadlift x 12	Run 400 m x 4	Push Press x 12 Run 400 m Push Press x 12 Run 400 m Push Press x 12	Run 400 m x 4	Squat x 21 Run 400 m Squat x 21 Run 400 m Squat x 21
Week 8	Deadlift x 12 Run 400 m Deadlift x 12 Run 400 m Deadlift x 12	Run 400 m x 4	Push Press x 12 Run 400 m Push Press x 12 Run 400 m Push Press x 12	Run 400 m x 4	Squat x 24 Run 400 m Squat x 24 Run 400 m Squat x 24
Week 9	Deadlift x 12 Run 400 m Deadlift x 12 Run 400 m Deadlift x 12	Run 400 m x 5	Push Press x 12 Run 400 m Push Press x 12 Run 400 m Push Press x 12	Run 400 m x 5	Squat x 24 Run 400 m Squat x 24 Run 400 m Squat x 24
Week 10	Deadlift x 12 Run 400 m Deadlift x 12 Run 400 m Deadlift x 12	Run 400 m x 5	Push Press x 12 Run 400 m Push Press x 12 Run 400 m Push Press x 12	Run 400 m x 5	Squat x 27 Run 400 m Squat x 27 Run 400 m Squat x 27
Week 11	Deadlift x 12 Run 400 m Deadlift x 12 Run 400 m Deadlift x 12	Run 400 m x 6	Push Press x 12 Run 400 m Push Press x 12 Run 400 m Push Press x 12	Run 400 m x 6	Squat x 27 Run 400 m Squat x 27 Run 400 m Squat x 27
Week 12	Deadlift x 12 Run 400 m Deadlift x 12 Run 400 m Deadlift x 12	Run 400 m x 6	Push Press x 12 Run 400 m Push Press x 12 Run 400 m Push Press x 12	Run 400 m x 6	Squat x 30 Run 400 m Squat x 30 Run 400 m Squat x 30

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Two Training Aids

Greg Glassman

It has long been said that necessity is the mother of invention and this month we give support to that adage with two exceedingly simple inventions. Both devices address problems that have long plagued our training efforts.

Pull-up Assistance Device

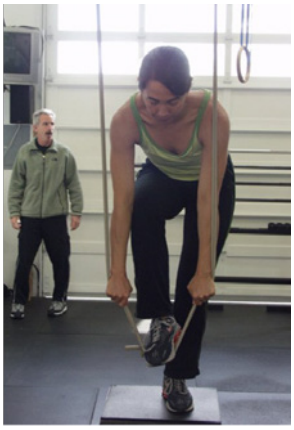
The first problem in dire need of remedy was how do we bring the pull-up to people who've never done one? Our first and easiest solution was the use of an assisted pull-up device like our favorite, the Stairmaster Gravitron, and we have long made regular use of the Gravitron with all our pull-up initiates.

There are several aspects of the Gravitron, though, that make its use problematic. First, the Gravitron is outrageously expensive. At nearly $3,000 after shipping, few pieces of gym equipment come even close in price. The steep price is perhaps particularly foreboding to someone relatively new to serious strength and conditioning training as are most people working to develop their first pull-up. Imagine if your first weight set had to be an Eleiko; there'd be a lot fewer weightlifters!

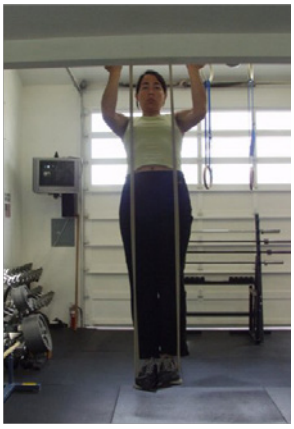
The second major problem with the Gravitron and all other assisted pull-up devices is that they are about as portable as your kitchen refrigerator. Now, at first this doesn't seem like a problem, and for many people it may never become one, but not being able to do pull-ups at the track, at other gyms, or other than in your gym is for many of our trainees a formidable issue.

We solved the dilemma with a rubber band! We bought ten feet of "Theraband" from our local medical supply store for a couple of dollars, tied the ends together, and we were done. Draped over the pull-up bar so as to allow two loops to hang evenly over the bar, the "Theraband" provided stirrups in which the trainee can place both feet and receive about forty or fifty pounds of assistance.





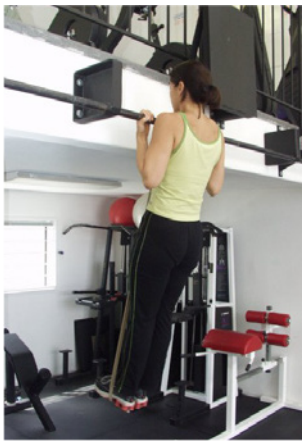


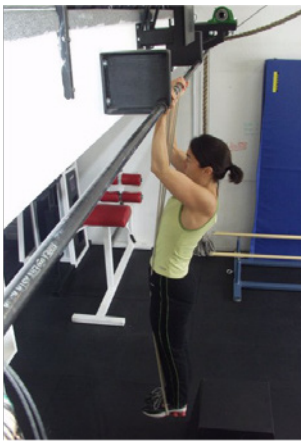


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The line of action is natural and the assistance can be varied by several approaches. "Theraband" comes in several resistances – selecting a length of greater resistance will, of course, provide greater assistance. By purchasing two bands and folding both over the bar you'll have four stirrups within which to stand and thereby double the roughly forty or fifty pounds of assistance provided by a single loop. With a little patience and experimentation you'll find the right assistance to allow you to perform a pull-up.

We recommend that you devise two set-ups – one that allows you to complete just two pull-ups and another that allows for fifteen. Both should be practiced regularly and between the two you'll be able to participate fully in the pull-up component of the CrossFit Workout of the Day and train towards the ultimate goal of an unassisted pull-up.

Getting in and out of the "Theraband" is somewhat tricky. We've found the most comfortable technique is to pull the band to the ground and then step into the stirrups with one foot and then the other. Great care must be taken to prevent the bands from slipping off of the foot and smacking you in the face. There is a potential here for a very serious eye injury if you are not very careful.

Dismounting is also a little tricky. The safest and easiest dismount is to bend the knees then lift the feet up towards the bar and work both feet out of the band while maintaining a tight grip on the bar. It is probably a good idea to close your eyes while doing this in case the bands slip and come back towards your face. With even a little focus and practice you'll be able to step in and out of the bands fairly easily and safely.

Heel Lift Detector

The other device we're featuring this month is a "heel lift detector" designed to test for the heels' lifting during the squat. Learning to keep the heels down during squatting and lifting is paramount to developing fully functional hip capacity. When the heels lift, the body's center of mass and balance shift forward and the glutes, hamstrings, and the hip extensors, lose most of their efficacy and athletic functionality is greatly diminished.

Learning to drive from the heels is essential to optimizing hip function and subsequently developing full athletic prowess. Unfortunately, it is exceptionally hard for many who are learning to do this. Poor hamstring flexibility, weak hip extensors, non-existent glute-ham awareness, bad habit, and poor coordination all contribute to lifting the heels but in every case the heels must remain firmly planted. To this end we've designed a simple device.



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From our local hardware store we purchased the following: a 1 1/4" X 48" wooden dowel, ten feet of 1/8" nylon cord, and a 6" X 24" X 1/16" sheet of steel. The total cost was less than $7.

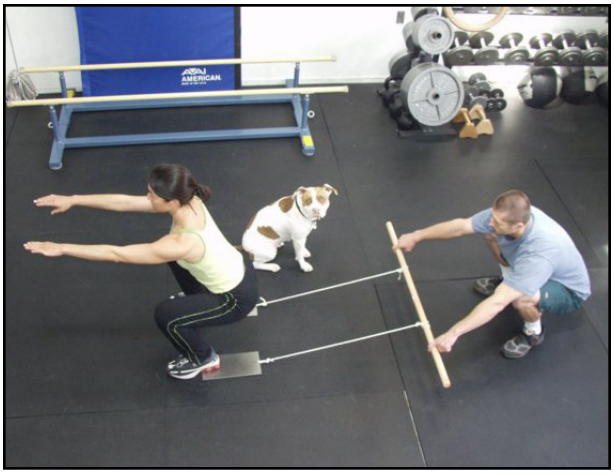
We cut the steel in half along its width, drilled holes in the two halves of steel sheet near one width's edge on each piece and through the dowel 16" from both ends. Tying five feet of cord to both sheets of steel and the dowel finished the project. The entire project took less than one hour including the trip to the store.

The use of our "heel lift detector" is very simple. By placing the narrow edge of each sheet of steel about 3 ½ inches under a squatter's heels and pulling gently on the ends of the dowel with just the index fingers, the squatter is ready to go. If the heels lift even fleetingly during the squat the sheet of steel slides out.

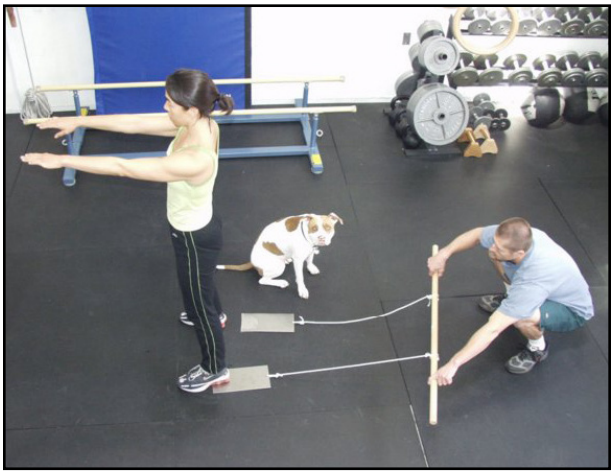
By the coach varying the pull on the dowel the steel sheets can be made to slip free when either the squatter's weight shifts even slightly to the ball of the foot or only when the heel lifts.

On first testing this device we noticed that some of our most flagrant violators of the admonition against lifting the heels were seemingly cured at the moment of placing the steel sheets under their heels. This heightened focus and awareness is exactly what we'd hoped for in this experiment.

The "heel lift detector" used with the overhead squat gives enormous emphasis to the essential mechanics of full athletic functionality.







Greg Glassman is the Founder of CrossFit, Inc. and Crossfit Santa Cruz and is the publisher of the CrossFit Journal. He is a former competitive gymnast and has been a fitness trainer and conditioning coach since the early 1980s.

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Interval Generator

Greg Glassman

There are no bad intervals, only weak efforts. Variety and intensity will ultimately determine preparedness. Here is a scheme to give variance to your anaerobic work.

Intervals generated by this experiment will certainly be anaerobic yet are certain to pack a substantial aerobic punch.

Play with these intervals before or after your regular workouts or on "rest" days.

Multiplier / *Die Number*	*x10Work*	*x5Rest*	*x2# of Int'v*
1	10	5	2
2	20	10	4
3	30	15	6
4	40	20	8
5	50	25	10
6	60	30	12



Roll single die (or three dice) and for first roll multiply number by 10 for work interval.

Then roll second die and multiply by 5 for the rest interval.

Roll again and multiply by 2 total for number of intervals.

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Metabolic Conditioning

Greg Glassman

Introduction

In the second issue of CrossFit Journal, "What is Fitness?" we explored the nature of metabolic conditioning, or "cardio", and highlighted some of the qualities of and distinctions between aerobic and anaerobic exercise, and touched on interval training.

In this issue we'll reexamine metabolic and interval training in a little more detail.

Review

Let's begin with a review of metabolic training. Metabolic training refers to conditioning exercises intended to increase the storage and delivery of energy for any activity.

There are three distinct biochemical means by which energy is provided for all human action. These "metabolic engines" are known as the phosphagen pathway, the glycolytic pathway, and the oxidative pathway.

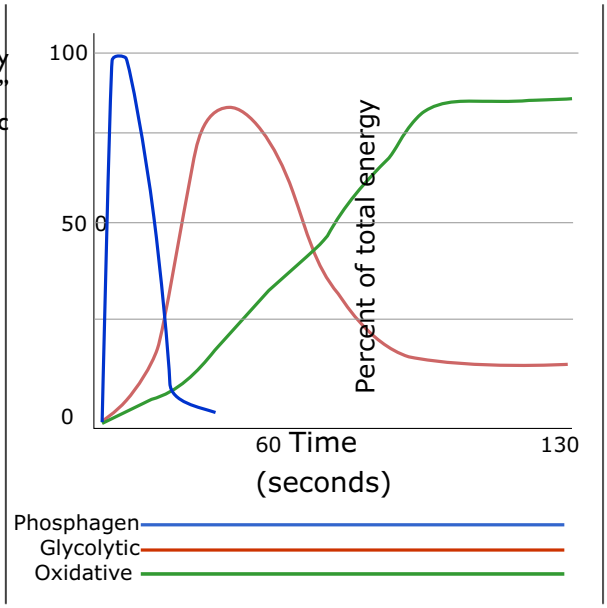
The first, the phosphagen pathway, provides the bulk of energy used in highest-powered activities, those that last less than ten seconds.

The second, the glycolytic pathway, dominates moderate-powered activities, those that last up to several minutes.

The third, the oxidative pathway provides energy for low-powered activities, those that last in excess of several minutes.

You may recall that the first two pathways, the phos-phagen and glycolytic, delivering energy for high and moderate powered activities, are known collectively as "anaerobic" whereas the third pathway, the oxidative is known as "aerobic." The significance of the term "anaerobic" lies in the fact that the phosphagen and glycolytic systems generate energy without benefit of oxygen where the oxidative or "aerobic" pathway requires oxygen for energy production.

The subject of metabolic pathways and energy production for human activity is known as "bioenergetics" and is loaded with details from biochemistry and discussions of ATP, ADP, substrates, reaction mechanisms, Krebs cycle and a lot of other stuff that you tried, and probably succeeded, to avoid learning in high school or college biology.



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If you feel the compulsion to learn more on the biochemistry of bioenergetics, many resources are available online.

Anaerobics and Aerobics Made Simple

Our purpose in this issue of CrossFit Journal is to avoid the complexities and nuances of molecular biochemistry and render a useable foundation for understanding "cardio" and specifically the CrossFit approach to conditioning.

To that end we will forego considerations other that the sustainability of maximum efforts and, so, concern ourselves with all out efforts of varying durations and ignore issues of power, pathways, and energy production.

We only need to remember that anaerobic exercise is metabolically unsustainable exercise whereas aerobic exercise is sustainable. Sustainability is the key.

Generally, all out efforts of two minutes or less are anaerobic while efforts lasting more than several minutes are aerobic.

Reducing the whole of bioenergetics to this level isn't just convenient it allows for examination at a level of granularity that allows for maximum useful understanding of metabolic conditioning. Biochemists, while able to recite intricacies of energy substrates and ATP production are all too often blind to the interplay of varying exercise protocols and their resulting fitness.

A metaphor may aid in understanding our position on the science of bioenergetics. We are striving to give you a racecar driver's sense of auto racing not a mechanical engineer's. Both have their place but only one drives the car on race day.

Anaerobic efforts are relatively high powered, and aerobic efforts are relatively low powered. This should be self evident from our understanding that anaerobic work is unsustainable past several minutes. It would be hard to escape the observation that power, or intensity, and duration of effort are inversely related. One hundred meter dash pace is a considerably faster pace than a mile pace.

Aerobic exercise is nearly universally regarded as being heart protective, but there is compelling evidence that shows that anaerobic exercise is at least as heart protective as aerobic exercise.

Though aerobic exercise is widely recognized as being the ideal vehicle for fat loss, recent studies have shown that anaerobic exercise is a vastly superior protocol for fat burning.

Anaerobic exercise builds muscle; aerobic exercise burns muscle - period. On this point there is no intelligent debate. Compare the look of sprinters to long distance runners – here a picture is indeed worth a thousand words.

The muscle wasting nature of aerobic exercise is both cause and symptom of the deleterious effect that endurance work can have on anaerobic performance. Sadly, this lesson has been slow to spread to many anaerobic sports. It is still common to find boxers and other martial artists who think that long slow endurance work – roadwork – is essential to their fight endurance. Nothing could be further from the truth.

On the other hand anaerobic training is of enormous benefit to endurance athletes. Not only does it support and build muscle, but it gives the "kick" needed to win close races. Importantly, not only does anaerobic work benefit aerobic performance, but anaerobic training can be used to develop high levels of aerobic fitness without the usual muscle wasting. This is accomplished through interval training and is an integral part of sports training for most sports.

Comparison Between Anaerobic and Aerobics

	Increases power, speed , and strength	*Improves cardiovascular health*	*Burns body fat*	*Burns Muscle*	*Builds Muscle*	*Aids in all sports*	*Develops aerobic capacity*	*Develops anaerobic capacity*
Anaerobics	•	•	•		•	•	•	•
Aerobics		•	•	•			•	

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	Sprint	Mid-Distance	Distance
Primary Energy System	*Phophagen*	*Glycolytic*	*Oxidative*
Duration of work (in seconds)	*10 - 30*	*30 - 120*	*120 - 300*
Duration of recovery (in seconds)	*30 - 90*	*60 - 240*	*120 - 300*
Load:Recovery ratio	*1:3*	*1:2*	*1:1*
Repetitions	*25 - 30*	*10 - 20*	*3 - 5*

Interval Training

Interval training alternates bouts of high intensity work with rest in repeated timed intervals. The general idea is to perform a high volume of high intensity work in a limited time. Ultimately, it is nothing more than anaerobic training with controlled rest periods.

The benefits of interval training are to both anaerobic and aerobic systems. The obvious question is how much benefit and to which system?

We can orchestrate intervals so that they predominantly stress either aerobic or anaerobic systems. The table below gives interval strategies to target desired metabolic systems.

But, even more interesting is the prospect of a hybrid interval that would greatly stress and thereby substantially condition both anaerobic and aerobic systems simultaneously. Finding such an interval and demonstrating its dual potency would be a great find.

It may have been done.

Tabata Interval

Dr. Izumi Tabata experimented with intervals and published in the journal Medicine in Sports and Exercise the results of an experiment in which he produced excellent improvements in anaerobic and aerobic conditioning in a group of accomplished athletes with a four minute (3:50) protocol of 20 seconds of all out work followed by 10 seconds of rest repeated 8 times.

Significantly, Dr. Tabata's 4 minute high intensity group got better V02 max improvement than the control group, which followed a 60 minute moderate intensity regimen.

Clarence Bass, and Peak Performance both give great accounts of Dr. Tabata's research and understand the important implications.

Tabata Applications

Dr. Tabata's research subjects exercised on stationery bikes; we decided to test other applications.

Our favorite and most effective application has been the "Tabata" squat – a 20 seconds on, 10 seconds off repeated 8 times squatting effort scored by the lowest number of reps performed in any of the eight intervals.

This single drill tests for and develops elite athletic capacities. Rankings for this drill accurately predict ranking performance on a wide variety of fundamental athletic skills and performance.

Another of our crew's favored applications is to use the Tabata interval in a workout where an athlete moves from the Concept II Rower to squats then pull-ups, sit-ups, and push-ups. Each exercise is performed like the Tabata squat – 20 on/10 off X 8. Adding the weakest link from each exercise tabulates a final score. The Rowing is scored in "calories" and the other events by reps. We allow a minute's break between exercises.

Both of these simple workouts are very demanding and surprisingly potent. Trying either will convince you of their potency. Our experience is that improvements in scores for both Tabata workouts suggest strongly that an athlete is likely to show substantial improvements wherever we test them.

Try the Tabata workouts, experiment with varying interval design, and repeat noticeably difficult protocols from time to time. Trust that particularly challenging efforts speak directly to your opportunities for physical gains, and that improved performance in those efforts is the best measure of those gains. Chase the toughest intervals.

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The most important point to remember is that high intensity efforts can produce dramatic aerobic benefit without the muscle wasting seen with endurance training.

Dr. Stephen Seiler on Intervals and Endurace Work

Dr. Seiler is a renowned exercise physiologist and rowing coach. In a piece entitled "Understanding Intervals" Dr. Seiler explains that there are winning rowing programs that train all intervals as well as those that do some, and programs that do none. Each approach has been shown to produce winners.

Dr. Seiler has concerns about the wisdom of programs that do too much interval work only because intervals may produce what he calls first and second wave adaptation to endurance training but not third wave adaptations. Third wave adaptations are largely specific to the training modality, and have nothing to do with aerobic conditioning but endurance performance. The difference is critical. But do we want third wave adaptations?

Third wave gains in endurance performance are entirely specific to that sport and have training effects disadvantageous to much of other sport performance.

Dr. Seiler's admission that elite aerobic performance can be trained by high intensity intervals and his concerns that intervals don't produce third wave adaptations form a terrific rationale for avoiding steady state aerobic work.

The idea that later adaptations to endurance work are highly specific to the training modality and portend little impetus to further cardiovascular development

hints at the possibilities for generating additional cardiovascular benefit by means of shifting training

modalities sufficiently to avoid "third wave" adaptations and focus instead on 1st and 2nd wave adaptations from a multitude of protocols and modalities. Our hope and suspicion is that this broadens the cardiovascular stimulus.

CrossFit Position

As ridiculous as the idea that extended endurance efforts optimally confer cardiovascular and fitness benefits is the notion that a stressor like a bike is good "cardio" whereas a Kettlebell, obstacle course, or CrossFit-like workout performed at similar exertion levels carries a lesser cardiovascular benefit!

Ultimately the CrossFit position on metabolic conditioning, or "cardio", is summed in two points:

- Anaerobic training can match endurance training for aerobic benefit.
- Metabolic training with varying and mixed exercise modalities avoids specificity of adaptation allowing for additional first wave – cardiovascular/ respiratory adaptations, and increased functional strength.

The clincher is that CrossFit athletes have demonstrated improved endurance performance without endurance training, and even more amazingly, in clinical trials CrossFit's high intensity regimen has produced improvements in endurance measures that rivaled those achieved through programs comprised largely of endurance efforts.

Police training programs in Florida have found that CrossFit produced better distance run times than prior programs comprised largely of distance runs.

CrossFit athletes live in a steady state of physical preparedness that leaves them primed for specialized training and unknown physical challenges regardless of whether the demands are aerobic, anaerobic, or both.

There are cars that get 100 miles to the gallon. They are low powered, slow, and fuel-efficient. Others cars are high powered and fast while being less fuel-efficient. CrossFit is building powerful fast athletes not slow, low powered, fuel-efficient athletes.

Athletes that train predominantly anaerobic pathways in a wide range of intervals and modalities have at least the cardiovascular or aerobic fitness of endurance athletes.



Greg Glassman is the Founder of CrossFit, Inc. and Crossfit Santa Cruz and is the publisher of the CrossFit Journal. He is a former competitive gymnast and has been a fitness trainer and conditioning coach since the early 1980s.

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Metabolic Conditioning Glossary

Pukie & Greg Glassman



I want to help with some of the basic terminology of metabolic conditioning, so here's Pukie's guide to easy bioenergetics complete with commentary

- Pukie

V02 max: Maximum amount of oxygen that can be used continuously divided by body mass. Long the gold standard of aerobic fitness, the slight advantage that endurance athletes have over anaerobic athletes in V02 max can be attributable to the low body mass of endurance athletes. I can use a similar definition of strength – by dividing lifts by weight - to show that little guys are stronger than big guys.

Aerobic: Low powered, low intensity, long duration – more than several minutes. This is the easy stuff. Introduced to real efforts these guys crumble!

Anaerobic: Higher-powered, higher intensity, shorter duration efforts– those less than several minutes. Anaerobic is Greek for "worth while." Pukie wants to know why there are 1 million recreational traiathletes but only 7 recreational 800 meter athletes.

Lactate Threshold: The point as work intensity increases where lactic acid levels in the blood rise faster than can be controlled. Lactic acid is a waste product of anaerobic work. Also known as "anaerobic threshold", the lactate threshold marks the point in intensity where work has become largely anaerobic. This is also the "pussy rest-stop."

Interval training: Exercise protocol of set periods of high intensity rest and work. This is how anaerobic athletes develop tremendous levels of aerobic fitness – through intervals. I want to meet the scientist who invented this. How else could you do high intensity work?

Heart rate monitor: It's all about the performance. Forget heart rate. The heart rate monitor is a fun toy, though. Mix dehydration, beer, steep hill, bicycle, hot humid day and see who can get the highest number. I've seen seven people over 200 at once on the same hill. What can you and your friends do?

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The Clean

Greg Glassman

The King of All Exercises

Were it not for the snatch, the clean would have but laughable challenges to the title "King of All Exercises." Oddly, we start our examination of the clean with mention of the snatch, as many of the superlatives attributed to the clean apply equally to the snatch. Clearing the air early with admission of the snatch's peer status, we can speak more freely of the clean's unrivaled qualities and need not repeatedly suggest the snatch's possible exception to the clean's peerless qualities.

Mechanics

The clean is a pure bit of functionality. The clean is simply pulling a load from the ground to the shoulders where frequently the object is being readied for lifting overhead. With the clean we take ourselves from standing over an object pulling it, to under it and supporting. (Compare this to the muscle-up where we take ourselves from under an object to supporting ourselves over it.)

In its finest expression the clean is a process by which the hips and legs launch a weight upward from the ground to about bellybutton height and then retreat under the weight with blinding speed to catch it before it has had the time to become a runaway train. The movement finishes with the hips and legs again working by squatting the weight up to full extension.

The speed and force with which the clean (and, yes, the snatch) drives loads give it developmental properties that other weight training movements cannot match. Deadlifts, squats, and bench presses will never approximate the speed and force and consequently the power required of a clean at larger loads. For this simple



reason, while these are important movements, they are not the clean's peers. Power is that important.

Developmental Qualities

The clean builds immense strength and power but this is only the more obvious part of the clean's story. (This complex movement actually contains within itself two princely exercises – the deadlift and squat.) The clean is unique among weight training exercises in that it demands extraordinary athleticism beyond strength and power.

Experience coaching the clean will show that a lack of sufficient speed and flexibility are common impediments to learning the clean and that refinements in coordination, accuracy, and balance are the biggest obstacles of all.

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The clean requires and develops enormous strength, flexibility, power, speed, accuracy, agility, coordination, and balance. The movement is as complex and nuanced as any movement in sport and can only be improved, never fully mastered.

At high reps, especially when fused with the push-jerk, the clean becomes a powerful tool for developing vitally important functional cardiorespiratory endurance and stamina.

There's no part of your physical development that can't be positively impacted by developing and improving your clean. The benefits to strength, flexibility, power, speed, accuracy, agility, coordination, and balance are directly proportionate to the load you can clean, and the benefits to your cardiorespiratory endurance and stamina are directly proportionate to the reps and load you can clean.

Application

The clean is as complete as an exercise can be, trains for super useful core to extremity motor recruitment patterns, and trains and conditions the body to apply large and sudden forces. It is "golf swing" or "baseball pitch" complex yet accessible to all who want to learn it.

Fortunately, you need not develop marked technical proficiency at the clean to benefit from its broad and potent athletic offering. In fact, errors in the clean's execution may actually increase many of the demands of the movement at any given load, so that the more trouble you have developing a good clean the more benefit practicing and training it deliver.

Finally, the clean is a gateway exercise to the clean and jerk – one of the two Olympic lifts. The clean and jerk continues the clean's journey from ground to shoulders with a second, powerful, whole body movement, the jerk, which sends the load overhead.

It is the combined movements, the clean and jerk, that at high-rep protocols simultaneously improve all ten general physical skills associated with physical training. Learning and working toward mastery of the clean is well justified by this application alone.

Setup and Preparation

Ideally you'd like to acquire a training bar and plates to learn the clean. The rig in the photo above is a fifteen-pound "Alumalite" bar and five-pound training plates from Bigger Faster Stronger. The entire setup comes in at only twenty-five pounds.

It is all too common for beginners to practice with too much weight. Typically, when learning the clean the lighter weight seems to fly around erratically. In an attempt to control the movement, the athlete often wants to pile weight on the bar. All this accomplishes is to mute the effect of some of the errant movement, which serves only to mask errors in technique.

If you cannot perform the movement consistently and properly empty-handed or with a broomstick, your progress will come to an early screeching halt with weight. When that happens, your faults can only be diagnosed and corrected back at training loads, which is tantamount to starting over. Don't waste your time by being in a hurry to lift large loads.

If the training bar and plates are out of your budget, you can make a training rig from PVC pipe and plywood. World Class Coaching's videotape on the clean, "The World's Most Powerful Lift," features homemade lightweight training bars and plates.

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Taping and Chalking



Taping the wrists can help with the discomfort in the racked position. The thumb also can be taped to keep the skin on it while using the hook grip. Use cloth athletic tape.

Chalk up with gymnastics and weightlifting chalk (magnesium carbonate) available from most sporting goods stores.

Hook Grip



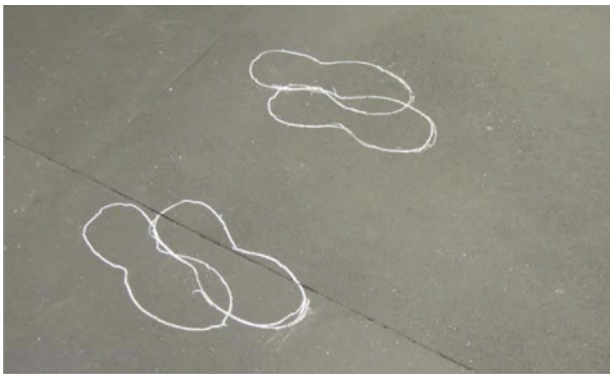
The hook grip will greatly add to your lifting capacity. Though initially uncomfortable, if not painful, with practice the hook grip will feel perfectly natural.

Push your hands down hard on the bar and then reach around the thumb, with the index, middle, and ring finger trapping it against the bar. The pinkie finger, unable to reach over the thumb stays wrapped around the bar.

Depending on the size of your hand, you may or may not be able to get your ring finger around the thumb.

With a load, the bar does not stay in the hand but hangs from the fingers. The hook grip may eventually increase your clean by 50 percent or more!

Stance and Hand Placement

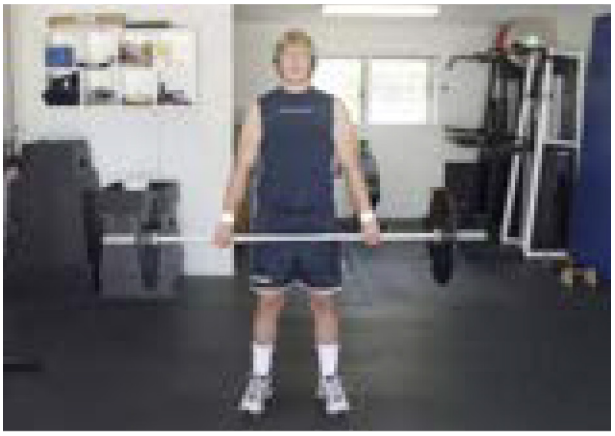


The starting stance for the clean places the legs and feet directly under the hips. This stance is slightly narrower than a squatting stance.

The chalk outlines in the photo at right show foot outlines of positions for both the starting stance and the "catching" or squatting stance. The starting stance is forward and narrower than the catching stance.

The hand position is just wide enough to keep the arms from interfering with the legs while pulling from the ground.

Ultimately your hand position will be determined by adjusting the grip so that the bar hits the explosion point where you've maximum capacity for hip and leg extension. More on this later.



Dave Leys, right, is in the starting stance. His feet are in the inside chalk outlines seen above right. When he drops under, he'll land in the outer, rearward outlines.

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The Rack



Notice in the picture to the right that the weight is sitting squarely on Dave's chest and shoulders with his elbows pointing forward. This posture, called "racked," is critical to weightlifting and demands and improves wrist and shoulder flexibility.

Practice the rack position with a moderate load on a squat rack. Reach out for the bar, pushing the shoulders and chest up and out, and then step under the bar and rest it in the channel formed by the chest and shoulders. The grip is loose, with several fingers possibly coming off the bar; that's O.K. The hands are only babysitting the bar.

With the bar racked on the shoulders, stand up to lift it from the squat rack several inches, exposing the shoulders, chest, and wrists to the posture.

With regular practice anyone can learn to "rack" the bar and even arrive at acceptable levels of comfort with the position. Without this technique your clean's development will be unnecessarily and dramatically limited.

Dumping

When a lift goes bad, and it happens regularly, you need to be able to dump the bar. Convince yourself by demonstrating that you can bail out from both the bottom and at the top.

From the bottom, spread the knees and push the bar forward letting it fall to the floor. Keep your hands close to the bar to control its decent.

From the top just drop the elbows and bow slightly. Again you'll want to keep your hands lightly on the bar as it descends to nudge a wild hop away from you.





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Technique – The Liftoff

The liftoff begins essentially as a deadlift. The bar sits directly above the foot. The shoulders are slightly in front of the bar.

There's nothing relaxed about the starting position. The chest is up and inflated; the lats and triceps are dug tightly into one another.

The arms are locked with the inside of the elbows facing one another. The hands, in the hook grip, may be turned a bit inward, just slightly flexing the wrists.

Try to keep the plane of the chest as upright as possible and your shoulders pinned back.

As the bar rises, the general direction of the bar is up and slightly back. By the time the bar reaches the knees, the shins have come to vertical, and the athlete's weight has shifted from mid foot to the heels.

The arms are not pulling at all. Think of them as straps.

The torso's angle of inclination remains constant until the bar crosses the knee.





Technique – The Explosion Point

About two-thirds up the thigh, from the knee, is the explosion point. There are two important features of the explosion point. First, the explosion point is where the bar brushes the thigh on its upward path.

Second, the explosion point determines the grip's width so that the bar hits the explosion point where you've maximum capacity for hip and leg extension.

The explosion point is brought to the bar and then the hip and legs extend suddenly, driving the bar up.





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Technique – The Max Extension Point

As the bar brushes the thighs, the chest is thrown upward, the shoulders shrug violently, and the athlete makes a short, flat-footed jump. This is the point of maximum extension. The arms have still not done any of the work.

The shrug and torso's hyperextension pull the bar up and back while the bang of the thigh at the explosion tends to drive the bar out and up. The net force sends the bar up powerfully and slightly back.





Technique – The Pull Under

At the exact instant of reaching the maximum extension point, the hip violently retreats downward into a squat. Simultaneously, the arms pull the athlete down under the bar. This is the first time the arms contribute to the movement.

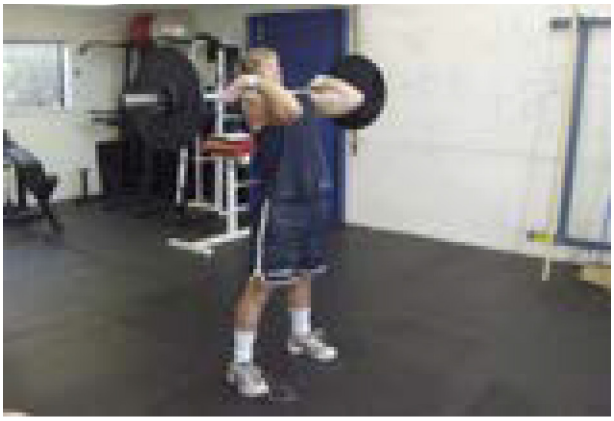


Technique – The Front Squat

As the elbows whip forward, the bar is caught on the chest and shoulders. Compared to the starting stance the squat is about four inches back and slightly wider to accommodate a deep squat.

Immediately on receiving the bar the athlete completes the movement by squatting to full extension.





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Medicine Ball Clean



The clean is without a doubt an advanced movement. A technically correct front squat and deadlift would seem to be obvious prerequisites to the clean, but we often introduce the medicine ball clean well before the deadlift and front squat are firmly established.

This reinforces the deadlift and squat and introduces the exciting dynamics, functionality, and metabolic potential of the clean.

The medicine ball is somewhat less intimidating than a bar, weighs less (we start with an 8-pound Dynamax and progress to the 20-pound ball), and seems to be more suggestive of the practical functionality of the clean than is the clean with the bar.

The medicine ball clean efficiently demonstrates to the developing athlete the critical sequence of the hip accelerating the object to maximum extension, the hip retreating towards the squat, and finally, the hip squatting the object to full extension.

Notice in the pictures the same fundamental features as the barbell clean – liftoff, explosion point, maximum extension point, pull under, and front squat.

High-rep medicine ball cleans are a wonderful sneak peak at one of CrossFit's more advanced training protocols – the high rep clean and jerk.

High-rep barbell clean and jerks

We have only scratched the surface of the clean. There are components like the "scoop" between the liftoff and explosion point that we are glossing over. Our hope here is threefold: first, to express the importance and potency of the clean, second, to offer fundamentals sufficient to help you effectively explore the movement, and third, to encourage additional research, discussion, exploration and coaching of the "world's most powerful lift."

We've not discussed lifting platforms, shoes, or the snatch. We leave it to you to learn as much about the clean and Olympic lifting as you can.

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Strength and the Clean

It has long been our observation that an athlete's max clean will in large part be dependent on their max deadlift and front squat.

For a load to come up from the ground confidently and then accelerated dramatically it better be an easy deadlift. Any load you attempt to clean should be an easy load for a deadlift.

To confidently dive under a load and catch it in a front squat it will need to be an easy front squat. Any load you attempt to clean should be an easy load for a front squat.

As a rule of thumb we encourage our athletes to push their combined max front squat and deadlift to four times their max clean. This suggests that if you want a 500-pound clean you'll want to develop a 1,000pound deadlift and a 1,000-pound front squat. In a less otherworldly example don't expect to clean 200 pounds when your max front squat is 200 pounds and your max deadlift is 300.

Improving your front squat and deadlift is a surefire way to improve your clean.

The Clean and the Clean and Jerk

We mentioned that the clean is a gateway exercise to the clean and jerk. The clean and jerk is not only one of the two Olympic lifts; it is also an extraordinary movement of unparalleled capacity to advance your fitness.

The clean will be the weak link in the clean and jerk. If you can get under the weight, you'll likely be able to squat the weight and then drive it overhead.

We want a big clean so that we can get a big clean and jerk so that you can get a big high rep clean and jerk.

Our favorite resources for exploring and developing the clean

- World Class Coaching, LLC's Coach Steve Miller has produced what we consider the most advanced and authoritative instructional material on the clean available anywhere in the videotape "The World's Most Powerful Lift".
- Bob White is a protégé of Coach Miller's and is Texas State age group weightlifting champion. Bob is an engineer and his careful analysis of the kinematics of the clean at the end of both World Class Coaching tapes is truly revolutionary in its startling conclusion.
- IronMind produces MILO, the best strength journal anywhere, fantastic equipment, videotapes, and posters related to weightlifting and serious strength training.
- David Webster's "Development of the Clean and Jerk." David Webster is a legendary weightlifting coach and his "Development of the Clean and Jerk" is a 46-page gem. Available only from IronMind this little book is in limited supply – get it now.
- USA Weightlifting is the national governing body of weightlifting in the U.S
- Dan John's Lifting and Throwing Page is a veritable treasure trove of serious weightlifting information.
- Arthur Drechsler's "The Encyclopedia of Weightlifting" available from IronMind. This 500-page behemoth is dedicated to only two lifts – the clean and jerk and the snatch.

The clean is as complete as an exercise can be, trains for fundamental core-to-extremity motor recruitment patterns, and trains and conditions for imparting large and sudden forces.

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Why a Big High-Rep Clean and Jerk?

Of the ten general physical skills (cardiorespiratory endurance, stamina, strength, flexibility, power, speed, coordination, agility, balance, and accuracy) the high-rep clean and jerk is the only single exercise protocol we know of that can substantially increase all ten!

An athlete able to perform a 225-pound clean and jerk for fifteen reps at a bodyweight of 200 pounds is surely "CrossFit."

That the world's greatest developer of power and speed isn't traditionally practiced at higher reps is a shortcoming that cannot be logically explained.

The Fifteen-Rep Clean and Jerk

For the fifteen-rep clean and jerk challenge, we allow only touch and go at the ground but allow any break wanted at rack, overhead, and hang positions. (Resting here doesn't buy much relief.)

Typically we perform three sets at the same weight. One at 15 reps, another at 12 reps, and a third at 9 reps. The 15-12-9 progression completely covers the time domain of the all-important middle metabolic pathway, the glycolytic.

At fifteen reps the clean and jerk combines the cardiorespiratory demands of an 800-meter run in a nauseating brew of function, strength, coordination, and power.

Conclusion

The "king of all exercises" contains two classic exercises, the deadlift and the squat, and is itself a component of another classic, the clean and jerk.

This classic of strength and power demands as much speed, flexibility, coordination, balance, accuracy, as any sport and at higher reps is a better cardiovascular stimulus than bicycling.

The clean, both an end and a means, marks the point where weight training becomes sport. As hard to master as the violin, every minute of practicing and training for this move is a minute well spent.

Greg Glassman is the Founder of CrossFit, Inc. and Crossfit Santa Cruz and is the publisher of the CrossFit Journal. He is a former competitive gymnast and has been a fitness trainer and conditioning coach since the early 1980s.

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Anatomy and Physiology for Jocks

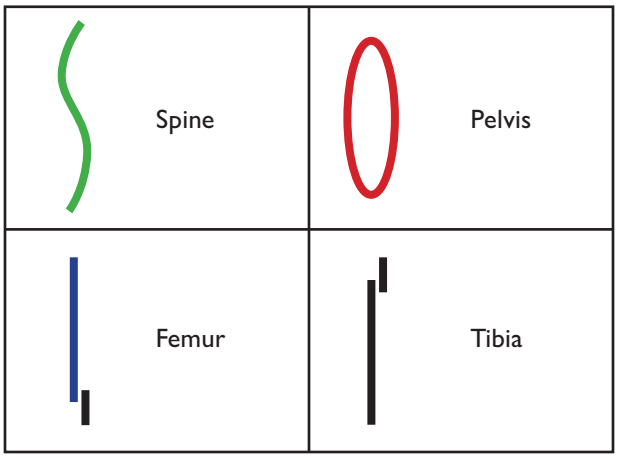
Greg Glassman

Effective coaching requires efficient communication. This communication is greatly aided by coach and athlete sharing a terminology for both human movement and body parts.

We've developed an exceedingly simple lesson in anatomy and physiology that we believe has improved our ability to accurately and precisely motivate desired behaviors and enhanced our athletes' understanding of both movement and posture.

Basically, we ask that our athletes learn four body parts, three joints (not including the spine), and two general directions for joint movement. We cap our A&P lesson with the essence of sports biomechanics distilled to three simple rules.

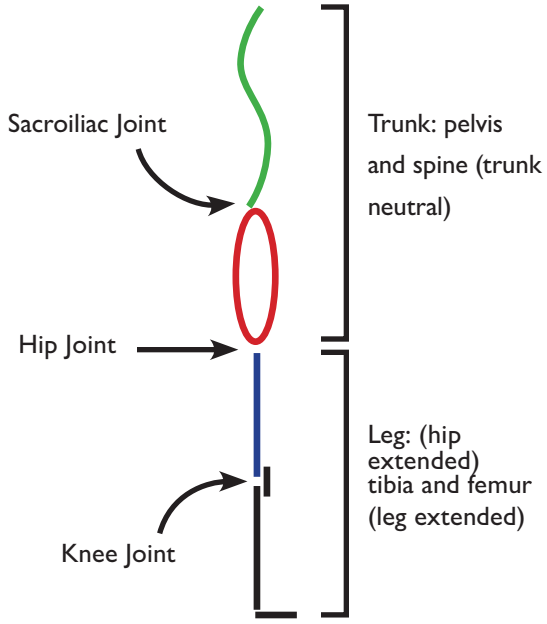
We use a simple iconography to depict the spine, pelvis, femur, and tibia. We show that the spine has a normal "S" shape and where it is on the athlete's body. We similarly demonstrate the pelvis, femur, and tibia.



We next demonstrate the motion of three joints. First, the knee is the joint connecting tibia and femur. Second, working our way up, is the hip. The hip is the joint that connects the femur to the pelvis. Third, is the sacroiliac joint (SI joint), which connects the pelvis to the spine. (We additionally make the point that the spine is really a whole bunch of joints.)

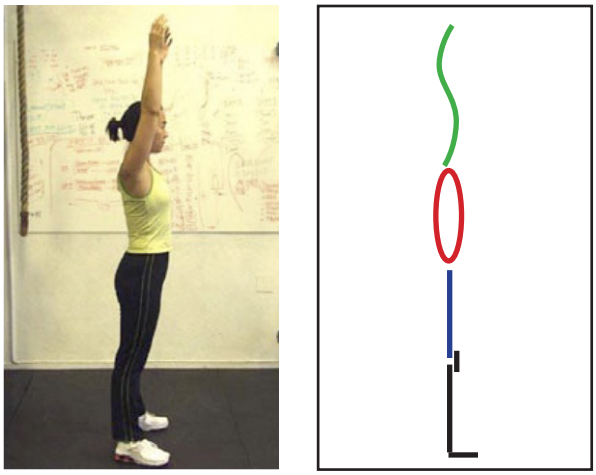
We explain that the femur and tibia constitute "the leg" and that the pelvis and spine constitute "the trunk."

That completes our anatomy lesson – now for the physiology. We demonstrate that "flexion" is reducing the angle of a joint and that "extension" is increasing the angle of a joint.

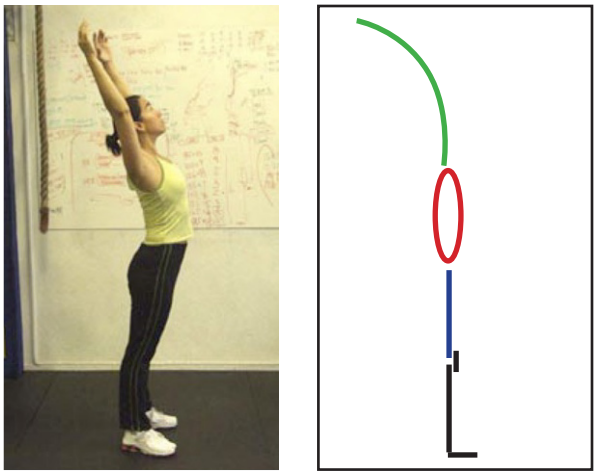


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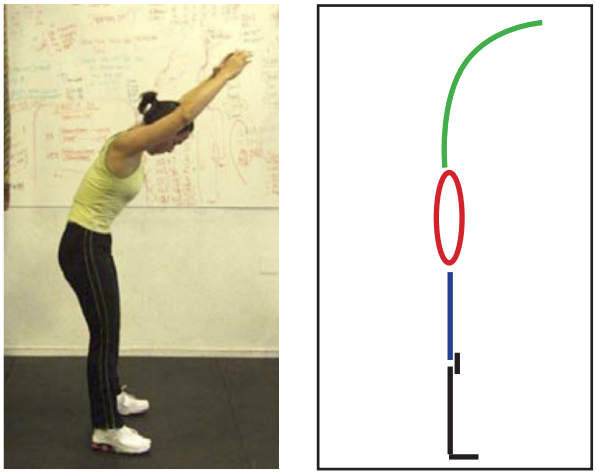
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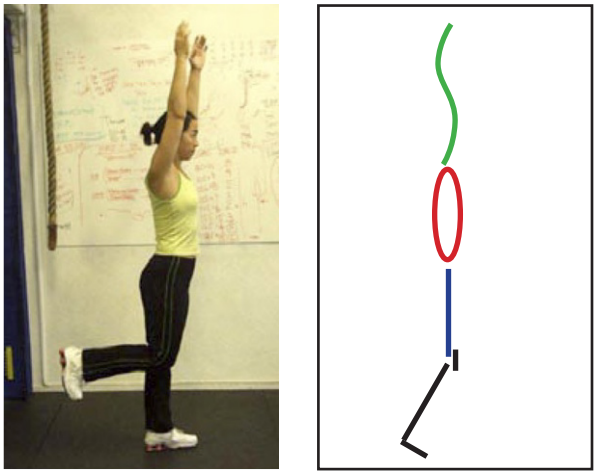
Trunk neutral, hip extension, leg extension



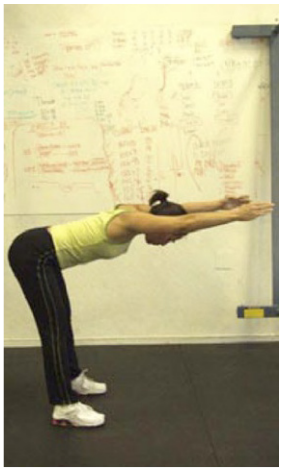
Trunk extension

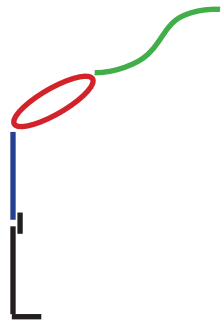


Trunk flexion



Leg flexion





Hip flexion

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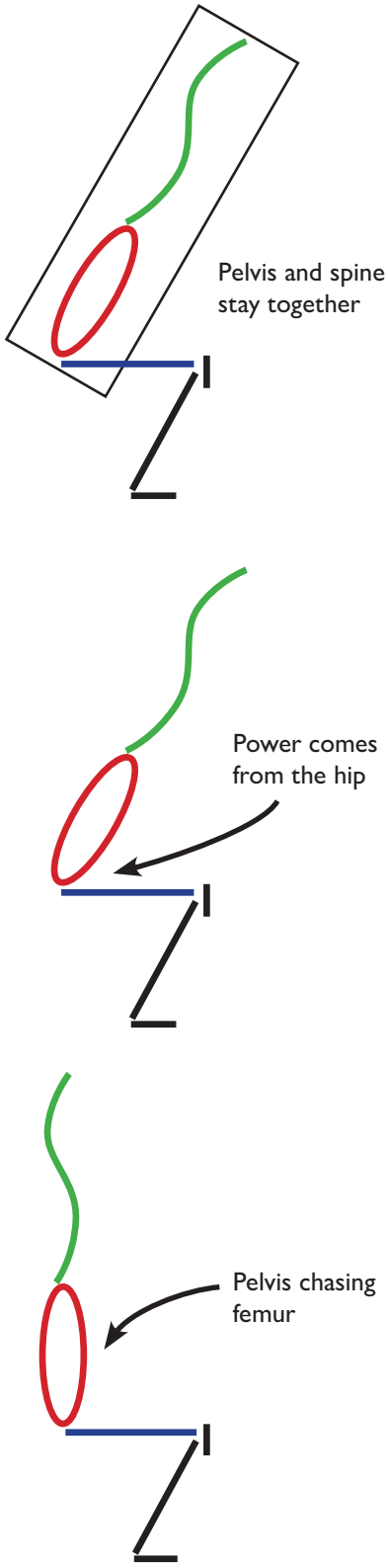
Before covering our distillation of essential biomechanics we test our students to see if everyone can flex and extend their knee (or "leg"), hip, spine and sacroiliac joint (or "trunk") on cue. When it is clear that the difference between flexion and extension is understood at each joint we cue for combinations of behaviors, for instance, "flex one leg and trunk but not your hip".

Once the joints, parts, and movements are clear we offer these three tidbits of biomechanics:

- Functional movement generally weds the spine to the pelvis. The SI joint and spine were designed for small range movement in multiple directions. Endeavor to keep the trunk tight and solid for running, jumping, squatting, throwing, cycling, etc. *3 of 3*
- The dynamics of those movements comes from the hip – primarily extension. Powerful hip extension is certainly necessary and nearly sufficient for elite athletic capacity.
- Do not let the pelvis chase the femur instead of the spine. We've referred to this in the past as "muted hip function" (*CFJ* issue 05, January 2003). We also call it "frozen hip" because when the pelvis chases the femur the hip angle remains open and is consequently powerless to extend.

Four parts, three joints, two motions, and three rules give our athletes and us a simple but powerful lexicon and understanding whose immediate effect is to render our athletes at once more "coachable." We couldn't ask for more.

◇



Greg Glassman is the Founder of CrossFit, Inc. and Crossfit Santa Cruz and is the publisher of the CrossFit Journal. He is a former competitive gymnast and has been a fitness trainer and conditioning coach since the early 1980s.

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Functionality & Wall Ball

Greg Glassman

Much is currently being made of "functional exercise." A Google search returned 950,000 hits for "functional exercise." Even a cursory review of the Internet sites featuring "functional exercise" would seem to support the notion that functional exercise is something done on/with Swiss Balls and rubber bands.

Physical therapists define functional exercise as exercise in multiple planes using multiple joints. Legendary seminarist Paul Chek has his own definition (http://www.paulchekseminars.com/articles.cfm?select=11), but much of what is termed functional exercise seems to be specialized exercises closely linked to rehabilitation and physical therapy.

Where functional exercise is touted for athletic training it seems to be largely about "core" training – lots of Swiss ball and trunk work. While surely of some value, this is not the functionality that CrossFit is pursuing and it is our contention that the benefits of functional movements, as we'll define them, exceed the orthopedic and neurological advantages generally cited by advocates of "functionality."

We see the bulk of human action as being composed of a limited number of irreducible fundamental movements. These fundamental movements we call functional. They include, but are not limited to, squatting, deadlifting, cleaning, lunging/running/walking, jumping, throwing, climbing, and pressing. This atomist or reductionist view has us asking of every exercise "How universal is the motor recruitment pattern?" When this litmus is applied to biking and the bench press, the answer comes back "not very." When we ask the same of running and push-press, the answer comes back "very."



The case for a potent neuroendocrine response associated with many of the exercises that we've dubbed functional seems like a fairly straightforward argument. It is known, for instance, that cleans, deads, and squats prompt an inordinately large neuroendocrine response. When you review the list of factors or exercises associated with significant neuroendocrine response, they largely or completely meet our requirements of being fundamental, elemental or irreducible, and universal to sport and life.

It is our strong and reasoned suspicion that the rest of the entire cast of characters we're calling functional

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will eventually be demonstrated to be responsible for evoking a significant neuroendocrine response. That is, we contend that the pull-up, dip, box jump, running and the like, used in the manner in which we use them, are making large systemic contributions to overall fitness. This view, while novel, if not revolutionary, takes a back seat to a second CrossFit suspicion that is truly revolutionary.

We have come to believe that the specificity of cardiorespiratory training adaptations to exercise modality is a function of an exercise's lack of functionality. This suggests three things. One, a more functional training modality will offer a greater cardiorespiratory benefit than a less functional modality. Two, a regimen of functional movements, developed across all three metabolic pathways, develops cardiorespiratory fitness with greater application to a larger number of activities, which implies the third, that there are varying qualities of cardiovascular fitness.

Currently we see each major functional movement carrying with it a cardiorespiratory capacity that can be developed independently and in conjunction with other functional movements to provide a superior cardiorespiratory response.

Currently we see each major functional movement carrying with it a cardiorespiratory capacity that can be developed independently and in conjunction with other functional movements to provide a superior cardiorespiratory response. We base this view on two commonplace observations in our clinical work.

First, elite runners, cyclists, swimmers, or triathletes crumble when exposed to simple CrossFit-like stressors and their failure is obviously cardiorespiratory. Second, our athletes are increasingly doing very well in competitions based on skills and activities for which they've little or no training.

Run, press, jump, throw, squat, deadlift, lunge, climb, and clean in all three metabolic pathways in varying combinations, at high intensity, and you'll be at most several weeks out from good to great performance (strength and conditioning wise) for nearly any sport or activity.

The claim here is that regimens like our WOD are ultimately a better cardiorespiratory prep than cycling or running for any sport except cycling or running. In fact, the advantage extends to all ten general physical adaptations (cardiorespiratory endurance, stamina, strength, power, speed, flexibility, agility, accuracy, balance, and coordination).

The cardiorespiratory benefit of mixed modal, high-intensity functional movements, a la CrossFit's WOD, is a better, more useful, broader cardiovascular stimulus than any monostructural activity like biking, swimming, or running—even in combinations.

The clear implication in light of our view of athletic training and more conventional practices is that the most efficacious tools available for metabolic conditioning are not generally employed. Until training regimens incorporate traditional resistance training protocols (weightlifting and gymnastics/calisthenics) to replace or supplement traditional "cardio" modalities (bike, run, swim, etc.), athletic conditioning remains inferior.

As an example of high functionality and marked carryover of cardiorespiratory benefit to sport and human performance in general, we offer our "wall-ball" exercise. This exercise is largely a front squat and push-press combination. The functionality of throwing or shooting an object from overhead and standing up is hopefully obvious.

We use a 20-pound Dynamax Medicine Ball and a flat vertical target (originally the wall and hence the name) located about 8-10 feet above the ground.

The movement begins as a front squat and follows through to a push press/shove that sends the ball up and forward to the target from which it rebounds back to the throwers outstretched arms where it is "absorbed" back into the squat. In its entirety the wall-ball is quite simply a throw.

When perfected, each shot looks identical to the one before, and the ball's contact and departure are gentle and smooth. If the athlete endeavors to quiet the drill,

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the benefit to mechanics and breathing technique are immense.

The drill can be made as difficult as needed by increasing the weight of the ball, moving back from the target, or raising the target.

Start and see how long you can continue hitting these milestones:

30 seconds:	12 shots
1 minute:	25 shots
1 ½ minutes:	37 shots
2 minutes:	50 shots
2 ½ minutes:	62 shots
3 minutes:	75 shots
3 ½ minutes:	87 shots
4 minutes:	100 shots
4 ½ minutes:	112 shots
5 minutes:	125 shots
5 ½ minutes:	137 shots
6 minutes:	150 shots

On failure (falling behind), rest and try again. Over time you want to get where you can do 150 shots in 6 minutes or less.

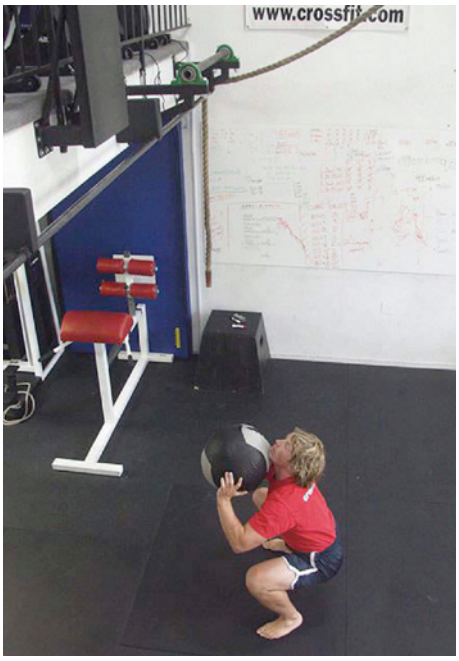
Our best time for 150 shots at a target 10 feet high with a 20-pound ball belongs to Mike Weaver at 4:52.

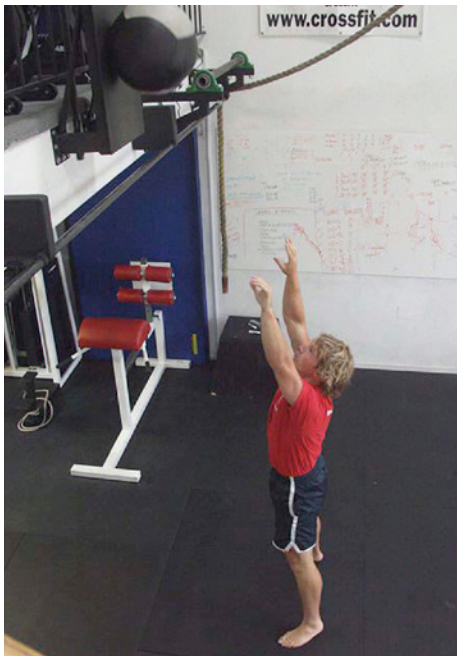
If you have the resources it might be best to master the drill (6 minutes/150 squats) with the 4-pound ball and work your way up to the 20-pound ball. (Dynamax has balls at 4, 6, 8, 10, 12, 14, 16, 18, and 20 pounds.)

Here are technique fundamentals:

- Each rep begins with a rock bottom squat, with feet flat on the floor
- Keep the elbows down and in
- Keep the ball low to the chest
- Don't let the ball obstruct view of target
- Launch with little finger roll and push
- Make ascending and descending movements the same
- Minimize breathing and ball contact noise
- Breath deeply and attempt to synchronize breathing to shot rate

The wall-ball drill comprises two highly functional classical weightlifting movements brought together at light loads and extended duration to create a super-potent metabolic conditioning tool with an enormous potential for increasing athletic performance.





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The Deadlift

Greg Glassman

The deadlift is unrivaled in its simplicity and impact while unique in its capacity for increasing head to toe strength.

Regardless of whether your fitness goals are to "rev up" your metabolism, increase strength or lean body mass, decrease body fat, rehabilitate your back, improve athletic performance, or maintain functional independence as a senior, the deadlift is a marked shortcut to that end.

To the detriment of millions, the deadlift is infrequently used and seldom seen either by most of the exercising public and/or, believe it or not, by athletes.

It might be that the deadlift's name has scared away the masses; its older name, "the healthlift," was a better choice for this perfect movement.

The deadlift keeps company with standing, running, jumping, and throwing for functionality but imparts quick and prominent athletic advantage like no other exercise.

In its most advanced application the deadlift is prerequisite to, and a component of, "the world's fastest lift," the snatch, and "the world's most powerful lift," the clean; but it is also, quite simply, no more than the safe and sound approach by which any object should be lifted from the ground.

The deadlift, being no more than picking a thing off the ground, keeps company with standing, running, jumping, and throwing for functionality but imparts quick and prominent athletic advantage like no other exercise.

Not until the clean, snatch, and squat are well developed will the athlete again find as useful a tool for improving general physical ability.

The deadlift's primal functionality, whole-body nature, and mechanical advantage with large loads suggest its strong neuroendocrine impact, and for most athletes the deadlift delivers such a quick boost in general strength and sense of power that its benefits are easily understood.

If you want to get stronger, improve your deadlift. Driving your deadlift up can nudge your other lifts upward, especially the Olympic lifts.

Fear of the deadlift abounds, but like fear of the squat, it is groundless. No exercise or regimen will protect the back from the potential injuries of sport and life or the certain ravages of time like the deadlift. (See the inset "Doc & Coach" on page 3)

We recommend deadlifting at near max loads once per week or so and maybe one other time at loads that would be insignificant at low reps. Be patient and learn to celebrate small infrequent bests.

Major benchmarks would certainly include bodyweight, twice bodyweight, and three times bodyweight deadlifts representing a "beginning," "good," and "great" deadlifts respectively.

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For us, the guiding principles of proper technique rest on three pillars: orthopedic safety, functionality, and mechanical advantage. Concerns for orthopedic stresses and limited functionality are behind our rejection of wider than hip to shoulder width stances. While acknowledging the remarkable achievements of many powerlifters with the super wide deadlift stance we feel that its limited functionality (we can't safely, walk, clean, or snatch from "out there") and the increased resultant forces on the hip from wider stances warrant only infrequent and moderate to light exposures to wider stances.

Experiment and work regularly with alternate, parallel, and hook grips. Explore carefully and cautiously variances in stance, grip width, and even plate diameter – each variant uniquely stresses the margins of an all-important functional movement. This is an effective path to increased hip capacity.

Consider each of the following cues to a sound deadlift. Many motivate identical behaviors, yet each of us responds differently to different cues.

- Natural stance with feet under hips
- Symmetrical grip whether parallel, hook, or alternate
- Hands placed where arms won't interfere with legs while pulling from the ground
- Bar above juncture of little toe and foot
- Shoulders slightly forward of bar
- Inside of elbows facing one another
- Chest up and inflated
- Abs tight
- Arms locked and not pulling
- Shoulders pinned back and down
- Lats and triceps contracted and pressing against one another
- Keep your weight on your heels
- Bar stays close to legs and essentially travels straight up and down
- Torso's angle of inclination remains constant while bar is below the knee
- Head straight ahead
- Shoulders and hips rise at same rate when bar is below the knee
- Arms remain perpendicular to ground until lockout







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Mixed Grip



Parallel Grip



Doc and Coach

(Transcript of actual conversation)

Doc: Many of my patients shouldn't be doing the deadlift.

Coach: Which ones are those, Doc?

Doc: Many are elderly, marginally ambulatory, and frail/feeble and osteoporotic.

Coach: Doc, would you let such a patient, let's say an old woman, walk to the store to get cat food?

Doc: Sure, If the walk weren't too far, I'd endorse it.

Coach: All right, suppose after walking home she came up to the front door and realized that her keys were in her pocket. Is she medically cleared to set the bag down, get her keys out of her pocket, unlock the door, pick the bag back up, and go in?

Doc: Of course, that's essential activity

Coach: As I see it the only difference between us is that I want to show her how to do this "essential activity" safely and soundly and you don't.

Doc: I see where you're going. Good point.

Coach: Doc, we haven't scratched the surface.

Greg Glassman is the Founder of CrossFit, Inc. and Crossfit Santa Cruz and is the publisher of the CrossFit Journal. He is a former competitive gymnast and has been a fitness trainer and conditioning coach since the early 1980s.

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Benchmark Workouts

Greg Glassman

Workout Design

The design and crafting of workouts is CrossFit's primary concern. Factors like impact, motivation, perception, recovery, and timing combine with decades of experience seasoned by luck and intuition to create our daily fare, the "Workout of the Day".

Though the process by which we engineer our workouts is largely rational, the finished product is often seemingly infused with qualities more commonly associated with art than exercise like symmetry, theme, or character. It is in this sense that we have in the past referred to "the choreography of exertion" in describing the best of workout design.

When everything goes right the finished product comes alive in a blend of elegance, simplicity, form, and impact. We are featuring six such workouts this month.

Benchmark Workouts

Our intent is two-fold in examining these workouts. First, these workouts, being exemplars of the CrossFit ideal, give us opportunity to lay bare some of the possibly unseen considerations and details we weigh in our programming design. Second, these six workouts introduce a series of workouts that will serve to measure and benchmark your performance and improvements through repeated, irregular, appearances in the "Workout of the Day". The workouts intended as benchmarks will be readily distinguished from other Workouts of the Day by their being given, in each instance, a female name. (See inset.)

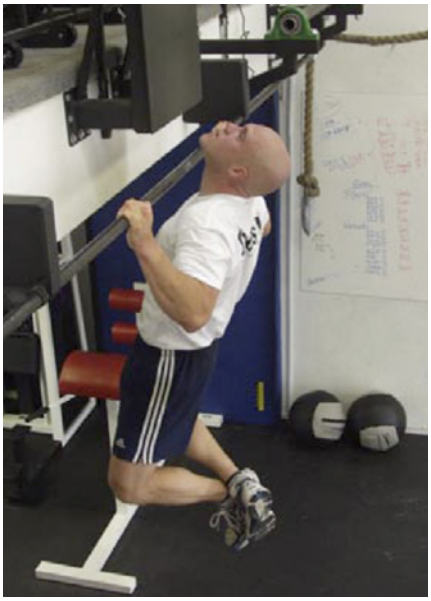
Our first six benchmark workouts are split evenly between two distinct thematic groups. The first three workouts are comprised entirely of push-ups, pull-ups, sit-ups, and squats while the second group is distinguished by couplets of fundamental weightlifting and calisthenic or gymnastic elements. Each is scored by time.

"The Girls"					
Angie	**Barbara**	**Chelsea**	**Diane**	**Elizabeth**	**Fran**
100 pull-ups 100 push-ups 100 sit-ups 100 squats	20 pull-ups 30 push-ups 40 sit-ups 50 squats	5 pull-ups 10 push-ups 15 squats	Deadlift 225 lbs Handstand push-ups	Clean 135 lbs Ring Dips	Thruster 95 lbs Pull-ups
for time	5 rounds for time - 3 minutes rest betwen rounds	each minute on the minute for 30 minutes	21-15-9 reps 3 rounds for time	21-15-9 reps 3 rounds for time	21-15-9 reps 3 rounds for time

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The First Group: Angie, Barbara, and Chelsea

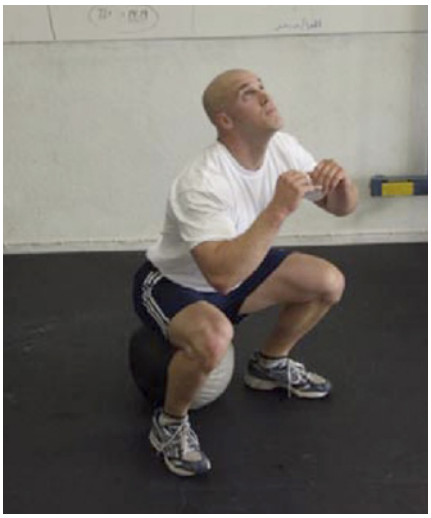


The workouts of the first group, Angie, Barbara, and Chelsea, are super simple (being comprised entirely of common calisthenics), very tough, dramatically reinforce the pull-up, and yet each presents a different metabolic challenge.

Angie and Barbara, contain pull-ups, push-ups, sit-ups, and squats. Chelsea contains pull-ups, push-ups, and squats but no sit-ups.

For each of these three workouts the pull-ups clearly present the greatest challenge. And, in the workouts' aftermath, most athletes expressed surprise at their significant lat, rear delt, and biceps soreness. At CrossFit the pull-up is sacrosanct and everyone needs more. Angie, Barbara, and Chelsea support these values and aims.

Varied Metabolic Demands



The real story with these three workouts though is perhaps hidden by their obvious similarities. Each offers a distinctly unique metabolic stimulus. (Though, each is completely exhausting.)

Angie represents about 20 minutes of continuous work. Even with the necessary breaks in the pull-ups and push-ups the exertion is largely steady from start to end. For most, the tempo picks up with each new exercise. This workout has a strong aerobic flavor that increases throughout the workout.

Barbara demands roughly 3 minutes of all out work punctuated by 3 minutes of rest repeated for a total of 5 intervals. At about 3 minutes of work and a 1:1 work to rest ratio this is an aerobic interval. Though three-minute efforts reach into aerobic turf they are short enough to still have a strong anaerobic character.

Chelsea timed out at 40 seconds of work for most followed by 20 seconds of rest repeated for up to 30 minutes. At 40 seconds "on" and 20 "off" this is an anaerobic interval with an abbreviated rest, which imparts a strong aerobic flavor. This is a hybrid interval like our Tabata interval.



Angie, Barbara, and Chelsea differ in metabolic demands and each shifts these demands throughout the workout. With Angie the work becomes steadier as the workout progresses. For Barbara each round takes a little longer and consequently increases aerobic demands while the rest remains constant. And, with Chelsea the rest shrinks as each round takes longer and longer to complete but cannot exceed 1 minute, so the aerobic quality asserts itself through diminishing rests.

This analysis greatly oversimplifies the bioenergetics of these workouts and the nature of the metabolic

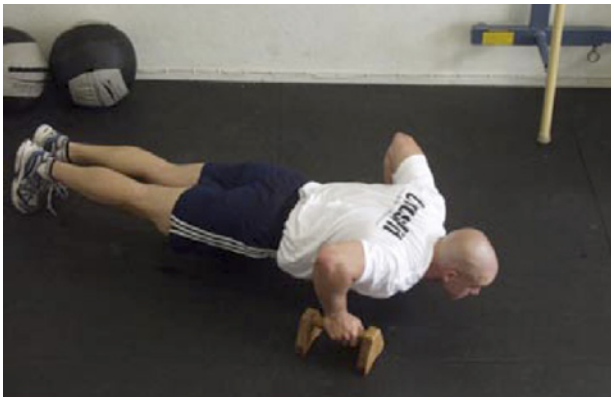
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stimulus will vary depending on each athlete's fitness and the strategy he employs to tackle the workout, but the fact remains that these workouts produce distinct and varied metabolic stimuli across several metabolic pathways; this is enormously important.

For simplicity and elegance these workouts are gems. Each requires only a pull-up bar and about fifteen square feet of space. They are whole-body with a nasty upper body component, extremely tough, metabolically challenging and collectively complete.



"Diane"





Great Travel Companions

For travelers these three workouts are absolutely perfect. Pack either the Door Gym or the Ultimate Chinning Bar, both are excellent portable doorway pull-up bars, and your hotel room becomes the perfect gym.

The Second Group: Diane, Elizabeth, and Fran

The workouts of the second group, Diane, Elizabeth, and Fran are timed three round couplets of fundamental weightlifting and calisthenic elements.

Diane consists of deadlifts and handstand push-ups. Elizabeth is constructed of hang cleans and ring dips, while Fran is built from our "thruster" and pull-ups.

These three workouts capture much of the spirit of CrossFit. Each workout not only combines weightlifting and a calisthenic element but is a powerful whole body workout containing functional hip, pushing, and pulling movements.

Exploiting Weakness

But the crushing charm of these ladies lies in their magnificent capacity to root out weaknesses and humiliate you with them.

For many athletes the high rep deadlifts at 225 pounds, cleans at 135 pounds, and thrusters at 95 pounds are easy. For these same athletes handstand push-ups, ring dips, and pull-ups are very likely deficiencies. Typically, these athletes are larger.

Similarly, those athletes for whom handstand push-ups, pull-ups, and ring dips are a breeze are nearly certain to bristle at these loads and high reps in the weightlifting. Typically, these athletes are smaller.

Do these workouts favor middleweights? It doesn't seem so. The middleweights seem to suffer at both ends.

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Pace, Strategy, and Capacity

Nearly everyone will have to chop up either the weightlifting exercises or calisthenic exercises into manageable subsets. If you can blast through without stopping, these workouts take about 4 minutes apiece. If you're less than a weightlifting gymnast with the lungs of a porpoise your times will reflect as much.

With that in mind there's no shame in taking 60 minutes to polish off one of these workouts. If the loads are in excess of your capacity at even a few reps, then you'll have no choice but to amend the workout with lighter loads. But, if you can manage three's then you can cruise through the workouts with 7X3's the first round, then 5X3's on the second, and on the third round 3X3's.

"Fran"





Handstand Push-ups

The handstand push-up will present a problem for a fair number of people. If this is a weak point for you, practice by kicking up into the handstand and lowering, slowly, down to where your head touches the ground (use a pillow or cushion) and immediately kick back up into the handstand. Eventually, by learning to go slow enough and with enough reps you'll be able to push one up.

We've seen several clever assistance techniques which all work in developing the handstand push-up. We recently heard of someone using a lat pull-down bar and stack to assist handstand push-ups by hanging from the bar by the knees. That's a great one!

The handstand push-up is a gateway movement that opens the doors to a world of drills and skills that are marvels of balance, agility, coordination, accuracy, and remarkable upper body strength. (See "Paralette Construction") Give yourself every opportunity to learn this exercise. Diane will help.

"Elizabeth"





Ring Dips

Elizabeth requires ring dips. I'd like to think by now that you all have rings. Anywhere you can do pull-ups you can sling a pair of rings. The ring dip is to the bar dip as squats are to leg press (ouch!). If you don't have rings please contact Tyler Haas of Power Ring Training Systems today and make things

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right. If you picked up rings just to complete Elizabeth it would become one of the more beneficial workouts you ever attempted solely for introducing you to the rings.

Rules and Preparation

For each of the six sisters, Angie, Barbara, Chelsea, Diane, Elizabeth, and Fran, the workout requires that you complete the requisite number of reps for each exercise before moving to the next exercise. You can parse up any set as needed but do not roll on to the next exercise until the specified numbers of reps are completed.

If you are doing the Workout of the Day (WOD), you are training for these workouts. Doing the WOD and applying yourself 100% to these workouts when they come around is enough. If you do them you will get better, if you get better at these you are becoming fitter.

Angie, Barbara, Chelsea, Diane, Fran and Elizabeth

According to the National Weather Service the use of "short, distinctive given names in written as well as spoken communications is quicker and less subject to error" than "more cumbersome" identification methods, so since 1953 storms have been assigned female given names.

This convenience and logic inspired our granting a special group of workouts women's names, but anything that leaves you flat on your back and incapacitated only to lure you back for more at a later date certainly deserves naming.

In this Journal we introduce you to Angie, Barbara, Chelsea, Diane, Fran and Elizabeth. Six amazing ladies whose charms we discuss in this issue will be making irregular but repeated appearances as the "Workout of the Day" (WOD).

Only by repeating workouts can we confidently measure our progress. We've chosen to repeat those workouts most challenging, formative, and expressive of the CrossFit fitness ideal, and these ladies fit the bill.

Within three days of a workout bearing a woman's name being posted on www.CrossFit.com, complete the workout and post your results to comments. We are going to develop a database around your performance on these workouts and wanted to give Journal subscribers a "heads up".

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Really Cool Homemade Parallettes

Greg Glassman

Parallettes training is fun and highly developmental. Without gymnastics training we opt out of the most potent neurological training (coordination, accuracy, agility, and balance) available to an athlete, and parallettes training is essential to your gymnastics development.

We hope our fervor for parallettes training specifically and gymnastics training generally will inspire all of you to get hold of a pair of parallettes and begin your gymnastics training in earnest.

To that end we offer this month step-by-step instructions for building a great set of parallettes out of PVC pipe available wherever building supplies or landscaping materials are sold.

Four things inspire this project: 1. They're dirt-cheap ($10-20), 2. ANYONE could make them, 3. They come out not just good but fantastic – you couldn't ask for better parallettes; we're shocked at how nice they are, and 4. It was a lot of fun building them.

Materials and Tools

Materials:

- 10 feet of 1 1/2 PVCs
- 4 Elbows
- 4 T's
- 8 end capss
- PV C glue aand primer
- Electrical tape
- Rags
- Newspaper

Tools:

- Fine tooth handsaw
- Tape Measure
- Wire brush or sand paper
- Paper

CAUTION
Please do all sanding and cutting in a well-ventilated area and use eye, nose and mouth protection such as goggles and a respirator. PVC dust has been linked to respiratory issues, so exercise caution to avoid inhaling any particles.



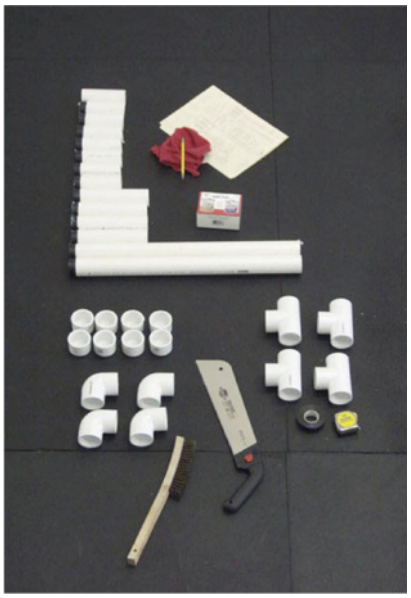
(right) All the tools and materials. The 10-foot pipe is marked with electrical tape, ready for cutting.

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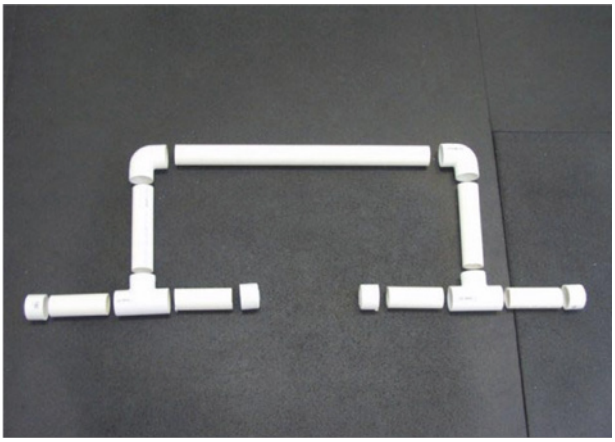
Procedures:

- Clean and dry a ten-foot section of 1 ! PVC pipe.
- Measure and mark with a pencil at 24, 48, 56, 64, 72, 80, 85, 90, 95, 100, 105, 110, and 115 inches from one end of the pipe.
- Run electrical tape around the pipe so that the leading edge of the tape exactly aligns with the measured marks.
- Cut the pipe at the leading edge of each band of tape. This yields two 24 , four 8 , and eight 5 sections. Don't cut into the tape, and keep your cuts reasonably perpendicular to the pipe's length.
- Read the directions on PVC glue and primer carefully.



The cut pieces, materials, and supplies, ready to glue.

- Primer and glue (P&G) one elbow on each (4) 8 section. These are the "legs."
- P&G legs to ends of both 24 sections. Make sure that legs are parallel on each piece.
- Set finished "tops" (two assemblies of 24 sections with "legs") aside.
- P&G 5 sections into each of the four T's.
- P&G end caps onto each of the four T assemblies. These are the "feet."
- P&G "feet" to "tops" at "legs."
- Sand or wire brush the top tubes, roughing them up so that they'll hold chalk. (Sanding works best.)



Pre-assembly check.



Above: Fine tooth hack saw makes easy work of cutting the pipe.

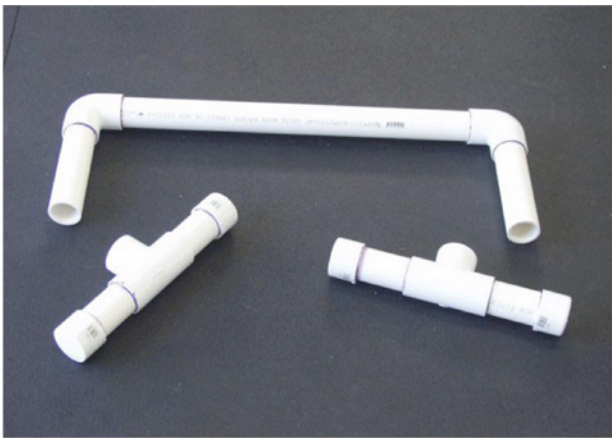


Read the directions for primer and glue carefully. You definitely want a good bond.

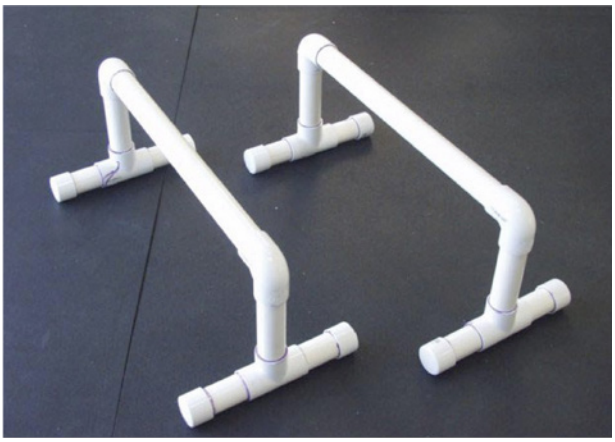
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"Feet" ready for attaching to "tops".



Finished product.

It took us about an hour to put together one of the coolest pieces of exercise equipment ever devised.

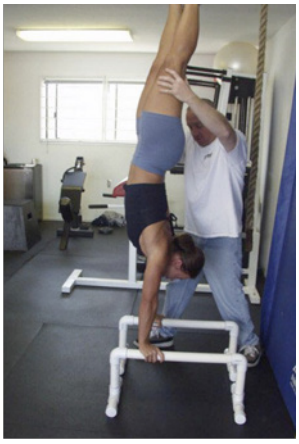
We plan to have a parallettes-making party at CrossFit Santa Cruz and crank out half a dozen for the gym and send each participant home with a set.

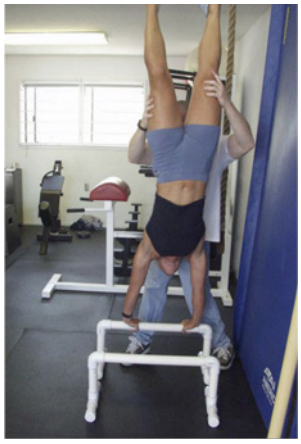
Gymnastics champions Steve McCain and Jay Thornton of American Gymnast have produced the definitive Internet parallettes training guide titled "Success in the Gym begins at Home: A Parallette Training Guide." This program has beginning, intermediate, and advanced lessons. There's enough here to keep you busy for years and years.

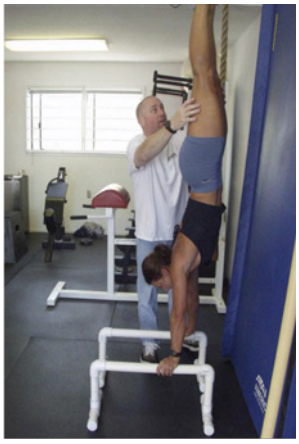


Work through the exercises in the Parallette Training Guide and check and date each exercise as you perform it. If you have doubt about your technique, video or photograph your efforts and compare your mechanics to the text and photos in the training guide.









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The following list of exercises is culled from the guide. It would be a tremendous accomplishment to complete this list in a year.

- Tuck Sit
- L-Sit
- Tuck Planche
- Straddle Press to Handstand Against Wall
- Handstand Against Wall
- Handstand Pushups Against Wall
- Push-ups *4 of 4*
- Handstand
- Handstand Forward ! Pirouettes
- V Sit
- Tuck Planche to Straddle Planche
- L-Sit Press to Tuck or Straddle Planche
- Straddle Press to Handstand (no wall)
- Pike Press to Handstand Against Wall
- Planche Push-ups
- Handstand Forward 1/1 Pirouettes
- Handstand Reverse ! Pirouette
- Pike Press (no wall)
- Broomstick Presses
- Straight-body Planche (feet together & on a box)
- Straddle Planche Press to Handstand
- Handstand Reverse 1/1 Pirouettes

Additionally, there are five presses to handstand that you want to develop and in this order:

- Bent arm, bent hip, bent leg press
- Straight arm, bent hip, bent leg press
- Straight arm, bent hip, straight leg ("stiff-stiff") press
- Bent arm, straight hip, straight leg ("hollowback") press
- Straight arm, straight hip, straight leg ("planche") press

These are all performed without a straddle. Some of these presses are partially contained in the training guide. Completing this list in two years would be outstanding!

Many of our athletes, if not most, are fully involved and committed to a sport. For these athletes the WOD (Workout of the Day) and their sport training and practice consume every bit of energy they may have available for physical activity. These athletes' plates are full.

Other CrossFitters are not committed to any particular sport and have the exciting option of more casual exploration of multiple sports and additional practice of drills and skills designed and selected to improve neurological fitness (coordination, agility, accuracy, and balance). Many of these athletes are soldiers, cops, and firefighters and for them fitness is their sport. These individuals include our best athletes.

With precisely these athletes in mind we will be increasingly posting alongside the WOD (Workout of the Day) skill development tips, drills, and skills for the parallettes and rings. Don't be left behind; make some parallettes (and buy some rings!).



Greg Glassman is the Founder of CrossFit, Inc. and Crossfit Santa Cruz and is the publisher of the CrossFit Journal. He is a former competitive gymnast and has been a fitness trainer and conditioning coach since the early 1980s.

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Team Workouts

Greg Glassman



CrossFit may well be one of only a few grassroots movements in fitness history. On launching our website nearly 32 months ago we hoped that by posting daily workouts someone, somewhere, would find them, try them, discover their potency, come back, and ultimately, draw others to our concept. We'd hoped to start a revolution in fitness that might challenge the commercial model by bringing more efficacious fitness programming to the masses. The original plan required that we structure workouts so that any reasonably ingenious or ambitious individual might participate. We saw our workouts as incendiary agents cast to the wind. We knew that if CrossFit were to

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catch it would happen through the work of a number of individuals spread around the world. All this being so, our focus and design has largely been on the individual and his workout, not on the team or group and their needs.

We've been successful in spreading the CrossFit concept and we now work closely with many institutional clients; military and law enforcement, sports teams, and clubs where most of our Workouts of the Day (WOD's) are not so readily applied to a team. Looking through the WOD's, you'll notice that many, if not most of them, do not lend themselves logistically to teamwork. Typically, the problem would be that to run, say, 10 individuals through a workout simultaneously might require ten rowers, ten ropes, and ten kettlebells on one day and ten sets of rings, ten squat racks, and ten glute-ham developers the next. This would be possible for a big budget institutional client that had bought into the CrossFit concept and wholly committed its resources to our model, but that is not what we are usually dealing with. (Alternately, sending one or two team members at a time through our WOD's could take several hours in some cases.) Generally, our team clients must work with their existing equipment, have limited resources for additional equipment, and cannot broach the subject of a wholesale conversion to CrossFit and repurposing their gyms with their superiors without some clearly demonstrable measure of success with our program and their current resources.

With exactly these institutional clients in mind we've developed thirty team workouts that we hope will facilitate team PT (physical training) leaders to explore and adapt the CrossFit method to their environment. We're calling this "6 weeks of CrossFit for 10" because we've packaged these thirty team workouts as a six week PT course for ten athletes.

Here are some of the criteria that guided our program design efforts:

- Accommodate a wide variance in capacities (including both male and female)
- Ultimately taxing of elite and novice athletes
- Motivate and amplify camaraderie
- Work with odd or even number of participants
- Preserve the physiological character of CrossFit's programming
- Place modest/reasonable demands for new equipment

"6 Weeks of CrossFit for 10"

Daily Workouts

1. Run 5K I
2. "Chelsea"
3. Broomstick Mile
4. Hoover Ball
5. Conga Line: Bench Press & Pull-ups
6. Rest
7. Rest
8. Run 5K II
9. Run, Rope Climb, Ring Dip Team Races
10. Deadlift I
11. Medicine Ball Throw
12. Two Man Squat, Pull-ups, Mile Run
13. Rest
14. Rest
15. Run 5K III
16. Run, KBS, Pull-ups Drag Races
17. The Clean
18. Tug of War
19. Max Pull-ups & Dips/Tabata Squats
20. Rest
21. Rest
22. Run 5K IV
23. Pressing and Jerking/Deadlift II
24. Squat, Run, Squat, Run, Squat
25. Pull-up, Push-up, Sit-up Circuit
26. Pushed Truck Racing
27. Rest
28. Rest
29. Run 5K V
30. The Clean & Jerk
31. Run, Thruster, Pull-up Circuit Races
32. Fallen Comrade Drills
33. Deadlift III
34. Rest
35. Rest
36. Run 5K VI
37. The Snatch
38. Run, Thruster, Pull-up Drag Races
39. Tire Flip Races
40. Conga Line: Rope Climb & Ring Dip

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- Inspire creative programming in PT Directors and Leaders
- Rely on largely low skill movements while simultaneously developing more complicated movements
- Design workouts that could be done outside
- Develop a program that would ready athletes and their instructors for more sophisticated programming and development
- Create a program that would motivate continued exploration of fitness after graduation
- Provide an exposure that would guarantee that athletes be able to follow the WOD by course end
- Design a 6 week course that ambitious, experienced, PT instructors could be trained to teach confidently during a three day course and a couple of weeks of preparation

When the team workouts are well constructed the physiological effect is equal to the individual workouts, but the magic created by the dynamics of teamwork and competition has no equivalent in the solo effort. The chief obstacles to team workouts are logistical – problems of structure, planning, timing, and equipment – and they can readily be overcome.

Our group workouts have been so fun and successful that most of our individual clients have asked to be placed in one of our groups. The team workout is increasingly dominating our local clinical practice.

Like the program listed here, we typically work with teams of ten. Many of our workouts (and many of those presented here) are built around a competition of two five-man teams. For these workouts we split the crew between our two best athletes who serve as team captains. Our team leaders have been groomed and selected for their instinctive nurturing manner and team spirit. The enormous benefit of elite athletes genuinely applauding and celebrating the achievements of lesser athletes has to be witnessed to be fully appreciated.

A chalkboard or white board is an indispensable tool to motivating these team workouts. Results from all but one of the 30 workouts featured in this issue can be perfectly quantified. It has been our observation that "throwing numbers on the board" creates a climate where everyone gives their all.

We've built this program on a five days on, two days off regimen. For much of the world the workweek runs Monday through Friday. We're not going to change that.

Equipment List

- 2 Olympic Bars
- 5 sets of 40 lb. Dumbells
- Rubber composition plates
  - 4-10 lb. pair
  - 4-25 lb. pair
  - 4-45 lb. pair
- Pull-up/Dip Station
- 2 Large TruckTires
- 10 Dowels
- Vulcan Racks
- Pillars of Power
- Bench
- 25 ft Rope Climb
- 2-20 lb. Medicine Balls
- 1-8 lb. Medicine Ball
- Rings
- 10 inch box
- 1 Truck
- 2-1 1/2 pood Kettlebells



The specifics of load and reps, sets and rest, are but a suggestion based on our experiences. We've designed these workouts with the physical capacities of several large metropolitan SWAT Teams with which we've worked in mind. Some of the workouts may have to be tempered a bit to accommodate regional police academies or departments.

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Week 1

Run 5K 1: (a 5K is 3.1 miles.) We're looking for a baseline on a distance that is overvalued by most but nonetheless important. Mass start the team and capture their times to completion. Warm-up with fifteen minutes of stretching before starting.

This can be run on a track, but urban and cross-country options are better. We favor an "urban 5K" brimming with natural and unnatural obstacles.

Compute the differences in times between each placing (difference between 1st and 2nd, difference between 2nd and 3rd, etc). This data will be used for handicapped start next 5K.

Each week start with a 5K run and reviewing performance trends is an essential feature of this workout. Each 5K workout will include "stick work" (see Day 3), trunk work, other calisthenic movement, and stretching.

Chelsea: Five pull-ups, 10 push-ups, and 15 squats repeated every minute on the minute for 30 minutes. Set up near the pull-up bars and start the watch.

This is a benchmark CrossFit WOD (Workout of the Day). Chelsea is easy on the legs and hell on the upper body. The metabolic ("cardiovascular") demands are stunning.

This is a high volume pull-up workout and that's abundantly clear the following day. Chelsea is a "pull-up potentiator" and CrossFit is "pull-upcentric".

Use a tri-watch and set it for one minute in countdown mode. Give a "15 seconds" call before each round ends.

This workout may introduce the squat for many. Insist on perfect technique. The more you nitpick the greater your positive long term impact will be on these athletes lives. See the article on "The Squat" in the CrossFit Journal

Most athletes will find staying on course for thirty minutes impossible. Instruct the athletes to keep going once they get behind and to note the number of rounds completed on time and the number of rounds completed after falling behind. Chelsea is scored as "the number of rounds completed within the prescribed minute"/" the additional rounds completed up to 30 minutes". E.G., a score of "12/9" indicates that one round a minute was completed for twelve minutes and during the thirteenth minute the athlete fell behind but then completed 9 more rounds in those remaining 18 minutes. The first number determines ranking and the second number only further separates ranking of those with identical first numbers.

Establish a zero tolerance policy on bad technique. We allow kipping and kicking on pull-ups (it's highly functional) but require Adam's Apple to bar and FULL extension at bottom. Squats go to below parallel and rise to full hip and leg extension. Push-ups are rigid body.

We don't want to belabor the importance or standards with each of the following workouts. Suffice it to say that cheating range of motion is completely unacceptable.

See the article in CrossFit Journal September 2003, "Benchmark Workouts" to learn more about "Chelsea" and other important workouts.

Broomstick Mile: 25 Back squats, 25 Front Squats, 25 Overhead Squats, Run 400 meters, 25 Shoulder Press, 25 Push Press, 25 Push-Jerk, Run 400 meters, 50 Squat Cleans, Run 400 meters, 50 Snatches, Run 400 meters.

All of this work, except for the runs, is done with a one inch by 6-foot dowel. The moves are done in synchrony and the run is kept to the pace of the slowest runner. Everyone stays together for every rep.

This workout introduces critical, functional movements of unrivaled impact. Introducing these essential movements under near zero loads places enormous demands on accuracy, coordination, balance, and flexibility that are all to often brand new to the athlete. The skills developed with these stick exercises pave the way for safe and super efficacious participation in the most important training stimuli known, weightlifting. Not the junk of bodybuilding but the real stuff.

PT shouldn't be the only aspect of training that is skilless. We require of teams enormous skill, but all too often think that PT is somehow more effective if built on low skill elements.

Take time to introduce each of the movements and don't start the race until nearly everyone can perform a

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reasonable approximation of the movements. Introducing and practicing the movements will likely take 20-30 minutes.

On completion, rank the athletes by quality of movement and identify two weightlifting team leaders one lightweight and one heavyweight by this ranking.



Hoover Ball: Hoover Ball is essentially volleyball with a medicine ball. We've played under official and unofficial rules. It was most fun and the hardest work without rules. Set up a net or rope at 8 feet.

Our favorite version allows any method of throwing, unlimited passing, and no strictures on combinations of running and passing or throwing. The ball has to be thrown so as to clear the 8 foot net or rope and must either be caught or allowed to go out of bounds by the receiving side. A team earns a point by someone touching and not catching the ball on the opposite side or by letting a thrown ball land out of bound on its side.

The most demanding games seem to come from two man teams and an eight-pound Dynamax Medicine-ball. Create five teams of approximately equal combined body weight. Rotate teams to replace losing teams in 13-point games. Whichever playing team grabs the ball first can serve after a point has been scored.

Play for 60 minutes. Rank teams by numbers of wins.

See the article in CrossFit Journal February 2003, "Hoover Ball" to learn more about the game.

Conga Line: Bench Press & Pull-ups: Set-up a bench, rack and bar near the pull-up bar. Line up the team and send the first athlete in to do as many reps of bench as possible without racking or resting on the chest and then immediately, but without running or rushing, he goes to the pull-up bar and performs a max set of pull-ups. As the first athlete completes his last bench press rep the second athlete readies to take his place. On finishing both his bench and pull-up reps the athlete goes back to the end of the line. The bench is never open for more than a few seconds and no one begins his pull-ups until the athlete ahead of him drops from the bar.

Depending on the experiences and physical size of the group members you'll try initially 95, 135, or 185 pounds for the bench press. You've selected the right weight when the team's totals for pull-ups and bench press are equal. Five rounds are plenty of work.

Week 2

Run 5K II: This time start the athletes in reverse order of their finishing last week. Separate their starts by the differences you recorded last week. If the athletes run the same as last week they will come in dead even. We've handicapped the runners and the benefits are interesting. This time the ranking of the runners indicates their relative improvement from the week before.

Capture finishing times and recalculate each athlete's raw time by subtracting his start times.

Share the data with the athletes. Do your homework ahead of time. Simple presentations made with Excel, showing improvements in times and changes in handicap, are strong motivational tools.

Before and after the run presents a great place to practice lifting movements or "stick work". front squat, back squat, overhead squat, shoulder press, push press, push jerk, deadlift, squat clean, and the snatch need to be regularly included in warm-ups.

The 5K workouts are the obvious place to preview the coming week's work. Introduce the ladder warm-up of pull-up, push-up, squat, and sit-up: one of each, two of each, three of each, until failure, and then count back down to one.

Run, Rope Climb, Ring Dip Team Races: Set up rings near a 25" rope. Two teams, of five each, head out together on 800-meter run. One team will return

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to the rope climb and the other team will return to the rings. The team at the rope needs 10 ascents and the team at the rings needs to complete 100 ring dips. The team that completes their assigned task first wins the round.

As each competitor comes in from the run he can make only one contribution to his teams totals, i.e., he can make only one ascent on the rope or only one set of dips on the rings. Not until all five team members have returned from the run can climbers or dippers make additional contributions to their teams' totals.

The athletes rotate at the rope and rings in the exact order in which they returned from the run until 10 ascents or 100 dips are reached ending the round. Every athlete that fails to ascent on his turn at the rope adds two to the number of ascents required of the team for completion of that round. Each athlete that cannot contribute any dips at his turn adds ten to the number of dips required of the team for completion of that round.

The first team to complete its assignment wins the round and can start out for the run, signaling the second round, or wait for the opposing team to complete its assignment.

The competition continues for 30 minutes. At thirty minutes the closest team to their dip or rope climb requirements (100 vs. 10) wins the uncompleted round. The team winning the most rounds wins the day.

Deadlift I: Form two teams of five athletes each. Warm-up and practice the deadlift with broomsticks until everyone's is pretty. Each team will roll each athlete through a 5 rep round at 65 pounds. After checking to see that everyone has excellent form at 65 pounds, run both teams through 3 reps at 95 pounds.

Assuming that everyone is still looking good, set up both teams' bars with 135 pounds. Athletes will come to the bar one at a time and perform ten reps rotating through until each athlete has completed 5 sets of 10 reps each. Nothing other than perfect form can be tolerated. Painstaking attention to technique will be amply rewarded for years. If it takes 30 minutes to get everyone's form right, that's O.K.

If someone has intractably bad technique they need to be segregated and sent back to the broomstick, then 65 pounds, and then 95 pounds with absolutely great technique before being "rehabilitated" and allowed to return to their team.

See the article in the CrossFit Journal August 2003, "The Deadlift", to lean more on standards, technique, and the importance of the deadlift.

Medicine-ball Throw: This competition is performed with a twentypound Dynamax Medicine-ball. Two teams of five each line up on a field of at least 100 yards length. Fifteen races are held alternating the races between "least throws to goal" and "first to goal". In the "least throws" competition, a team member throws the ball downfield, and a second picks it up at the spot of landing and throws it again downfield where a third team member throws to a fourth. Each player moves downfield to the forward most position after throwing the ball. No changing of the order or skipping of turn is allowed.

Winning the "least throws" race is done by throwing the ball across the goal line in the least number of throws. In the case of a tie, the first team to put the ball across the line wins.

The "first to goal" race is performed in identical fashion except that the win comes from getting the ball across the line before the other team. In the case of a tie, the fewest throws wins.

There is no attempt made to catch the medicine ball and it is always spotted from the point of landing not the point to which it rolls. No more than thirty seconds can be taken between each of the fifteen races. When one team gets its ball across the goal the losing team must collect its ball and run to the finish line. The finish line becomes the next race's starting line – within 30 seconds the race is on again.

Two Man: Squat, Pull-up, and Run: Five two man teams compete against one another. On starting, each competitor completes 160 squats, then each team must complete a total of 100 pull-ups with each member contributing fifty "two-man pull-ups". The two-man pullup has one man assisting with a squat like push-press, pushing his teammate by the ribs or butt. The contact from the assisting team member must be at the hands and fingers only. Teammates will alternate between pulling and assisting until the duo has 100 reps from 50 each. After a team completes the 100 pull-ups both members complete a mile run. The clock stops for each team as the second member crosses the

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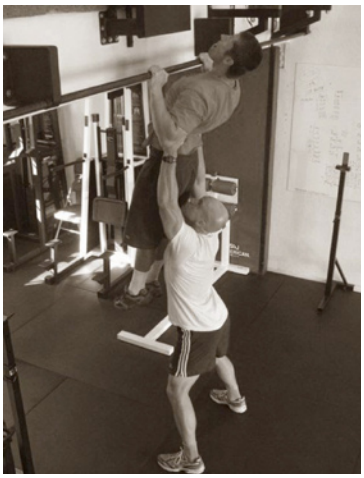
finish line. Teams rank by time to completion of all squats, pull-ups, and the mile.

The two-man pull-up is a classical bit of functionality and between the assisting and pulling uses all major muscle groups. Combined with high speed squatting and the mile run this workout is extremely demanding.

Two-Man Pull-up: Technique

"The two-man pull-up has one man assisting with a squat like push-press, pushing his teammate by the ribs or butt. The contact from the assisting team member must be at the hands and fingers only."





Week 3

Run 5K III: On this third 5K we return to the mass start. Record times and compute differences for handicapped start next week.

Again, more sophisticated warm-ups, trunk exercises, and stick work would be well advised today.

Spend 20 minutes or so practicing the clean with the stick. The Clean comes up Wednesday of this week.

Run, KBS, Pull-ups Drag Races: This workout is comprised of two separate races. Each member of two fiveman teams will get to compete against another athlete from an opposing team in each race and collect time for both races. The first race is an 800-meter run, 50 Kettlebell swings with the 50-pound (1 ½ pood) Kettlebell, and thirty pull-ups all for time. The second race is a 400-meter run, 35 swings of the Kettlebell, and 20 pull-ups.

Start the first pair of athletes and watch their progress in order to decide when to start subsequent pairs. Congestion at the kettlebells could ruin the timing scheme. On the last pair's completion of the first race, begin the second, shorter race with the same ordering of athletes.

This workout is a stew of mixed modalities, metabolic pathways, and lactic acid. This workout is an excellent introduction to its nasty older brothers: Run, Dumbbell Thruster, Pull-ups, Drag and Circuit Races!

Your athletes will need to be reminded that they are not necessarily expected to complete all 30 pull-ups or even all 50 Kettlebell swings in a single set. This is a great feature of this workout because survival is often dependent on skilled management of work & rest intervals and this is a great workout on which to hone that skill.

The Clean: After an extended warmup and stick practice, form two teams of five athletes each. Each athlete will hang squat clean 65 pounds 30 times and then 20 times and then 10 times.

The athletes should endeavor not to stop during their sets and should under no discomfort set the bar down.

Drive the point home that this work is being done with the hips and not the arms. Pop the hips, shrug, and dive! No power cleans.

The clean, like the deadlift and squat, deserves a

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protracted introduction. Athletes that don't clean are not as good as those that do; the advantages of this movement – and the squat and deadlift are enormous.

See the article in CrossFit Journal July 2003, "The Clean" to learn more on standards, technique, and the importance of the clean.

Tug-of-War: Use a 25', 1 ½", 3-ply, Manila rope (same used in rope climb) and tie a line around the rope marking the 12 ½ ' mark (middle). Place two fiveman teams of roughly equivalent body mass and strength on each side of the rope. The tug is started with the middle mark directly above a well-defined line in the dirt. On command, both sides work to pull the entire length or rope to their side of the line in the dirt.

Record the time for the first tug and then make substitutions that you suspect would gently favor the losing side and test your estimation by reforming the teams and starting again. If your substitution was good the next tug should last longer. Don't let the athletes know what your game is and work them for 30 minutes.

Give the teams as much rest time as the previous tug lasted, giving a 1:1 work to rest ratio.

This is a primal struggle of immense functionality. The applications are endless.

Max Pull-up & Dips/Tabata Squats: Two five man teams set-up near the pull-up bar. Each team rolls all five men through for a max set of pull-ups and then through a max set of dips. Repeat this twice more until each member of each team has done three sets of pull-ups and three sets of dips. Someone from each team is always doing either pull-ups or dips. Waste no time in transitions. Each team member records his pull-up and dip count before returning to the line-up.

After the last man on both teams has finished their last dips, perform Tabata squats. The Tabata squat is squatting for 20 seconds and resting for ten. The interval is repeated for a total of 8 efforts. The Tabata squat is scored as the least number of squats in any of the eight intervals. The team's Tabata score is the average of all five team members.

Compare teams totals on pull-ups, dips and Tabata scores. Multiplying the team's Tabata score by the sum of all the teams pull-ups and dips determines a team's score for the day.

The Tabata squat is an original CrossFit application of Dr. Izumi Tabata's research on anaerobic and aerobic system's adaptations to various interval protocols.

Week 4

Run 5K IV: Handicap starts based on the differences from last week. Again, give a hand to the most improved. Many of these athletes will be winning foot races for the first time in their lives. Encourage success.

Practice stick movements. Review the clean and then work the shoulder press, push press, and push-jerk until everyone can do each on command. Tomorrow is the "pressing & jerking" workout with a load. Don't listen to the argument that the stick movements would be easier with a load. The truth is that the load will only serve to mask a lack of coordination and ultimately limit the athletes' ability to learn these essential basics.

Pressing and Jerking/Deadlift II: Two five-man teams set-up with 65-pound loads. Two men face off from each team with their 65-pound loads and shoulder press 15 reps, then pushpress 15 reps, then push-jerk 15 reps. Week 4 The athletes should try to complete all 45 repetitions without putting the bar down. Not everyone will make it. Insist on perfect form. On a second warning of bad form the athlete must take the bar to the ground and rest. The athlete who finishes with the least visits to the ground wins. In the case of a tie the one who finished first wins. Push presses that should be shoulder presses don't count and jerks that should be push presses don't count.

Repeat this competition until everyone has done the "15's", and then repeat the competition with "12's", and then "9's".

See the article on the progression "shoulder press, push-press, and pushjerk" in the CrossFit Journal. Discuss the efficiencies and functionalities of these moves and take note of the metabolic demands of this workout as evidenced by the athletes' reactions.

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The same teams now deadlift their 65-pound loads 15 repetitions in turn and then load the bar to 95 pounds and each deadlift 12 reps, then 135 pounds for 9 reps, then 185 pounds for 6 reps, and finally 225 pounds for three reps. Nobody is allowed to do any ugly lifts. Perfect form is required to stay in the game.

Athletes who are pulled for technique remediation should practice with the last load that they can deadlift beautifully for 10 reps.

See the article in CrossFit Journal January 2003, "Shoulder Press, Push Press, Push Jerk" to learn more about the mechanics of these movements.

Squat, Run, Squat, Run, Squat, Run, Squat, Run: It's every man for himself. On starting, each athlete completes 100 squats, runs 400-meters, 75 squats, runs 400-meters, 50 squats, runs-400 meters, 25 squats, runs 400-meters - all for time. This is only a mile run and 250 squats.

Compare and contrast the probable difference between this workout and running for an equivalent length of time. Have the same discussion tomorrow too.

Pull-up, Push-up, Sit-up Circuit: Each athlete performs the circuit of 5 pull-ups, 10 push-ups, and 20 sit-ups for 30 minutes. No bad form. Kipping is allowed on pull-ups.

Rankings based on number of completed rounds and fractions of rounds at thirtyminute mark.

Pushed Truck Races: The best setup is a pick-up truck in a freshly plowed field. Set up cones 100 yards apart. Two fiveman teams take turns running timed heats from one set of cones to the next. Each team will get to make five runs.

Week 5

Run 5K V: Back to the mass start. Record times and compute differences for handicapped start next week.

Tomorrow is the Clean & Jerk workout so take one last time to practice the C&J with the sticks.

This is a good time to introduce some more advanced ab exercises like the hollow rock, knees to elbows, V-ups, etc.

The Clean & Jerk: Warm-up and practice with the stick and then an empty bar. Two teams set-up with 65-pounds each and in turn C&J (squat clean and push-jerk) 15 reps until each member has had a turn. Those who could manage 15 reps without setting the bar down stay "in" and continue for the next round. Each round the reps remain at 15 and the load goes up 20 pounds. Continue until the last man has found a weight that he cannot C&J 15 reps.

Remember touch and go at ground only. No re-gripping or pausing at bottom. Rest at hang, rack, or overhead as needed. Everyone stand back.

Run, Thruster, Pull-up Circuit Races: This simple workout has one five-man team working and a second five-man team "coaching" and timing a circuit race of five rounds of a 400-meter run followed by 15 dumbbell thrusters with 40 pound dumbbells followed by 15 pull-ups. After the first team completes the five round circuit they "coach" and time for 5 rounds for the remaining athletes. You'll need five pairs of 40- pound dumbbells, an essential item to any program worth its salt.

This is really good stuff. The run is functional, primal, critical. The thruster (a front squat/push-press fusion) is the nastiest acceleration we can come up with - from full ankle, knee, hip, shoulder, and arm flexion to full extension of same, against the normal force of gravity, with body weight plus a (unstable two-handed) load. The only thing missing is pull-ups – we threw them in. In multiple rounds for time, this combo creates a virtual hell that serves any future endeavor well.



Pull-up and dip stations built with inmate labor and about $300

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Fallen Comrade Drill: The easiest version of this drill has the carrying athlete approaching a standing "fallen comrade" who obligingly "falls" or drapes across the back and shoulders of the carrying athlete. This workout is a race between two fiveman teams to carry their members across a field. Here is the pattern for the drill: A carries B across and B goes back for C who goes back and get D who goes back and gets E who then takes A back and then both E and A run back. When A and E have both crossed the finish line the team of five is done. This way each member has run unladen, run carrying a comrade, and been carried. First team done wins.

Seven of these races make for a great morning. No resting between races.

Deadlift III: Warm-up with a ladder drill of pull-up, push-ups, sit-ups, and squats. Moving briskly, start at "one" and work up to "seven" and then work back to "one". Two five-man teams set-up with 135 pounds and each man must perform 3 reps. Next round set-up 185 for three reps, then 225 for 1 rep. From then on add twenty pounds at each round. Stop at 305 (seven sets).

Supervise closely and abort any lift that surrenders lumbar extension. If the lifter cannot correct the problem pull the lifter from the group and set up remediation. You might want to set up athletes who are pulled for technique remediation with the last load that they can deadlift beautifully for 10 reps.

Many will be able to lift more and some won't make it to the 305. That's all normal. One of many lessons that must be learned is how to safely attempt post maximal lifts – they occur in nature all the time. Trained properly, a lift past capacity poses insignificant risk to the athlete. These athletes have been studying this for five weeks.

Week 6

Run 5K VI: Handicap starts based on the differences from last week. Again, make a big stink about the guys who place well.

Line the crew up and have them perform a broomstick combo of 25 back squats, front squats, overhead squats, shoulder presses, push-presses, and pushjerks followed by 50 squat cleans, and snatches. Nitpick form.

The Snatch: Today we're introducing the one-armed snatch, practicing the overhead squat with a load for the first time, and introducing the two-hand barbell snatch (the Olympic snatch). The one-armed snatch takes minutes to learn and fairly represents the mechanics and beauty of the Olympic snatch. Practice with 40-pound dumbbells for twenty minutes. Next, form two five-men teams each set up with 45 pounds (empty bar) and have each rotate through rounds of 21-18-15-12-9-6 and 3 reps of rock bottom (10" box) overhead squats. Finally, with the same bar the teams practice the hang squat snatch 10 reps apiece for 5 rounds.

Run, Thruster, Pull-up Drag Races: This workout is comprised of two separate races. Each member of two fiveman teams will get to compete against another athlete from an opposing team in each race and collect a time for both races. The first race is an 800-meter run, 30-rep 40-pound dumbbell thruster, and 30 pull-ups all for time. The second race is a 400-meter run, 20-rep 40-pound dumbbell thruster, and 20 pull-ups.

Start the first pair of athletes and watch their progress in deciding when to start subsequent pairs. Congestion at the dumbbells could ruin the timing scheme. On the last pair's completion of the first race, begin the second, shorter, race with the same ordering of athletes.

Tire Flip Races: Line up two five-man teams behind two large (650-800 pound) truck tires. On starting, both teams flip their tire repeatedly until it passes a cone 100 yards down field. (Look for a tire that is narrow and tall – they're hardest to flip at any given weight.) Instruct the athletes not to try to deadlift the tire, but to drive their chests' into the tire, trying to drive it forward and it will pop up. On one team's winning, the losing team stands their tire up and rolls it to the finish line, drops it and starts the second race. The two teams compete for the best of 9 races.

Conga Line: Rope Climb & Ring Dips: Set the rings up near the rope. Send the first athlete up the rope and he has 60 seconds in which to make as many ascents as he can. At the sixty-second mark he is to descend the rope and as he steps away from the rope the second athlete begins the rope climb while the first goes to the rings for dips. Both have another 60 second to complete as many ascents and dips as they are able. Move at this rate until the entire team has moved through 5 rounds of the pair.

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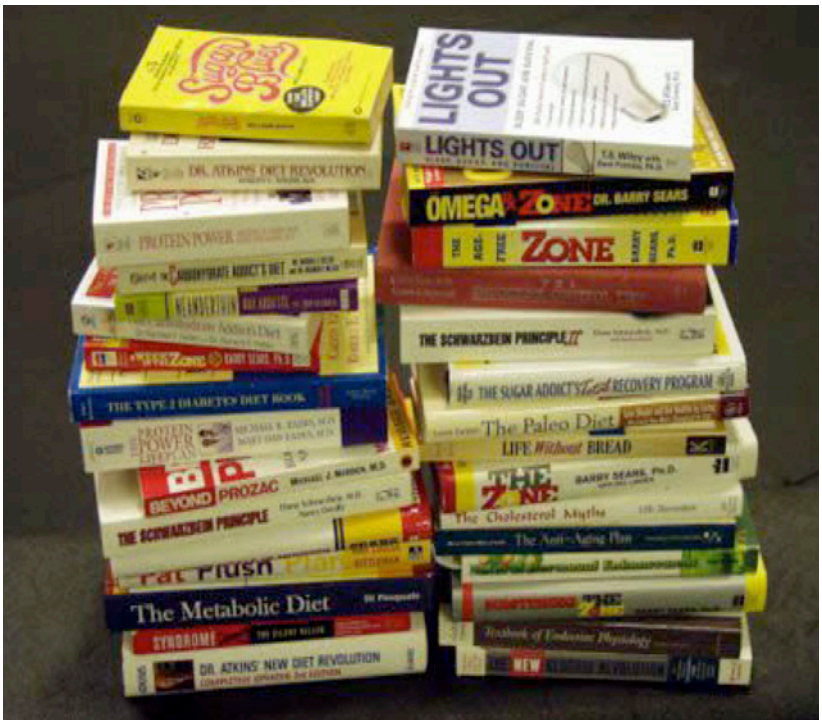
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Nutrition:

Avoiding Metabolic Derangement



Food

"What a long strange trip it's been"
- Grateful Dead

CrossFit has been an active combatant in the diet wars. For decades it has been an exciting world of "us" versus "them".

"We" were the low carb, low calorie, good fat camp and "they" were the low fat, low calorie, high carb opposition. The battle was for the hearts and minds of the public on the very personal and private matter of nutrition - what diet makes us healthy?

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Sheldon Margin, publisher of the UC Berkley Wellness Letter, a leader of "them", accepted this characterization of battle lines when we presented it to him in 1996. In 1996 Dr. Atkins and Barry Sears were both publicly and regularly referred to as "quacks" and "frauds" by mainstream physicians, journalists, and nutritionists. While this was something that Sears would have to get used to, Dr. Atkins had been dealing with vicious assaults on his life's work and character since publishing his Dr. Atkins' Diet Revolution in 1972.

We write here today in 2003 gloating. Gloating, because it is our perception that we are decisively winning the diet war. In the public square, the realization that carbs, not fat, make you sick and fat is spreading rapidly. Spreading like truth unobstructed. The position that carbohydrate is essentially toxic at common consumption levels was a truth suppressed by political and industrial corruption of science and journalism. Suppressing truth is like holding a beach ball under water; it takes constant work against a tireless resistance. They have slipped and our position sits like the beach ball on top of the water, where everyone can see it.

We interpret our position of being clearly visible, as winning the diet wars because our diet better models human nutrition and will always trump the opposition's model if tested. Ours works, theirs doesn't. Where theirs does work, ours works better. Their success required our being kept out of the marketplace. Underwater preferably.

In countless exchanges with doctors, trainers, nutritionists, and family we shared our position and the common response was, "do you have any science? I need science." We had science and showed it proudly. No one would read it. The cry for peer-reviewed evidence is almost always a smoke screen. The guys who write it read it – the rest pretend. If you can train people to unquestioningly accept proposition X then you've largely inoculated these same folks from even considering "not X".

The science supporting our position while being produced at an increasing rate, was always there and is not responsible for the dramatic change over the last two years.

What has changed is that the public bought some 100 million diet books over the last thirty years running the most important and successful science experiment ever conducted. To a constant and universal barraging of the fat is bad mantra from public health authorities, millions of people with no clinical or scientific credentials tried regimens found in "dangerous" books and found some of them marvelously effective.

Doctor Robert Atkins deserves credit for suffering unimaginable abuse while remaining steadfast, Gary Taubes for being the first journalist to expose the fraud and origins of the low fat position and for later making the point that the science may have been behind Dr. Atkins all along, Barry Sears for super tuning a responsible diet, and Dr. Uffe Ravnksov for exposing the fraud and slop in anti-fat research so effectively that he needed to be completely ignored to be dealt with.

But the true heroes are each and every one of you who thought for yourselves, ignored the chorus of doctors, nutritionists, journalists and neighbors bleating like sheep, "faaaat is baaad", followed the logic of reduced carbohydrate consumption, and then critically and most importantly, tried the diet. You try one diet and you feel great, you try another and your teeth fall out. Who needs a doctor?

Patients are telling their doctors about the Zone and Protein Power and Atkins, not the other way around. Doctors everywhere are themselves doing the Zone and Atkins on the advice of their patients – on seeing their patients' successes. The peer reviewed literature remains unread, but, the reverberation of the good diet books message is working its way from author to reader to doctor and finally back to patients.

Perhaps, this process isn't so unusual but merely another example of the efficiency of decentralized networks. In any case it is consistent with this bit of philosophy from Dr. Uffe Ravnskov's epilogue to The Cholesterol Myths:

"After a lecture, a journalist asked me how she could be certain that my information was not just as biased as that of the cholesterol campaign. At first I did not know what to say. Afterwards I found the answer.

She could not be certain. Everyone must gain the truth in an active way. If you want to know something you must look at all the premises yourself, listen to all the arguments yourself, and then decide for yourself what seems to be the most likely answer. You may easily be led astray if you ask the authorities to do this work for you.

This is also the answer to those who wonder why even honest scientists are misled. And it is also the answer to those who after reading this book, ask the same question."

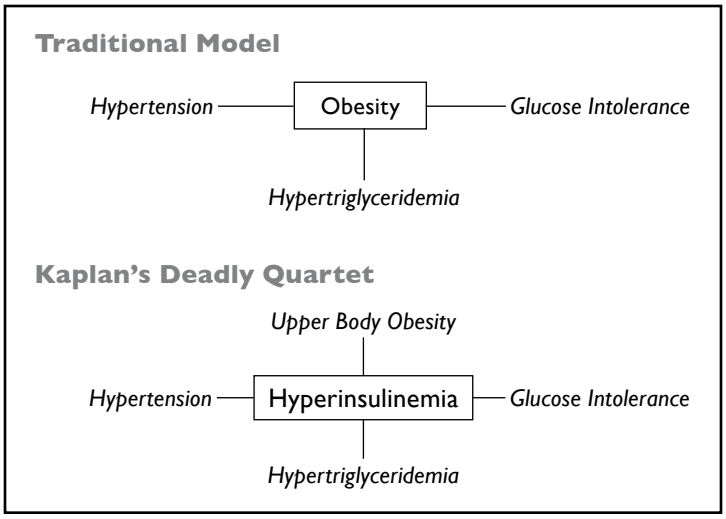


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The Deadly Quartet



Clinicians and researchers have long recognized the clustering of risk factors for heart disease. Physicians have known for decades that obesity, glucose intolerance (a precursor and measure of diabetes), hypertension, and hypertriglyceridemia tended to coexist in the same person and are predictive of heart disease.

Furthermore, physicians had noticed that glucose intolerance, hypertension, and hypertriglyceridemia lie in store for patients who'd become overweight. The assumption was that because the obesity came first that it was the cause of the other risk factors. While this is a natural assumption it is nevertheless a classical logical fallacy - Post hoc, ergo propter hoc (After this, therefore because of this.)

This traditional view of obesity as the cause of glucose intolerance, hypertension, and hypertriglyceridemia was seriously challenged when Dr. Norman Kaplan head of the Hypertension Division at the University of Texas Southwestern Medical Center at Dallas published an article in the July 1989 Archives of Internal Medicine entitled "The Deadly Quartet" When Dr. Kaplan examined the research, he found that obesity is not the cause of glucose intolerance, hypertension, and hypertriglyceridemia but merely a correlate.

Dr. Kaplan went on to demonstrate that hyperinsulinemia, another correlate of each of the traditional risk factors, can be more realistically represented as the cause of glucose intolerance, hypertension, hypertriglyceridemia, AND obesity (upper body obesity specifically).

The importance of this work is hard to overstate. Treating glucose intolerance, hypertension, hypertriglyceridemia, and obesity as separate diseases had not yielded impressive results and all too often treatment for one of these diseases exacerbated the rest (e.g., Dean Ornish's diet worsens triglycerides while reducing obesity and hypertension).

What would be a legitimate test of Dr. Kaplan's hypothesis? Well, if hyperinsulinism is the root cause of glucose intolerance, hypertension, hypertriglyceridemia, and obesity then reducing hyperinsulinism should reduce the occurrence of the correlated risk factors and it does.

Dr. Kaplan suggested convincingly that hyperinsulinism was the cause of heart disease risk factors in 1989, but Dr. Robert Atkins had been making the same point since 1972 and had proven it in thousands, if not millions of persons who'd followed his book, Dr. Atkins' Diet Revolution. One of many lessons that can be garnered from this history is that the astute clinician will often trump the researcher by decades, which brings us to a final point - there are two serious problems with medical science today: first that correlation and causation are tragically confused by many researchers and second, that there is low regard and little interest among academics with the often highly successful protocols employed by clinicians.

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Responsible Diet Books

These authors understand the double-edged nature of blood glucose control, i.e., hormonal regulation and caloric restriction. Our cast includes a lipidologist, cardiologist, psychiatrist, nephrologist, an exercise physiologist, pathologist, practicing and research endocrinologists, biologists, an attorney, journalist, and falconer. They largely quote the same published research and have come to the same conclusion: the low fat/high carb diet is lethal.

The first book listed for each author is linked to Amazon.com.

Barry Sears PhD:
- Enter the Zone
- A Week in the Zone
- The Top 100 Zone Foods
- The Age-Free Zone
- The Soy Zone
- Mastering the Zone
- Zone Food Blocks
- Zone-Perfect Meals in Minutes
- The Omega Rx Zone

Robert Atkins, M.D.:
- Dr. Atkins Diet Revolution
- Dr. Atkins New Diet Revolution

Dr. Robert Atkins held fast to the notion that hyperinsulinism brought on by excess carbohydrate consumption was at the root of obesity and other risk factors for coronary heart disease in spite of a torrent of criticisms and claims of quackery heaped on by the collective medical establishment. His citing of studies and his super impressive clinical record carried little sway among the mainstream advocates of the high-carb/lowfat fad diet.

Dr. Atkins first book, Dr. Atkins' Diet Revolution, contains his responses to the American Medical Association's condemnation of his diet and the subsequent investigation of his regimen by the Senate Select Committee on Nutrition and Human Needs. Remember from Gary Taubes that it was this Senate Select Committee, chaired by George McGovern that largely sponsored, promoted, and funded the low fat high carb diet that has destroyed the health of countless millions. (It's not surprising to see that socialists through their collective vision for us all have done for health and nutrition what they've done for economics and human rights.) The A.M.A. is not likely to reverse its negative impact on human health in a thousand years of good deeds.

William Dufty:
- Sugar Blues

Sugar Blues published in 1975 proclaimed that sugar was a poison responsible for unimaginable disease and suffering. A million copies of this little book were sold and the medical establishment laughed. Oooops, he was right! To read Sugar Blues in light of modern research, a more enlightened medical community, and the legacy of the high carb/low fat diet is spine chilling.

Drs. Michael and Mary Dan Eades:
- Protein Power

The Protein Power Lifeplan Michael Eades is a very good writer, and Protein Power has been an accessible introduction to responsible nutrition. The Eades' examination of research on diet and heart disease is outstanding. The book is great; the diet is good. For many this book has resonated where the Zone may have been impenetrable.

Michael Norden, M.D.:
- Beyond Prozac

Dr. Michael Norden, a psychiatrist and pioneer researcher, explains in Beyond Prozac how the high carb/low fat diet is directly responsible for a pandemic of mental illness and mood disorder ranging from alchoholism to depression and anxiety attacks. Norden reveals that the Zone Diet has to date been the most effective clinical treatment for a long list of psychological maladies.

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Responsible Diet Books

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We'd seen this effect of the Zone Diet long before Beyond Prozac was published. We had a file full of testimonials regarding mitigation of mental disorders after following the Zone and weren't sure what to make of them until this book hit the market in 1996.

Uffe Ravnskov, M.D., PhD:
The Cholesterol Myths

Dr. Ravnskov has "no dog in this fight". He advocates no diet, but what he does say and quite convincingly is that the connection between the consumption of saturated fats, high cholesterol and cardiovascular disease, known as the "diet-heart" idea, is built on a house of sand.

Ravnskov has impeccable credentials as a researcher and clinician and his understanding of the research surrounding the statins, cholesterol management, and cardiovascular disease is unrivaled. Ravnskov brings an understanding of experimental protocol and design to the discussion that is also singularly unique.

Drs. Richard and Rachael Heller:
The Carbohydrates Addicts Diet
Healthy for Life

The Heller's bring an amazing personal and professional history to the understanding of hyperinsulinism. The Heller's are both distinguished professors of medicine at Mount Sinai School of Medicine in New York.

Ray Audette:
Neanderthin

Neanderthin is a delightfully written presentation of the paleodiet position: "if a caveman could hunt it or gather it to eat, so can you."

Loren Cordain, PhD:
The Paleo Diet

Dr. Cordain is widely acknowledged as the world's leading authority on Paleolithic nutrition. The Paleo Diet elaborates brilliantly on the discordance brought on by a diet sharply at odds with our biological development and design.

Roy Walford, M.D.:
The Anti-Aging Plan
Maximum Lifespan
The 120-Year Diet

Dr. Walford is the undisputed leader of longevity researchers. This U.C.L.A. pathologist has been studying and thinking about longevity since high school. It is impossible to research caloric restriction and longevity without finding his work.

Calvin Ezrin, M.D.:
The Endocrine Control Diet
The Type 2 Diabetes Diet Book

Calvin Ezrin discovered the thyrotroph, the cells within the pituitary gland responsible for production of thyroid stimulating hormone, as a young researcher under Banting and Best, the discoverers of insulin. A pioneering endocrinologist, Dr. Ezrin has never found a physician willing to publicly and directly answer his claims of the entirely beneficial effects of ketogenic diets. It has long been easier to ignore this scientist and physician than to take him on.

The Endocrine Control Diet and the Type 2 Diabetes Diet Book are one and the same book. In his book, Dr. Ezrin has published a letter, "Doctor to Doctor" in which he offers his help in understanding benign dietary ketosis and offers assistance to any physician willing to contact him.

We've found Dr. Ezrin to be of enormous benefit to every diabetic we've sent his way.

T.S. Wiley and Bent Formby, PhD.:
Lights Out: Sleep, Sugar, and Survival

Wiley and Formby continue in the vein of Norden's Beyond Prozac with compelling evidence of the scientific link between insufficient sleep and the metabolic derangement of hyperinsulinism. This is a powerful premise with strong support.

Gerald Reaven, M.D., Terry Kristen Strom, M.B.A., Barry Fox, PhD.:
Syndrome X

Nobody has done more scientific research on the metabolic derangement caused by hyperinsulinism than Dr. Reaven. This derangement is widely referred to as "syndrome X" in medical circles, a label first given by Dr. Reaven.

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Responsible Diet Books

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Dr. Reaven has been rabidly critical of every attempt to mitigate "syndrome X" by reducing carbohydrate intake until he published his book in 2000. He repeatedly cites studies that show that weight loss is equivalent with isocaloric diets of varying macronutrient composition. It is hard to believe that a man of Reaven's background and knowledge doesn't know that all twenty-pound weight losses are not equally beneficial. This, and his harsh criticism's of Atkins and Sears, suggest the possibility of an integrity problem with Dr. Reaven.

Diana Schwarzbein, M.D.:
The Schwarzbein Principle
The Schwarzbein Principle II

Diana Schwarzbein is an endocrinologist sub-specializing in diabetes, osteoporosis, menopause and thyroid conditions.

Mauro DiPasquale, M.D.:
The Anabolic Diet
The Metabolic Diet

Dr. DiPasquale is the father of the cyclical diet of which Natural Hormonal Enhancement is an indistinguishable variant. In practice this diet looks like Atkins with one or several nasty cheat days per week. The Anabolic Diet crowd found strong and articulate proponents among academics, coaches, and athletes interested in power sports. The debates between the Zone crowd and the Anabolic crowd have been destructive of both camps and resolved nothing.

Dr. DiPasquale's knowledge of and position as an authority on anabolic steroids and the unfortunate public association of the word "anabolic" with steroids probably doomed his diet to obscurity. It works, and works very well.

Christian Allan, PhD, Wolfgang Lutz, M.D.:
Life Without Bread

Life without bread is an excellent presentation of the scientific literature on carbohydrate metabolism – a subject to which both authors have dedicated their scientific careers.

Jennie Brand-Miller, PhD, Thomas M.S. Wolever, M.D., PhD, Kaye Foster-Powell, M. Nutr. & Diet., Stephen Colagiuri, M.D.:
The New Glucose Revolution

This book bills itself as "The Authoritative Guide to the Glycemic Index". It may be just that.

Rob Faigin, J.D.:
Natural Hormonal Enhancement (NHE)

Natural Hormonal Enhancement owes considerably more to Mauro DiPasquale and the Anabolic Diet than its author credits. An entertaining compendium of responsible works, NHE leaves us with the suspicion that Faigin, an attorney, hasn't been able to separate theory from effective programming.

Although none of the nutrition gurus reviewed here's exercise advice matches the quality or effectiveness of their nutritional regimens, but Faigin's exercise views come right from the muscle magazines. NHE is an exciting brew of sound science, untested theory, and the best of the bodybuilding magazines.



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Cholesterol Myths

Everyone knows by now that the consumption of animal fats and cholesterol causes heart disease. There is, though, one simple problem with this knowledge: it is absolutely, positively, dead wrong, and no one can make this point more convincingly than Dr. Uffe Ravnskov in his wonderful book The Cholesterol Myths.

Dr. Ravnskov armed with a brilliant mind, a PhD in chemistry, an M.D., and an unassailable record of published medical research is the medical counterpart to science journalist Gary Taubes in loudly yelling "The Emperor has no Clothes!!"

Here, thanks to Dr. Ravnskov, are some important cholesterol facts and their scientific support. There is more research available through this portal than could be studied in a year. Enjoy!

Here is an excerpt from an excellent review of Cholesterol Myths off of the Weston A Price Foundations website by Stephen Byrnes, N.D., RCNP:

"Would you buy a book that was literally set on fire by its critics on a television show about it in Finland? I would and so should you. The longawaited English version of debunker extraordinaire Dr. Uffe Ravnskov's notorious book is now available from NewTrends Publishing.

Ravnskov, a medical doctor with a PhD in chemistry, has had over 40 papers and letters published in peer-reviewed journals criticizing what Dr. George Mann, formerly of Vanderbuilt University, once called "the greatest scam in the history of medicine," namely the Lipid Hypothesis—the belief that dietary saturated fats and cholesterol clog arteries and cause atherosclerosis and heart disease.

Equipped with a razor-sharp mind and an impressive command of the literature, Ravnskov methodically slaughters the most famous sacred cow of modern medicine and the most profitable cash cow for assorted pharmaceutical companies. Sparing no one, Ravnskov again and again presents the tenets of the Lipid Hypothesis and the studies which supposedly prove them, and shows how the studies are flawed or based on manipulated statistics that actually prove nothing."

Cholesterol Facts

1 Cholesterol is not a deadly poison, but a substance vital to the cells of all mammals. There are no such things as "good" or "bad" cholesterol only density. Mental stress, physical activity and change of body weight may influence the level of blood cholesterol. A high cholesterol is not dangerous by itself, but may reflect an unhealthy condition, or it may be totally innocent.

2 A high blood cholesterol is said to promote atherosclerosis and thus also coronary heart disease. But many studies have shown that people whose blood cholesterol is low become just as atherosclerotic as people whose cholesterol is high.

3 Your body produces three to four times more cholesterol than you eat. The production of cholesterol increases when you eat little cholesterol and decreases when you eat much. This explains why the "prudent" diet cannot lower cholesterol more than on average a few per cent.

4 There is no evidence that too much animal fat and cholesterol in the diet promotes atherosclerosis or heart attacks. For instance, more than twenty studies have shown that people who have had a heart attack haven't eaten more fat of any kind than other people, and degree of atherosclerosis at autopsy is unrelated with the diet.

5 The only effective way to lower cholesterol is with drugs, but neither heart mortality or total mortality have been improved with drugs, the effect of which is cholesterollowering only. On the contrary, these drugs are dangerous to your health and may shorten your life.

6 The new cholesterol-lowering drugs, the Statins, do prevent cardio-vascular disease, but this is due to other mechanisms than cholesterol-lowering. Unfortunately, they also stimulate cancer in rodents.

7 Many of these facts have been presented in scientific journals and books for decades but are rarely told to the public by the proponents of the diet-heart idea.

8 The reason why laymen, doctors and most scientists have been misled is because opposing and disagreeing results are systematically ignored or misquoted in the scientific press.



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Beyond Prozac

In *Beyond Prozac*, Dr. Michael Norden, a clinical associate professor of psychiatry at the University of Washington, developed the idea that the all-important eicosanoids which Barry Sears has written of and researched, play an essential role in brain function.

Dr. Norden's hypothesis is that low fat/high carbohydrate diets have contributed substantially to mental disorders that can be treated effectively by Prozac. It is his contention that the Zone diet is an effective clinical treatment for these maladies.

As if heart disease, diabetes, and cancer weren't enough, here is a list of disorders from Dr. Norden's book that Prozac can mask, but that the Zone diet can treat and might cure. We'd laugh at this list but we've seen the benefit with about a dozen of these maladies in our clinical practice.

- Alcoholism
- Anorexia nervosa
- Anxiety
- Arthritis
- Attention deficit disorder/
- hyperactivity disorder
- Autism
- Bipolar disorder
- Body-dysmorphic disorder
- Borderline personality disorder
- Bulimia
- Cataplexy
- Chronic pain
- Depersonalization disorder
- Diabetic neuropathy
- Dysthymia
- Elective mutism
- Emotional lability
- Enuresis
- Gilles de la Tourette syndrome
- Hypochondria
- Hypomania
- Impotence
- Impulsive aggression
- Intention myoclonus
- Late luteal dysphoric disorder
- Major depression
- Migraine
- Oncyophagia
- Obsessive-compulsive disorder
- Panic disorder
- Paraphilia
- Pathologic jealousy
- Post traumatic stress disorder
- Premature ejaculation
- Raynaud's phenomenon
- Schizophrenia
- Seasonal affective disorder
- Self-injurious behavior
- Social Phobia
- Syncope
- Trichotillomania

Dog Food

Carnivore or Cornivore?



The lead ingredient in most dog foods is corn. For a lot more money we can upgrade to rice.

At first we had trouble imagining the niche of a corn eating, or "cornivorous", dog, but with a little work we got it. In nature corn eating dogs would use their tiny little front teeth to denude the cob of kernel. But, there's competition for the corn among other cornivores, like chickens. It is for these competitors like the chicken that our corneating dog would need a mouthful of fangs – to ward the chickens off the corn, not to eat them!

Take any dog food manufacturer's claimed caloric requirements for a dog and place an amount of naturally available biomass equivalent to that load at sixty to seventy percent carbohydrate and place it on a tarp. Now find a dog that will eat that much grass and vegetation. It would take a goat.

The premise of a dog requiring a high carbohydrate diet is patently absurd. The industrialization of food has produced faire that neither man nor dog should eat.

Athena, the CrossFit mascot, doesn't like corn. She won't eat it. She also won't eat rice, potato chips, most "doggie treats", or "dog food". She does like chicken legs though, and she eats them raw. She eats everyday on average 3-5 chicken legs, a little grass, a multivitamin, and 2 fish oil-caplets.

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Gary Taubes

There are many heroes in the diet wars among scientists (Ravnskov and Sears to name but two) and clinicians (Atkins and Eades), but among journalists Gary Taubes stands alone.

In large measure the fleecing of the public with the low-fat/high-carb diet was a collaboration of politicians, the food processing industry, and the media. The scientific community was never as sold on the low fat diet to the extent that the media portrayed.

Endeavoring to root out the source of the low fat phenomenon, we found that the overwhelming majority of physicians came to their position on diet not through peer reviewed literature or experiential knowledge but through the popular media. We've heard countless times from M.D.'s that "everyone knows that fat makes you fat." When asked to name a scientific study that supported the notion the overwhelming response was something to the effect that "I don't know but there are thousands."

Over the last 18 months there has been a sea change of awareness regarding the shallowness of the low fat/high carbohydrate diet and much of this change can be rightly attributed to Gary Taubes.

In March of 2001 science journalist Gary Taubes published an article in the highly esteemed peer reviewed journal Science entitled "The Soft Science of Dietary Fat". The essence of this article was that "mainstream nutritional science has demonized dietary fat, yet 50 years and hundreds of millions of dollars of research have failed to prove that eating a low-fat diet will help you live longer". The evidence in this article was so compelling that the National Association of Science Writers awarded Mr. Taubes its coveted Science in Society Journalism Award. The Soft Science article and the acclaim Taubes received for it was tantamount to a crack in the popular acceptance of the fad low fat/high carbohydrate diet foundation.

Then on July 7, 2002 New York Times published a second article by Gary Taubes entitled "What if It's All Been a Big Fat Lie?" revealing an emerging acceptance of Dr. Robert Atkins diet among researchers, public health officials, and physicians. This piece prompted a media storm of attention that irreparably damaged the public's acceptance of the low-fat/high-carb position.

Every major media outlet covered the story and Dr. Atkins ended being a runner up for Time Magazine's Person of the Year Award for 2002. It was obvious that Taubes' articles were enticing a second look at the much maligned Dr. Atkins. Before the end of this decade, Dr. Atkins will be held in the highest regard and his long time detractors will largely lie about their condemnation of is work. There's a recurring theme in medicine and public health that major advances are fought tooth and nail by the medical establishment while quackeries rise to accepted practice largely unchallenged.

The flap over Gary Taubes' "What if It's All Been a Big Fat Lie?" among vocal supporters of the low fat diet was fascinating. Reason Magazine (an otherwise outstanding magazine) published a poorly researched and strongly biased criticism of Taube's work by Michael Fumento in March of 2003 entitled "Big Fat Fake". Mr. Fumento was suffering the embarrassment of having written a book extolling the virtues of low fat eating and several poorly researched articles on nutrition that revealed his deep

ignorance on the subject. "Big Fat Fake" is so bad it has to be read.

But, even more entertaining and informative was Mr. Taubes' rebuttal to Michael Fumento's criticisms and the subsequent reply by Mr. Fumento to Taubes' rebuttal.

Gary Taubes' "What if It's All Been a Big Fat Lie?", Michael Fumento's response "Big Fat Fake", and the ensuing exchange between the two are exemplary of the arrogance, hostility and muddle headedness of the low fat camp. For many of our contacts the exchange between these two was personally decisive in resolving the diet wars.



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The Zone and the Omega Rx Zone

We are Zone-heads. Why? Because the Zone produces a result that we don't quite match with other excellent protocols.

The ideal diet would increase your energy, sense of well-being, and acumen. It would also flense fat while packing on muscle. Finally, the ideal diet would nudge every important quantifiable marker for health in the right direction. While each of the "responsible diets" we've reviewed can do this, the Zone diet does it best.

We've found that the Zone prescription offers an accurate and precise model for optimizing human function. Accurate in the sense that it does more of what we want than other protocols and precise in that we find the response we want more often and quicker than with other protocols. Importantly, the Zone allows us to be accurate and precise in our prescription and is accurate and precise in its results. (Accuracy vs. Precision)

Allowed variances in caloric intake and macronutrient composition with non-Zone regimens occur outside the bandwidth that distinguishes resultant good from great performance. Finding Zone like results from other protocols requires luck, or frankly, mimicking Zone parameters.

We usually need to "tweek" the Zone to meet the needs of the athlete, but not until we bring him to Zone parameters. Once that is accomplished, we find that we either don't need to do a thing or that we are very close.

Where we need to, we tune the Zone a little "hot" – more fat and protein, less carb. Starting at Zone parameters, the body fat comes off very fast. As the men fall below 10% towards 5% we kick up the fat. Many of our best are at X blocks of protein, X blocks of Carbohydrate, and 3X or 4X blocks of fat. We modulate the fat to control the leaning and find the range for best performance. We're uncannily accurate. When we dial it in for an athlete, he pulls away from the pack.

Dr. Sears' Omega Rx Zone teaches you how to pilot your endocrine system like a pro – all with food and fish oil. None of the best diet authors can touch Barry Sears for understanding lipid biochemistry and this is what delivered him to the Zone and that is what

continued page... 11

One Day in the Zone

Zone Specimen

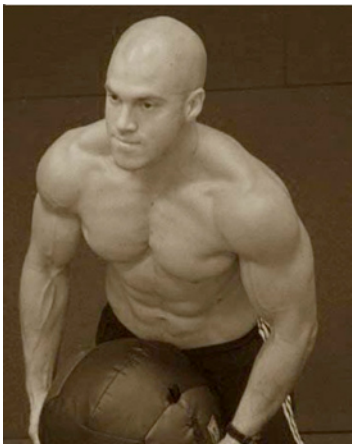
Breakfast
5 eggs
1 1/2 apple
10 macadamia nuts

Lunch
5 oz tuna
1 large salad
5 Tbsp avocado
2 cups grapes

Snack
3 oz sliced roast beef
3 cups sliced cucumber and tomato
30 olives
1 orange

Dinner
5 oz chicken breast
24 asparagus spears
1 artichoke
2 1/2 cups brocolli
30 almonds

Snack
3 oz salmon
2 cups green beens
24 peanuts



We train and feed for function, not form. This is the resultant form. CrossFit combined with the Zone diet produces lean, muscular, and able monsters.

Greg Amundson does the WOD and eats Zone (5 blocks of protein, 5 of carbohydrate, and 10 of fat at breakfast lunch and dinner. Twice a day he eats a snack of 2 blocks of protein, 2 of carbohydrate, and 4 of fat).

Greg is atypical in his diligence not in his response to our program.

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Hyperinsulinemia

Insulin is the hormone - produced by the pancreas - that allows glucose into cells where it can be utilized as fuel. Through bad luck (heredity) and lifestyle (too much dietary carbohydrate chiefly) your cells can become resistant to insulin. The mechanism of this resistance is still being studied but we know that the insulin receptors that sit on every cell's surface lose their ability to function. This causes the pancreas to secrete more insulin than is normal to get glucose inside the cell. Though insulin is absolutely essential to life, chronic and acute elevation of insulin wreaks havoc in the human body. This process is known as "insulin resistance" and the resultant condition is "hyperinsulinemia".

The amount of research being published suggesting a causal link between hyperinsulinism and disease is one of the more productive and exciting arenas in modern medicine. The expansiveness and range of diseases whose underlying cause is hyperinsulinism has inspired metaphors of a multi-headed monster of Greek mythology, the Hydra, by Dr. Michael Eades, author of Protein Power, and an iceberg with hyperinsulinemia below the water's surface and disease state as the peaks by Dr. Ralph DeFronzo, a pioneering hyperinsulinemia researcher at the University of Texas, San Antonio.

...continued from page 10

drives his understanding of the effects of fish oil supplementation.

In Sears' first book, Enter the Zone, chapter 12, "The Wonder Hormones: Eicosanoids – The Long Course", we are introduced to the metabolism of Omega 6 essential fatty acids and the production of "good" and "bad" eicosanoids. Dr. Sears' dietary strategy for manipulating that metabolism and eicosanoid production is a roadmap to increased performance and health. The theoretical foundations for the The The Omega Rx Zone manifest in chapter 12 of Enter the Zone and seven years later the concept of EPA/DHA supplementation comes to the scene tested and proven.

There is mounting evidence linking hyperinsulinemia to:

- Hypercholseterolemia
- Hypertriglyceridemia
- Obesity
- Hypertension
- Immune disorders
- Thrombosis and platelet aggregation
- Cellular proliferation
- Diabetes
- Heart disease
- Mood dysfunction
- Brain dysfunction
- Arthritis
- Hyper inflammatory states
- Alzheimer's disease
- Stroke
- Osteoporosis
- Metastasis
- Angiogenesis
- Cancer

Whether the link between hyperinsulinism and disease states is causal or correlative will be debated for years. But the tide is dramatically shifting towards causality in many, many disease states.

What cannot be debated is that reducing carbohydrate intake eliminates hyperinsulinemia in nearly every occurrence. By what logic would we not adopt an easy prevention, cure, or mitigation (with not only no side effect, but provable and dramatic side benefit) in regards to the litany of disease states linked to hyperinsulinism. We strongly counsel that you opt out of hyperinsulinemia while the scientific community continues slogging along.



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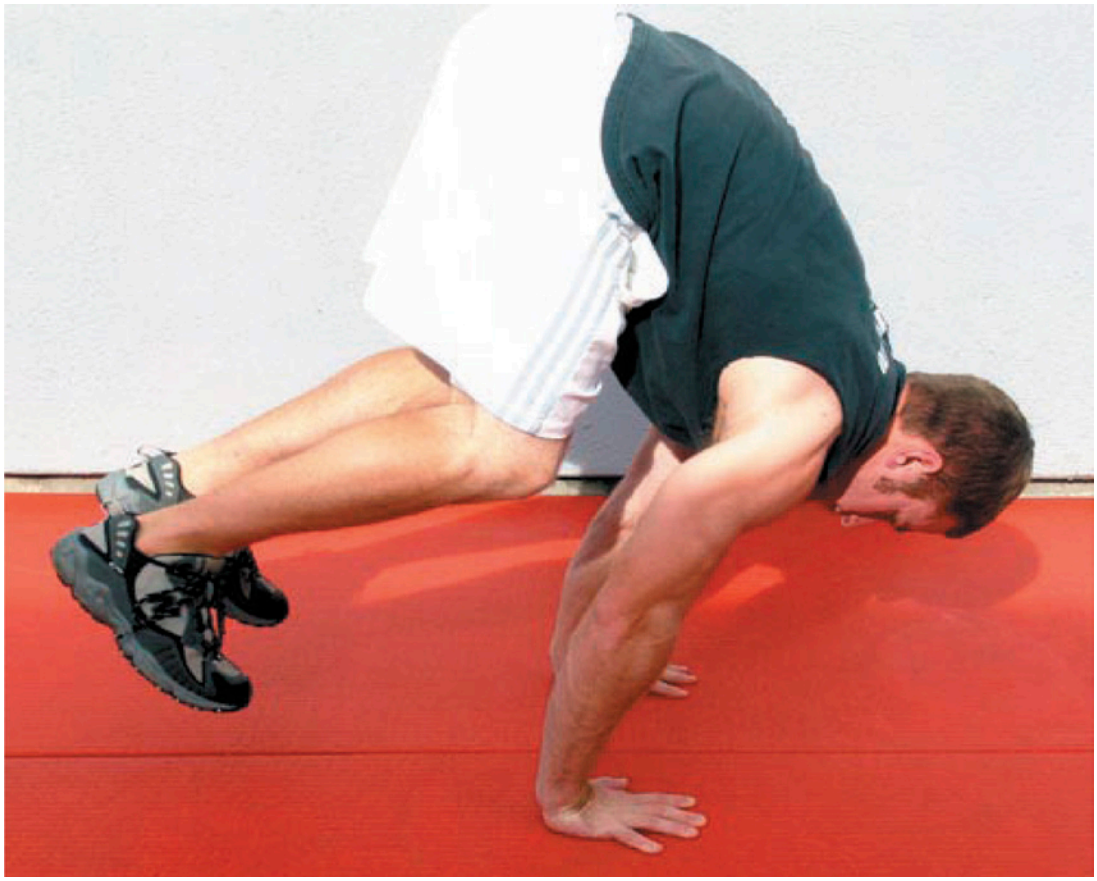
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Handstands

Greg Glassman



Handstands, hand walking, and pressing to the handstand are critical exercises to developing your athletic potential and essential components to becoming "CrossFit."

Historically, these exercises have been collectively referred to as "hand balancing" and have been an integral part of strength and health culture since antiquity, yet today hand balancing seems to have followed the passenger pigeon to extinction.

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Examining the twin questions "what has been lost by this extinction?" and "what does hand balancing offer that makes it essential?" is the aim of this month's Journal. The answers to these questions motivate a challenge for our readers for the New Year.

The quick and obvious analysis as to hand balancing's benefits would include improved balance and increased shoulder strength, and though accurate, ending the analysis here doesn't speak to the singularly unique advantages to this training.

There are countless successful protocols for increasing shoulder strength and balance, but training the handstand and presses to the handstand improves proprioception and core strength in ways that other protocols cannot. Let's examine this claim more closely.

Being upside down exposes the athlete to, what is for many, a brand new world. Psychologically, physically, and physiologically, inversion is otherworldly. We spend roughly two thirds of our life upright and one third in repose. When upside down most of us lose our breath, orientation, and composure. What this portends for an athlete upended by opponent or accident is calamitous. The difference between tripping and landing on your feet versus knocking your teeth out is profound. Gymnasts' bike wrecks don't look like weightlifters'.

Combat, nature, survival, and sport favor individuals who keep bodily and spatial awareness regardless of their orientation in three-space. The handstand is prerequisite to handsprings, walkovers, cartwheels, aerials, and flips, each of which will train for generally favorable outcomes to being tossed into space. The handstand is the first step to developing a catlike capacity for landing on your feet.

Standing on one's hands also dramatically alters the normal kinetic chain required for standing on one's feet. In the handstand, a much weaker base supports the body while simultaneously raising the body's center of gravity a foot or more in a world turned upside down. Things don't get more foreign.

When standing, the hip is the focus of control and leverage. When in the handstand, the focus shifts to the shoulder. This shift not only helps develop "shoulders strong as hips" but also presents a set of unique demands on the body's core.

Many of the common motor recruitment patterns found in extending the trunk and hip while standing upright are reversed in pressing to a handstand. The enormous difficulty the beginning hand balancer encounters in bringing the hip over the shoulders and hands is due to the utter confusion of activating the extensors of the back from shoulder to hip. While upright the task of midline stabilization involves maneuvering the torso relative to the base of support—the hips and feet. While upside down the task of midline stabilization requires bringing the hips over the base of support—the shoulders and hands. The difference is profound and for most of you will be the primary obstacle to pressing to a handstand, not insufficient strength!

Similarly, a potent and largely unfamiliar recruitment of the abdominals is required of pressing to a handstand.

Though highly developmental of core strength and neurological adaptations like coordination, accuracy, agility, and balance, the greater point to be made is that hand walking and pressing to the handstand are gateway movements to much of the corpus of gymnastics movements and that gymnastics training, even of rudimentary movements, has no peer for core or neurological training.

The value of training gymnastics movements for midline stabilization, torso strength, and hip control is so tremendous that it makes the bulk of what is widely conceived of as "core training," including "Swiss" or "stability" ball training, patently silly. The Swiss ball is to core training as the BowFlex is to strength training – better than nothing.

It would be reasonable to ask "If gymnastics training, and hand balancing specifically, are so developmental, why isn't this training modality in more common use?" Perhaps we are the wrong folks to be answering this question in that gymnastics training is essential to our model of fitness, but we cannot help but point out that the market trend for fitness has, for the past forty years, been towards less technical, strenuous, and efficacious protocols. This trend has corrupted physical training even at the university and within police and military training programs.

Though battling this trend is part of our charter, we've recently come to feel that we've not been entirely successful inspiring greater effort and commitment to our friends exploring the gymnastics realm. The difficulties motivating greater gymnastics training through the Internet and this Journal are obvious and

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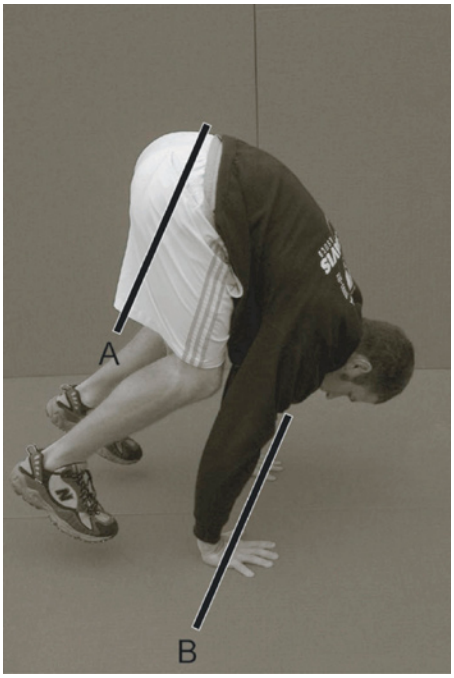
formidable but clearly surmountable. We have a plan.

We are asking each of you to resolve to pressing to a handstand and then hand walking 100 feet within this year, 2004. Towards this end we are offering three simple floor drills that we want you to include as a warm-up for every non-pressing workout and as a "cooldown" for pressing workouts.

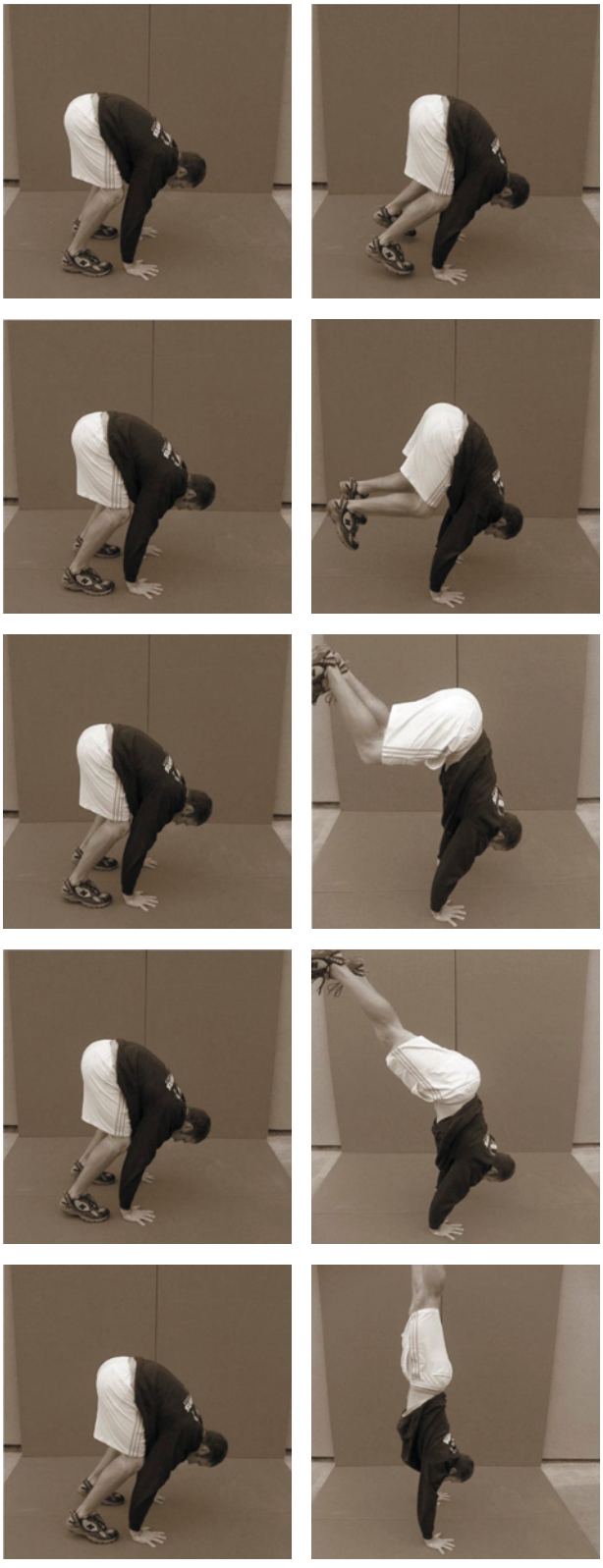
Here are the drills:

"Take-Offs"

Stand with feet about shoulder width apart. Place your hands on the ground just outside and in front of your feet. In the set-up flex your arms, legs, and shoulders as little as possible while simultaneously flexing at the hips as much as possible. This position is similar to a toe-touch stretch – very similar. Next, slowly lean forward while rising up on the toes and gently, slowly, shifting your weight from your feet to your hands until your feet gently lift off the ground. The challenge is to bring your hips over your hands. Do not jump or push off at all! When your feet come off the ground, lift them skyward to complete the handstand. Perform three to five take-offs each workout.



Lift and lean your hips A directly over your base of support B



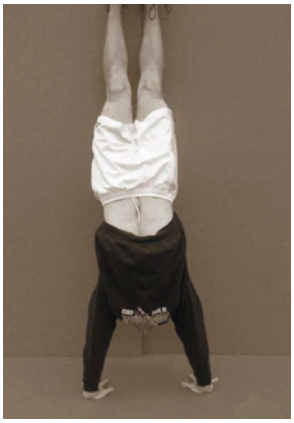
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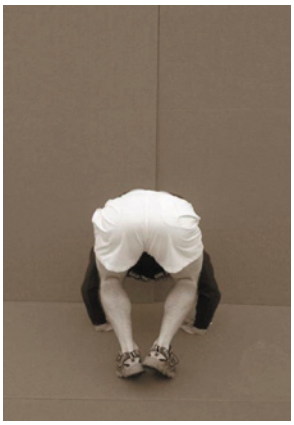
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"Landings"

Kick or jump to the handstand and after a three second hold bring your feet towards the floor as slowly as you can. The challenge is to keep your hips over your hands as long as possible. A perfect landing settles your feet between your hands gently and slowly, and may take years to master. Perform three to five landings each workout.




"Kick-ups"

Kick or jump to the handstand against a wall. The first time up hold the handstand as long as you can, up to one minute, flirting with the balance point by gently pushing off the wall with your heels. For the second handstand you'll try to walk on your hands. Take little steps and note your distance covered. Alternate these efforts until two of each, for a total of four, have been performed each workout.





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We're recommending that these drills be performed in this order and after a CrossFit-like warm-up of a circuit of squats, pull-ups, push-ups, or related calisthenic movements.

It's O.K. if your take-offs don't takeoff or if your landings are more like crashes; do them anyway. If these drills are seemingly impossible, don't let that psych you out. Nothing about your difficulties suggests their inappropriateness for you.

For each exercise, in the set-up, place your hands shoulder-width apart with the fingers spread and the hands pointed forward. Keep your eyes on a spot between your hands.

The take-off is a genuine press to a handstand – the first and easiest. When it's mastered, you'll learn to press to a handstand with perfectly straight arms and legs, the "stiff-stiff" press. After the stiff-stiff press you'll learn the straight body (hips and legs), bent arm press – the "hollow back" press. Finally, comes the ultimate press on the floor, parallel bars, or rings, the straight body, straight arm press – the "planche press."

Landings teach control and work the "negative" or eccentric portion of pressing to a handstand. Most gymnastics strength moves and holds are learned, in large part, by working the negative until you can slow the movement to an eventual stop. This comes long before the concentric portion of a movement is possible. The iron cross, planches, and other scales and levers have all been trained successfully this way forever.

The kick-ups give you more upside down time and, of course, expose you to hand walking and general competence at moving, balancing, and controlling your movements while inverted. Measure your progress by either steps taken or distance traveled – both will work. The goal is 100 feet.

Each of these drills should be practiced initially against a wall. As your confidence, balance, flexibility, and strength improve, you'll want to move these drills away from the wall and into open space. The fear of falling over backwards is strong but you can manage it by learning to bail out cleanly.

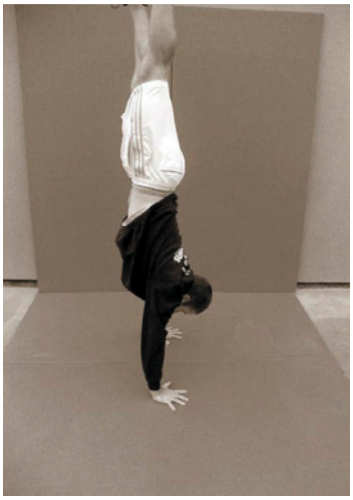
There are two common methods for bailing out. The first is to make a ¼ - ½ turn while falling and landing on your feet. The second method is to tuck your chin to your chest, round your back, and let your arms gently lower you to the ground where you'll roll to a seated position. Practice and master both methods on mats – both skills are also critical to later movements.



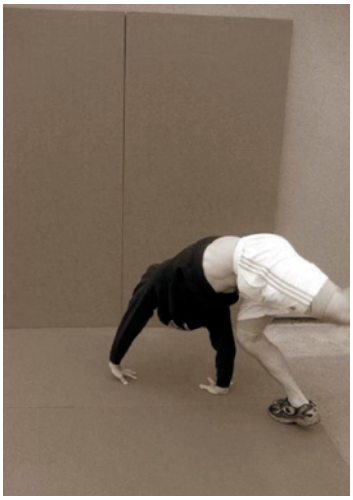
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Bail out method 1









Bail out method 2

Resources

1. Rings – Methods, Ideas, Curiosities, History, Ivan Cuk, PhD and Dr. Istvan Karacsony

2. Jeff Gothard, Hand Balancing and Feats with Bodyweight, MILO March 2000, Volume 7 – Number 4

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4. Jeff Gothard, Hand Balancing (Part III): Pressing Matters, MILO September 2000, Volume 8 – Number 2

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6. http://www.amgym.com/tt/index_464.cfm

7. http://www.usa-gymnastics.org/publications/technique/2000/2/stillrings.html

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9. http://www.naturalstrength.com/history/detail.asp?ArticleID=332

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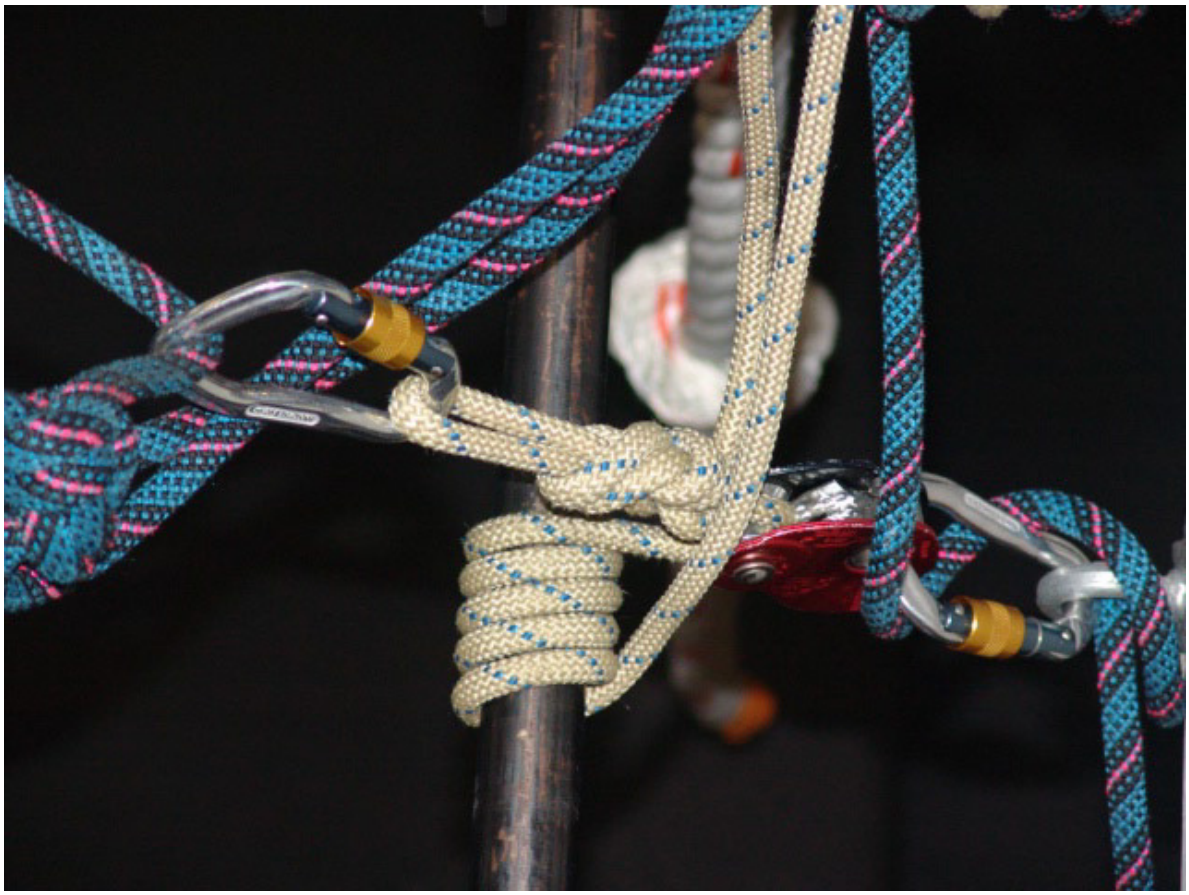
11 American Gymnast, Parallette Training Guide (click "Next" at the bottom of the page)

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Macroclimbing

Greg Glassman



Paleoanthropologists tell us that our ancestors left the trees for the ground millions of years ago. Competing hypotheses attribute this shift from a predominantly arboreal to terrestrial locomotion on postural-feeding, social-behavioral, or thermoregulatory pressures. In any case there is a strong consensus among scientists that our heritage is deeply rooted in both climbing and bipedalism, i.e., both swinging from the trees and functioning on two feet.

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While nearly all of our regular movements today are bipedal, the value to survival, fitness, and combat of climbing skills is critical and largely undeveloped even in "elite" athletes. In this issue of *CrossFit Journal* we are offering some tools and techniques to remedy this imbalance of functional domains.

In the broadest and most useful sense, the functional distinction between arboreal and terrestrial skills is that arboreal skills are rich in pulling movements whereas the bipedal movements mostly comprise hip extension and pushing movements. As a consequence of this distinction and the dearth of climbing skills drawn upon in fitness programs, the pulling capacity of modern athletes is woefully deficient. Compare briefly the number of pushing to pulling movements available in the course of our normal training. Push-ups, dips, handstand push-ups, bench press, shoulder press, and jerks versus, what, pull-ups and maybe rope climb?

In discussing the dearth of pulling movements in physical training many have offered for consideration the "pulling" components of the clean and jerk and snatch lifts. It is our contention,though,that these movements have much more in common functionally, and anatomically, with pushing movements than the pulling required of rope climb or pull-ups.The"pulling" of cleaning and snatching moves the upper arm away from the body and emanates from the trapezius and anterior and middle deltoids rather than moving the arms closer to the body with the lats,posterior deltoid,and biceps as required of the pull-up or rope climb.

Even the bodybuilding repertoire, which includes seated cable rows, bent-over rows, one-armed rows, and curls, includes more pulling movements than more functional and developmental weight training like weightlifting and powerlifting, but the motivation and value behind these moves is somewhat more anatomical or cosmetic than functional.

We believe that the semi-pull of the Olympic lifts coupled with regular pull-ups offers a superior pulling regimen than bodybuilding yet still is pulling deficient. We're going to fix that deficiency.

The CrossFit regimen has long included rings, pull-up bars, and rope climb, but this month we introduce two new tools to our community: the cargo net and the Bachar ladder. With these new tools we have been able to build a climbing network that offers endless combinations of movements and pulling types that are extremely challenging and wonderfully developmental.

The addition of the Bachar ladder and cargo net when combined with the climbing rope add to the development of what is for us a sub-domain of gymnastics that we're calling "macroclimbing." Our focus and aim in macroclimbing is to work less technical and nuanced climbing than associated with "bouldering" or sport climbing.

As we see it, the immediate advantages to macroclimbing are that it focuses on larger muscle groups, places less demanding stress on delicate tendons and ligaments of the hands and fingers, requires less technical skill, and has more immediate and functional application to survival, combat, and fitness. Our community is as likely to find the need to scale fences, trees, balconies, and rooftops as rock.

There are two other aspects to macroclimbing that will hold particular interest to the CrossFit community. First, the applications to grappling arts of large muscle pulling movements are immense. Secondly, increasing the repertoire of climbing components has somewhat reshuffled the deck in terms of ranking the prowess of our athletes. This reshuffling, or reranking, of our



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athletes is in part due to the shift towards the "little guy" in the "big guy/little guy" wars, but more importantly fear of heights, very low heights in fact, has dethroned several of our indomitable performers – male and female. Several intrepid athletes, again male and female, of the middle ranks have trounced a few superstars, and this has been not only riotously entertaining but also healthy for everyone.

The Bachar ladder was entirely unknown to us until Mark Twight, the legendary alpinist and author of *Extreme Alpining* and *Kiss or Kill*, came to visit us late last year. No sooner had Mark described the ladder and explained that it was instrumental in developing great climbing strength when we decided to build a few of these beasts.

The climber John Bachar developed the ladder that bears his name in the mid 1980s. The Bachar ladder is simply a tensioned rope ladder suspended on an incline. It was recommended that the ladder be strung at 45 degrees but we had two convenient beams that we wanted to bridge, so our ladders ended up being more like 60 degrees, but we've read recommendations of 20 to 30 degrees from several references.

While the Bachar ladder is credited with developing elite climbing strength it also has the reputation for causing injury. The current consensus among elite climbers is that the ladder is not directly at fault. The injuries associated with the Bachar Ladder are tendonitis of the elbow and separation injuries to the shoulder. Rapid and aggressive descents and immoderate dosages while first learning to use the ladder probably account for most of these injuries. In our early and admittedly limited experience with the Bachar Ladder the consensus among our athletes is that it presents no greater risk of injury than the climbing rope or rings. Climber Neil Gresham's advice that "used correctly, with control and appropriate rest and set structure, Bachar ladders can provide a safe, fun and highly effective means of developing upper body strength and power for climbing" resonates well with our experience and intuition.

John Bachar once offered a commercial ladder, but alas, these are no longer available. Pacific Fibre and Rope Co. offers rope ladders with wooden dowels available in custom lengths, widths, and rope types (manila or Poly Dacron) and diameters. We, however, opted, in large part because of Mark Twight's generous assistance, to make our Bachar ladders from scratch.

We need to admit right off that we are disinclined by time and temperament to fabrication of nearly any kind. But, this project was a lot of fun and the end product came out not just good but great! Each ladder is constructed from 1" schedule 40 PVC pipe, used climbing rope, and locking (self-jamming) pulleys, carabiners, and in our case, eyebolts, washers, and nuts for attachment to our glue-laminate beams.

We bought a mitre-saw for cutting the PVC pipe and a drill press for drilling the holes. One of our adventurous friends cut his pipe and drilled his holes by hand and the resulting product was certainly useable. We picked up the power tools out of a combination of laziness, a desire for precision, uncertain skills, and in anticipation of additional and regular fabrications down the road.

We started with the knowledge that we wanted to span the two major beams from which our pull-up bars, ropes, and rings are attached. One of these beams is 8 feet high and the other is 15 feet. From center to center the beams are separated by 11 feet, which would become the overall length of each of our two ladders. It was recommended that we place our rungs 12 inches apart so we used 9 rungs for each ladder, leaving a foot of working room above and below each rung.

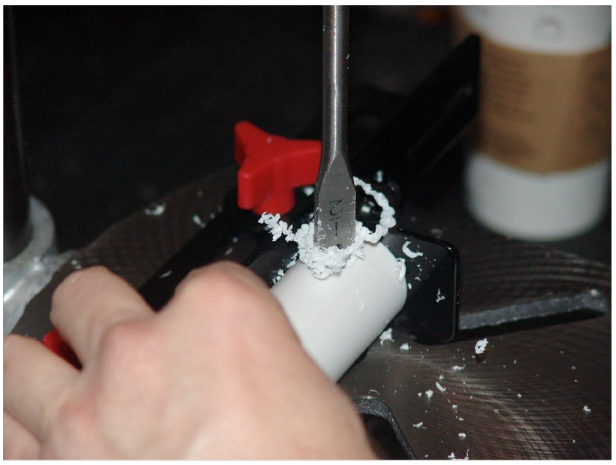
Each ladder is constructed from a single strand of rope. We used 11 mm climbing rope, and each ladder was built from a 30-foot length.

We made 9 rungs for each ladder for a total of 18 rungs. We made each PVC rung 9 inches long and drilled a half-inch diameter hole through both ends with the hole's center 5/8 inch from the end. Sand the rungs with medium grit sandpaper only enough to roughen the



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surface. This will help them accept chalk. Don't sand over the holes.

Start with a length of rope 2.5 times the desired overall ladder length, find the middle and tie a figure eight knot from that point. The middle of this strand will sit above the top rung of the ladder. The loop formed by the figure eight knot at the top allows for adjusting the height of the top rung of the ladder. The figure eight knot is the only knot used in making the ladder and has the advantage of being a solid "stopper" while still being relatively easy to untie after having been tightened. The carabiner will not go in the loop but sits "below" it.



Next, feed the free ends opposite the top loop through the holes in what is to become the top rung. When the rung is roughly in position relative to the desired top, chase a figure eight knot up the free end until it comes to rest below the rung. Without tightening the figure eight knots, thread each rung followed by a pair of figure eight knots, leaving roughly 12 inches space between rungs. The figure eight knot is important; an overhand knot will work as well at stopping the rung but may be impossible to untie after the ladder has been loaded or tensioned.

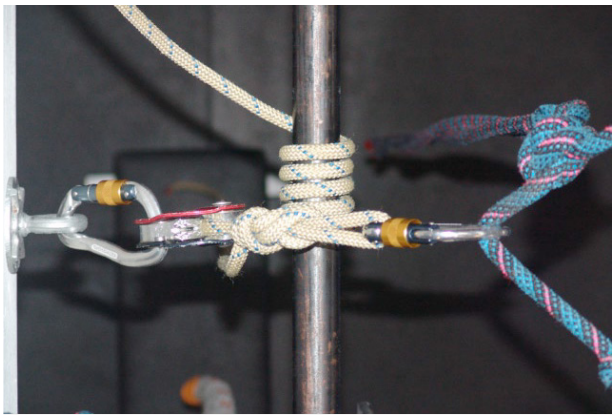


Then with the ladder laid out with the top secured to a fairly immovable object make the adjustments from top to bottom securing each rung against a pair of finessed and tightened figure eight knots before measuring and proceeding to the next rung. This is a fairly laborious process as each knot needs to be secured at about 10.5 inches and the rung pulled on to settle the knot and rung at the 12 inch mark. As many knots as not will settle at above or below 12 inches and need to be redone if you

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Bottom of ladder

want precise spacing and parallel rungs. (We're not sure this is important, however.)

Tie another figure eight knot from the free ends at the bottom of the ladder and the ladder is completed.

The top of the ladder can be secured to an eyebolt with the carabiner "below" the top loop. A carabiner attached "above" the bottom loop will attach to another loop tied from an additional single strand of rope. This single strand passes through a locking pulley that is used to adjust tension in the ladder. We attached the locking pulley to another carabiner fed through an eyebolt attached to the bottom beam.



Top of ladder

If you don't have a wooden beam through which you can conveniently pass an eyebolt and hardware you'll want to attach the carabiners at both ends to some immovable object with 1" nylon tubular webbing. You can safely and securely tie nylon tubular webbing around any immovable object but it is imperative that you use a water knot to do so.



Water knot

Tensioning of your ladder is simply a matter of pulling with several people on the free end of the single strand of rope passed through the locking pulley. The ladder will need to be re-tensioned several times until the stretch is out of the rope.

Using the ladder is rather simple. Returning again to Neil Gresham: "The basic exercise is to climb the ladder using alternate rungs, preferably footless or with one foot for assistance if required. This simulates the biomechanical pattern of climbing far more effectively than a basic pull-up, primarily because the arms are at different heights. This creates a continuous coordinative

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switch between pulling (with the leading arm) and pushing (with the trailing arm), as well as a further switch between dynamic strength (when pulling up) and isometric strength (when locking off and reaching up). In addition, if climbed at speed using the deadpointing technique to move between the rungs, Bachar ladders can be equally effective for developing explosive upper body power and reaction timing."

With regular exposure to measured doses our crew is going up the ladder backwards, forwards, with and without legs. We mat the drop zone with gymnastics landing mats and double up under the daring, gifted, or terrified. We coach our crew to keep their shoulders active – away from the ear and under tension – and practice brachiating – swinging with relatively straight arms, like monkeys. On average, the Bachar ladder is a huge hit with our crew. The ladders are going to serve as a powerful incentive to good nutrition; the fat boys are less than thrilled.

Don't let a lack of workout space or ceiling height keep you from making a ladder. You could perform miracles with a ladder that rose 5 feet across 9 feet. This is perfect garage gym stuff. The rise is 30 degrees and when worked backwards, forwards, with and without feet, in an "L", and for time the stimulus is strong.

Another CrossFit addition to our arboreal network is a cargo net. Our net is made from one-foot squares of 1 inch Dacron sheathed polypropylene, or Poly Dacron, and measures 15 feet by 7 feet. We've hung it to eyebolts lengthwise across our 15-foot high beam like a curtain. With Kevlar climbing slings we can adjust



Hanging active shoulder



Hanging passive shoulder

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the length of the curtain to the intended protocol. Currently it sits gathered with a three square (foot) long curtain dangling across nearly fifteen feet, 12 feet above the floor. Climbing the full net with legs and arms is really easy. Nearly anyone ambulatory could climb it, but traversing the dangling curtain of net by arm is surprisingly tough. The net has the most amazing and wonderful property that the target point of every reach dramatically runs uphill as the trailing arm releases and swings forward. In a lateral traverse the athlete will rise and fall repeatedly before reaching the other side. Every step is surprisingly tough.

Climbing the hanging edge of the cargo net without feet, because it offers a moving target, is a lot harder than climbing the Bachar ladder.

We bought our cargo net from Pacific Fibre and Rope Company. They've been included in our dreams for a long time. They supply to a lot of retailers of gymnastics equipment and offer an array of cargo nets, rope ladders, gangway nets, Burma bridges, and climbing ropes.

During the past year our only climbing rope, a 1-½inch manila, started shedding like a mangy monkey. Initially we were disinterested in synthetic ropes but after seeing a broken-in Poly Dacron rope at Santa Cruz Gymnastics and talking repeatedly with Ron Goldman at Pacific Fibre we had not only a Poly Dacron cargo net but six Poly Dacron climbing ropes (four regular and two knotted) outfitted with hardware and shipped out to us. The Poly Dacron ropes should maintain their integrity and improve their hand with use and chalk over decades.



We've hung three of the new ropes, the cargo net, and both Bachar ladders in a network that also includes our main pull-up bar, rings, and spotting harness. The routing possibilities are endless and the climbing types are widely varied. We've already become enamored with competitive routes that involve ladder climbing followed by a rope descent (both ladder and rope legless) with a brief stop on terra firma for kettlebell snatches (tough), thrusters (tougher), or hang squat cleans (toughest), and back up the ladder. Five rounds for time are devastating.

Requiring the ladder climbers to traverse the cargo net at ladder's top and cross each other on the net to descend on the opposite rope is fun to watch through your fingers. Allowing competitors physical contact on the traverse is in the cards.

We'll not go into the ideas for games that have been tabled and shelved since installing the climbing network.

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Special Thanks to Mark Twight, Training Director, Mountain Mobility Group, LLC, info@mountainmobilitygroup.com, for everything we did right and apologies for the parts we may have goofed on.

http://www.grivelnorthamerica.com Grivel North America. Climbing stuff.

http://store.karstsports.com/petp07mintra.html Petzl self-jamming (self-locking) pulley. This is the pulley we used.

www.pacificfibre.com Pacific Rope and Fibre is extremely helpful (ask for Ron Goldman) and they can make anything you need.

http://www.jqjacobs.net/anthro/paleo/bipedalism.html The origins of bipedalism

http://geert.com/HumEvGrip.htm The lust for grip pressure

http://brmrg.med.virginia.edu/knots/water.html Water knot

http://brmrg.med.virginia.edu/knots/fig8.html Figure eight knot

http://www.planetfear.com/article_detail.asp?a_id=187 Deadpointing and other techniques.

http://www.judoinfo.com/ukemi.htm Falling techniques from Judo

http://www.norberts.net/gymnastics.htm Norbert's is our favorite supplier of mats, spotting belts and a lot of other equipment.

http://www.varsity.com/index.asp?article=15 This cheerleading catch needs to be learned by coaches and taught to special teams and better athletes.





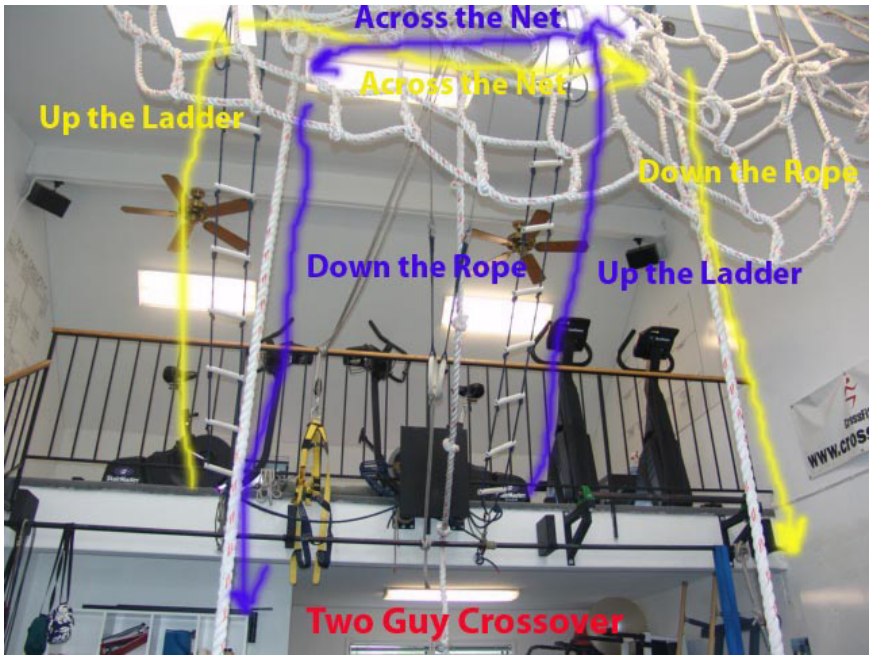
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More than a few ideas involve throwing medicine balls at climbers.

We've now also the possibility of entire workouts ex terra where matting, and spotting and falling techniques are important and need to be researched, learned, discussed, and practiced by coaches and athletes. Between the martial art, gymnastics, and even cheerleading communities you can find numerous rich sources for falling and spotting techniques on the Internet.

This bit of handiwork with knots, carabiners, ropes, nets, pulleys, and PVC, was instructive and opens the door for many to an entire world of survival related skills, and the physical advantage to developing a strong capacity in the arboreal, or ex terra, environment is an important advancement in the CrossFit protocol.





Greg Glassman is the Founder of CrossFit, Inc. and Crossfit Santa Cruz and is the publisher of the CrossFit Journal. He is a former competitive gymnast and has been a fitness trainer and conditioning coach since the early 1980s.

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What is CrossFit?

CrossFit is a strength and conditioning system built on constantly varied, if not randomized, functional movements executed at high intensity.

Let's give life to this description and see how this program, honed from years of clinical experience, goes about forging elite fitness.

Man's world, nature, is full of movement. Our standing, sitting, throwing, lifting, pushing, pulling, climbing, running, and of course, punching are all quite natural. They got us where we are. They are part of our design.

These natural, primal, movements influence the exercises included in CrossFit's workouts.

A major and natural division occurs in movement types between those requiring control of the body alone and those that require the control of an external object as well.

We have also denoted movement types as being from the "arboreal" or "terrestrial" realms in recognition of man's history.

The anthropologist's notion that our ancestors practice of brachiating (swinging through the trees with relatively straight arms) effected an upright view and posture that transferred perfectly to bipedal movement on ground allowing the hands to use weapons and other tools is captivating in that it gives a full range of man's physical capacities.

Those intertwined yet distinct demands are wonderfully expressed by the classical sports of gymnastics and weightlifting and what are for us their subsidiary domains, climbing and throwing. In the combined capacities of the weightlifter and gymnast we see a broad and powerful representation of the physical abilities of man for moving himself and things.

It's from these wells, gymnastics and weightlifting, that we've drawn the exercises that form the basis of CrossFit's programming.

We use the term "functional" to describe the exercises utilizing movements most representative of natural movement. Functional movements generally use universal motor recruitment patterns, recruit in a wave of contraction from core to extremity, move the body or other object effectively and efficiently, and are multi-joint

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"compound" movements, which are neurologically irreducible.

The movements we've selected are in large part responsible for the potency of the CrossFit protocol. We say, "The magic is in the movements".

For us the process of reviewing, testing, and evaluating exercises for selection is constant.

Criteria for selection include, range of joint motion, uniqueness of line of action, length of line of action, strength of line of action, commonness of motor pattern, demands on flexibility, irreducibility, utility, foundational value, neurological value, measurable impact on adherents, and, frankly, potential for metabolically induced discomfort.

Our workhorse movements include deadlifts, squats, pull-ups, running and lunging, push-ups and dips, presses and jerks, cleans and snatches, rope climbing, sit-ups, jumping, throwing, pressing to handstand and some hybrid movements like the muscle-up, clean & jerk, "wall-ball", and "thruster".

This cast of characters well represents the range of useful natural movements found in man; they are the "alphabet" from which more complex and natural movements are formed.

Our toolbox contains gymnastics rings, barbells, bumper plates, dumbbells, parallel bars, pull-up bars, medicine balls, rope, mats, and some odds and ends like kettlebells, a giant tire, and sandbags.

Our tools and exercises have long records of distinction outside of and long before CrossFit. In earlier times every "gymnasium" had parallel bars, rings, vaulting horse, dumbbells, barbells, and heavy bags. The rudiments of gymnastics and weightlifting were taught to all school kids. They were also an integral part of military physical training.

Today, outside of the CrossFit community, gymnastics and weightlifting protocols rarely mix. The most effective stimulus for developing agility, balance, coordination, accuracy, flexibility, trunk control, and upper body strength rarely mixes with the most effective stimulus for developing overall strength, power, speed, and explosive hip extension.

CrossFit's vast clinical experience with functional movements strongly suggests that these movements are not only safe but also absolutely essential to health and

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Kelly Moore | Champion Powerlifter

On CrossFit, superior fitness, and general physical preparedness



Superior fitness - you bet. I couldn't hold a candle to my current overall fitness despite long hours in the gym following powerlifting and bodybuilding routines. Better cardiovascular condition, better endurance, a little better flexibility and more determination and focus...I'm in the best condition of my life. Superior health - I don't know if it's CrossFit, better eating or a combination of the two, but I haven't had a full blown cold or flu despite lots of stress, overtime and night shifts with ill co-workers in an enclosed and shared keyboard/phone environment. I also sleep better than I have in years.

Superior GPP - no question that CrossFit works. Throwing hay bales, pushing a wheelbarrow loaded with wet manure through 4" of mud, hauling shavings from the arena to the barn all feel like a warm-up now rather than a workout. Even my cardio and overall quickness has become better - occasionally some of the horses will refuse to go into their pasture area and I will need to go out and get them moving in the right direction. If the normal persuasion fails, I need to herd them to where they need to go. This involves sprinting and fast lateral direction changes. Depending on how cooperative the horses feel, this activity may take several very CrossFit-like minutes. I used to nearly collapse in a heap after a session, now it's just another thing to do.

I do have to tell you that CrossFit is the most productive fitness program I've ever used in 20+ years of lifting. I'm stronger in almost every lift, am participating in rudimentary gymnastics, running, and performing lifts I never dreamed I could. Although I know it's not an important factor, I also have to share with you several things friends have said regarding my changing body condition. People who have known me for years have commented that my shoulders are broader, my back wider, my arms are much bigger, forearms are more muscular, and waist is tighter and that there is less fat on my butt and thighs. How amusing, I'm achieving a bodybuilder's dream without bodybuilding! The effects of CrossFit on both my fitness performance and my appearance have been dramatic.

Another interesting note: my father was very supportive of my lifting and competing. He would attend meets and shows, take pictures, and brag to his friends. But one thing he said bothered me. He asked me how I could look like I did, lift as much as I did, but still struggle to lift those 50# bags of cement mix to my shoulders and take them 300 feet to the shed? I guarantee I wouldn't have trouble handling those bags now!

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fitness. Provocatively, it is our contention that non-functional movements not only render a seriously blunted training response, but that they are collectively, in contrast to functional movements, unsafe.

Our protocol has been tested across the broadest spans of human capacity with but minor modifications to exercises and workouts. Our claim of a universally scalable program has been proven sound.

Beyond safe and essential, we've found that functional movements form the basis for dramatically effective rehabilitation from injury and illness. Be sure that we are talking about squats, deadlifts, pull-ups, and push-ups and not rolling around on Swiss balls and playing with Theraband. Functional movements scaled to capacity, that is, coupled with common sense and patience offer the quickest path to full habilitation. We believe that this is the future of physical therapy.

In terms of performance, the functional exercises are singularly unique in developing strength, speed, and power. Several of our functional exercises, the deadlift, clean, and squat to name three, have been shown to alter hormone and neurotransmitter production. This "neuroendocrine" response is widely held to explain curious phenomenon like the squat's development of upper body strength. The neuroendocrine response offers a more systemic and less mechanical view of strength development.

Neuroendocrine response has nothing to do with our selection of exercises, however. We've chosen the exercises we have because of their observed leverage in conferring strength and capacity past their more apparent or obvious, mechanical or anatomical, advantages. Neuroendocrine response may explain our program's efficacy, however.

We're making the important point here that our protocol has been developed experientially or empirically. We call it the black-box model. We don't know or care so much about what goes on inside, we're keeping our eye on inputs and outputs, workouts and results alone. This approach has kept us a generation or two ahead of theory-based programming. Experts offering fitness, nutrition, or health regimens that they claim are distilled from first principles rather than clinical practice are fooling those who listen to them and, as often as not, themselves as well.

The concept of neuroendocrine response provides a theory as to how and why not only an exercise, but an entire regimen might contain distinct and powerful biochemical advantages. It is our suspicion that CrossFit's entire repertoire of movements and even workouts themselves, elicit a powerful neuroendocrine response. We're waiting for some professor to prove it.

Until then, let's examine how we mix the functional movements to distinct advantage and then explore those advantages.

On the potency of functional exercises we say, "The magic is in the movements", but our line on maximally effective programming is, "The art is in the mixing."

The fitness that CrossFit advocates and develops is broad, general, and inclusive. Our specialty is not specializing. Combat, survival, many sports, and life reward this kind of fitness and, on average, punish the specialist.

In practice, this encourages the athlete to disinvest in any fixed notions of sets, rest periods, reps, exercises, order of exercises, routines, peridodization, etc. Nature frequently provides largely unforeseeable challenges; we train for that by striving to keep the training stimulus broad and constantly varied.

We want to develop the capacity for elite performance in any combination of functional movement across a broad range of challenges or demands. (See "What is Fitness?" CFJ Issue 2.)

Introducing the idea of the "functional couplet" and using a simple design template shows how simple and yet how much artistry can go into making CrossFit workouts.

A "functional couplet" is a pairing of two functional exercises. Period. The most intriguing, and perhaps effective, are those comprised of a classic weightlifting or weight training movement coupled with a classic gymnastic or calisthenic movement. The best couplets are whole body monsters like thrusters and pull-ups or deadlifts and handstand push-ups.

Functional couplets make perfect CrossFit workouts when used as timed circuits where the athlete either attempts a predetermined number of rounds for best time (task priority) or works to complete as many rounds as possible in a predetermined time period (time priority).

Generally, the task priority couplets will go 3-5 rounds and the time priority couplets no more than 20 minutes but anything is possible and fair game. These workouts will last between 3-20 minutes and probably average 15. One hour including warm-up and cool down and stretching is plenty.

The workouts can be worked at such blistering intensity, and should be, so that on the following day some rest, or at least a change of tempo is needed. For our simple template we will call these days "focus days".

A focus day would be ideally spent in one of three manners. The first would be a distance effort, i.e., bike, run, swim, or row long. The second would be to focus on developing a gymnastics skill, e.g., press to handstand, pirouette, back flip. The third manner would be to focus on single rep efforts of a basic lift or, perhaps, concentrate on technique as with the O'lifts. This is a great day to work on fixing chinks in your fitness armor.

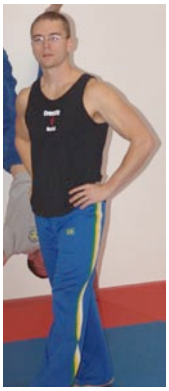
Following the focus day is another couplet and the fourth day is a rest day. So, a single

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Editor

Robb Wolf | CrossFit Coach, Founder of CrossFit Norcal



Regimens built from functional exercises at high intensity and constantly varied structure -

Produce a superior cardiorespiratory adaptation

Are essential to fitness and health

Health and Fitness, although difficult to define precisely, share many interconnected attributes. Among these are: appropriate immune response, insulin sensitivity, the acquisition and maintenance of lean muscle mass, the ability to cope with acute stressors, the maintenance of physical, emotional and intellectual elacticity and the ten general physical skills as defined by the 10/2002 CrossFit Journal.

CrossFit, through the application of functional movement performed at high metabolic output, achieves an unparallel degree of health and fitness. This may appear a bold claim until one considers how the best minds in paleo-anthropology, sports science and human genetics are approaching the topic:

http://www.thepaleodiet.com/articles/Int%20J%20Sport%20Article.pdf

http://jp.physoc.org/cgi/content/full/543/2/399

Constitute the most effective rehabilitation from injury –

Rehabilitation may be viewed as a continuum spanning the states of prehabilitation to recovery. Prehabilitation includes biomechanically sound motor recruitment patterns created in the execution of functional movements. Non-functional movements, by their nature, are pathogenic in that they create muscle imbalance and faulty motor recruitment and they compromise joint integrity. Prehabilitation is also characterized by the turnover of bio-molecules in muscle, tendon, bone ligament, cartilage etc. This turnover facilitates growth and repair and is optimized, not coincidentally, when the parameters of health and fitness (hormonal state, immune function) are also optimized.

Recovery from a pathological condition which may include tissue damage, loss of proper neuro-muscular function, compromised immunity and stress response is qualitatively no different from prehabilitation. If functional movements are utilized the greatest recovery potential may be realized. Non-functional movements create smaller recovery potentials and will promote further pathology.

Comprise the only truly safe protocols-by their very nature

Functional movements support and protect joint and tissue integrity at any loading paramater via biomechanical efficiency AND sound motor-recruitment patterns.

Non-functional movements do not provide this benefit and are consequently unsafe.

Elicit an inordinate neuroendocrine response -

The neuroendocrine response, as the name implies, has both a neurological and a hormonal component. The hormonal component is characterized by increased free circulating hGH, insulin like growth factor and testosterone as well as aspects of acute adrenal cortical response. Metabolically this translates into enhanced tissue repair and improved nitrogen retention. The neurological component appears to improve efficiency at the neuro-muscular junction and likely improves rate coding and recruitment patterns. Only functional multi-joint movements such as those found in gymnastics, throwing, Olympic lifting and sprinting elicit a neuroendocrine response of appreciable magnitude.

Are singularly unique in developing core strength -

From a functional standpoint core strength and midline stability are perhaps better described than defined. True core strength involves the transfer of significant forces through the trunk musculature. This may involve rotation as in punching, kicking and throwing or maintaining a rigid torso in the Olympic lifts, linear flips, vaults and jumping. Individuals who develop the core strength to perform well in these movements typically find any amount of Swiss ball crunches or other low quality movements to be superfluous. It is readily apparent that no amount of low quality movement will translate into functionality.

Yield unparalleled general physical preparedness or fitness -

General physical preparedness (GPP), as described by Verkoshansky and Bompa, prevents injury, increase work threshold and is the basis whereby sport specific training may be conducted at levels consistent with elite performance. Historically GPP has consisted of sled drags, complexes, and body weight calisthenics performed at high intensity with resultant improvements in aerobic and anaerobic endurance, enhanced recovery, above normal neuroendocrine response, and accentuated hypertrophy. The key features of GPP, and CrossFit, are functionality, generality and intensity.

Crossfits' reliance upon functional movements from gymnastics, Olympic lifting and sprinting mixed in a randomized fashion, with keen attention placed on energy system demands, ensures the most general, prepared fitness possible.

It is important to note that GPP is tapered cautiously prior to competition in elite level throwers, Olympic lifters, gymnasts and others due to an inability to withstand Sport Specific Training volumes WITHOUT GPP.

Bompa, T. (1999) Periodization: Theory and methodology of training. Kendall/Hunt
Verkoshansky, V. (1988) Programming and Organization of Sports training. Sportiviny Press, Livonia, MI

What is CrossFit?

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...continued from page 3

cycle of our template looks like this: Couplet, Focus, Couplet, Off. This is a three days on one day off regimen.

Sixteen-day Cycle

1. Five rounds for time of:
Deadlift 185 pounds 15 reps/10 handstand push-ups

2. Run 5K for time

3. How many rounds can you complete in 20 minutes of:
24" Box Jump X 25 reps/5 Muscle-ups?

4. Off

5. How many rounds can you complete in 15 minutes of: Hang squat clean 135 pounds 12 reps/15 Ring dips?

6. 5 sets of 50 Sit-ups on GHD

7. Five rounds for time of:
35 pound Dumbbell thrusters X 15 reps (front squat/push-press)/12 pull-ups

8. Off

9. Five rounds for time of:
60 pound two hand dumbbell swing X 21 reps/Glute-ham developer medicine ball throw sit-up with 12 pound ball X 15

10. One set of max rep pull-ups every 12 minutes or six sets.

11 .How many rounds can you complete in 20 minutes of:
Run 400 meters/Deadlift 225 pounds X 7 reps?

12. Off

13. Seven rounds for time of:
Front squat bodyweight 10 reps/30 feet of rope climb

14. Snatch nine sets 3-3-2-2-2-1-1-1-1

15. How many rounds can you complete in 20 minutes of:
Bench press 135 pounds 10 reps/12 "L" Pull-ups?

16. Off

In these workouts the reps, sets, length of workout, exercises, and combinations of exercises vary greatly while the intensity stays relatively high and the movements are all functional.

We started with a description of CrossFit as "a strength and conditioning system built on constantly varied, if not randomized, functional movements executed at high intensity." Our 16-day sample fits the description.

Athletes with a primary sport would want to squeeze CrossFit workouts around their major sport practice and training, but they would not need additional strength and conditioning work. This can be a delicate operation in that the workouts are so demanding that the specter of overtraining may arise. These workouts are very potent medicine and need to be introduced gently especially if supplementing a rigorous athletic training schedule.

Athletes preparing for special forces selection, pararescue indoc, BUDS, or other military PT will find that supplementing the CrossFit workouts with some extended distance running or swimming work and additional calisthenic training consistent with the program's expectations will give a great foundation. This additional work would be treated exactly like sport. Also, the focus days are perfect for testing selection goals and standards.

Invariably, if not always the question comes up regarding "cardio". "What about the cardio?" is the standard refrain.

The answer is simple yet hard to believe for many: The "cardio" is built into the workouts themselves. Cardiorespiratory adaptations don't develop independently of exercise and movement.

Much of cardiorespiratory adaptations are specific to the training modality. VO2 max, the gold standard for aerobic fitness, is fairly specific to the mode in which it is developed. What we've discovered is that the specificity is lessened and the aerobic benefit of an activity transferable largely to the degree that the activity in which it was developed is functional and representative of the intended application.

This leads us to offer that running is a better aerobic preparation than bicycling for close quarter combat but thrusters and pull-ups would be better yet.

In total, the strength of our training stimulus gives an adaptation so broad and deep that we have not only matched the cardiorespiratory development of other protocols but surpassed them readily, leading to our claim that CrossFit is an unrivaled protocol for developing general physical preparedness and that our system is an ideal kernel from which to develop more specialized but no more fit capacities.

In "What is Fitness?" (CFJ Issue 2) we explained what we thought fitness should be and what it is for us. Since that issue, nearly sixteen months ago CrossFit has been tested repeatedly by many of the world's toughest men in the world's toughest environments and proven uniquely effective. Some day, someone is going to do a study.

What is CrossFit?

Editor

Mark Twight



Alpinist, President Mountain Mobility Group, Trainer to SOCOM personnel and FBI Hostage Rescue Team, author of "Kiss or Kill – Confessions of a Serial Climber", and "Extreme Alpinism: Climbing Light, Fast and High", Founder of Gym Jones – a CrossFit affiliate in Salt Lake City.

The following was excerpted from several of Mark's posts on the www.crossfit.com message board.

"You can talk all you want about being in good shape until you do a few CrossFit workouts. And then you will realize -- like I did -- that what you have been doing is likely training strong points, rarely working on weak points, and training efficiency to such a degree that the workouts you do are less effective than they might be if you mixed energy modes, duration, and types of work.

You probably know something about climbing-specific training because of books like Ex Alp, Clyde's book, Dale's book, and maybe Will's. But none of this will prepare you for what is to come if you make even the slightest effort to follow CrossFit. Coach invited me to CrossFit HQ for an instructor seminar. I was the weakest guy in attendance, by at least 50% during every workout we did over the three days. Those days changed my life. I could "what if?" my old training program and all the years I missed when I thought I was fit but I was nowhere near my potential but the key is to move on when you know that something better is out there, without second-guessing. I don't believe I will find anything better than CrossFit for developing power, endurance, lactate tolerance, stamina (local area endurance), balanced muscle groups, efficient neurological pathways (in the context of movement), etc. The bottom line: I started toying with the CF protocol last April without truly understanding it. I improved in some diverse areas of fitness but had not seen the light or my own potential yet. I went to CFHQ 1 December. Since then I have lost 12lbs, leaned out, and I am approximately 25% stronger across the board without significant negative effect on endurance despite the short duration of our workouts (nothing longer than 25 minutes, with the norm being half that or less).

I had purposefully not skied or climbed much all winter (prior to this I only climbed 4 days, all teaching, and went ski mountaineering once). I only did CF type workouts from November 1. I have an aerobic base and movement efficiency developed over many years but still, I never ran more than 400m with exception of one 3k per a particular WOD, never rowed more then 30 minutes (and this at very low HR). Results were encouraging; during the ski mountaineering days I had plenty of gas for power-endurance efforts, went 4-6 hours each day, never felt aerobically pressured, stayed mentally sharp and recovered quickly. Ice climbing days were on relatively easy routes and the only challenge I felt was (as usual) grip endurance, which is VERY specific and despite training on rings, the fat pull-up bar, isometric farmer bar holds, etc. this must be "re-educated" through actual practice of the sport. But grip endurance was not an anticipated part of the test. All I was interested in was whether the anaerobic and lactate tolerance training common to CrossFit would have positive influence on pure aerobic effort of significant duration (i.e. 20 to 40 times longer than an average CF workout, which is still lower than the final the target duration) and the answer is a resounding, "yes."

I still need to do some benchmark ski mountaineering days to make "exact" comparisons with previous (one to two years ago) effort. I put "exact" in quotation marks because not only do snow conditions change but my body has changed a lot from doing CrossFit and eating Zone/Paleo as well: I am 13lbs lighter than the previous two winters, which will have positive effect on VO2 Max and O2 uptake efficiency, I can push (dips and push-ups) harder now, which would have a positive effect on poling on uphill or flat terrain, I have stronger hips, which allows me to stand upright and push with glutes, etc. when skiing uphill instead of leaning forward and relying mostly on my quads. The upright position improves breathing efficiency as well. I have a much stronger core, and this increases the efficiency of all movement. So, while the tests cannot produce an exact comparison they do show, and I expect future tests to give similar results, that CF has positive benefits for endurance and power-endurance effort. Good results with fewer destructive side effects than those associated with long, slow distance, oxidative type training.

I'm certainly not finished with this "test" but I am really psyched with the results so far. Being a skeptic at heart I keep asking, "how is this possible?" I am trying to overcome more than 20 years of training programming. My body is doing it just fine but my brain is still shouting that something is not right! It is an amazing process to be going through at age 42.

Previously, training for big routes in Alaska, the Himalayas or the Alps I did spend time lifting but I focused mainly on movements I thought

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What is CrossFit?

Editor

...continued from page 6

related to climbing: the five core exercises were pull-downs (seated with knees locked under a plate for the higher weights), finger curls (standing, with an Olympic bar), one arm rows (bent over, one knee on bench), leg press (on a machine), calf raises (standing, also on a machine). I was pushing and pulling some remarkable weight for my bodyweight. I combined the weight room with metabolic work on a road bike, some skate skiing, and either running or skiing uphill. Then stacked with long days in the mountains onto the program.

Strangely, I never believed strongly in the need for massive hours of aerobic base. The scientists say I was wrong but I never felt like a lack of fitness caused me to fail on any routes. There were guys I could not keep up with, of course, but that may result from many causes. In the early years my longest "artificial" metabolic workouts lasted a couple of hours, max. That changed in the mid-1980s when I realized how slow most guys were going in the mountains and that maybe their slow training modality was the cause. They trained at a moderate level of effort for long, long hours so they never got to know what intense and fast really meant, never could express it in the mountains.

So I started training shorter duration of higher efforts but never got below 45-60 minutes during the metabolic workouts. It certainly improved lactic acid tolerance and pushed my anaerobic threshold higher but not to the same degree as CrossFit has. And I eventually adapted to the training because it was so repetitive, working the same energy systems in the same way over and over. I never got bored to the point of detraining myself but I realize how efficient I became at certain types of effort, which ultimately reduced the value of the training.

Now, with several months of CrossFit under my skin, and many conversations with Coach I recognize that, while fitness might never have caused me to fail, I could certainly have achieved higher and broader levels of fitness by following a protocol other than the one I developed on my own or with equally narrow-minded coaches who thought there was one right way to get there.

I wish I had discovered the rings as a tool 15 years ago. I wish I had discovered the need for effective core and midline stabilization, and learned how a weak SI joint was costing me energy. I wish I had dipped below the 45-60 minute metabolic duration into the 20-minute area at much higher intensity -- but years of programming insisted that this did not make sense.

I am pleased that, while I might have done more, better if my training program had been different back then, I am able to move ahead with something new. One of my partners adamantly refuses to move on because that would force him to consider that he wasted the last ten years on a less effective protocol ... he's training massive hours at a Zone 1 HR, finally starting one interval day per week last week. I can't wait to get with him and test the results of our different training programs!"

CrossFit Manifesto:

Regimens built from functional exercises at high intensity and constantly varied structure -

- Produce a superior cardiorespiratory adaptation
- Are essential to fitness and health
- Constitute the most effective rehabilitation from injury
- Comprise the only truly safe protocols
- Elicit an inordinate neuroendocrine response
- Are singularly unique in developing core strength
- Yield unparalleled general physical preparedness or fitness

the CrossFit JOURNAL

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Your input will be greatly appreciated and every email will be answered.



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ISSUE TWENTY

the CrossFit JOURNAL

April 2004





The Moves

The traditional process of coaching human movement involves the coach first demonstrating a sought after skill and the athlete then attempting the skill after which the coach provides corrections and the athlete again performs the skill hopefully incorporating the coach's inputs. Iterations of these steps are the essence of not only coaching human performance but all teaching as well.

The challenges to applying this familiar process through the Internet and digital media are nettlesome yet fully manageable.

Information technology concerns like bandwidth, speed of connectivity, file size, compatibility of operating systems and browsers mix with more human or pedagogical concerns like how to best represent mechanism and motion, process and dynamics, cause and effect, explanation and narrative to support understanding.

From the first days of planning www.crossfit.com we were convinced that animation could most powerfully and effectively depict the basic movements we were eager to share with the world. We envisioned moving bodies where the skin would magically disappear while highlighting the muscles and muscular contraction responsible for the movement. Bone, muscle, joint angle, line of action, and forces could all be depicted independent of any other confusing or obscuring data or concern.

Four years later we still believe that animation would be the best medium for depicting movement, process, and cause and effect. The single obstacle to animating the basic movements is cost. Imagine, though, the job that the Walt Disney Company could do in conveying our favorite exercises.

Dismissing animation, our thoughts next and quite naturally turned to video. In fact, our current exercise page, http://www.crossfit.com/cf-info/excercise.html, contains short video clips of many of our more commonly used movements.

While these clips are largely adequate to the task, there are several serious problems with video.

First, the images need to be small and of relatively low resolution to keep the file size small enough to handle the connectivity speed of the average viewer. Consequently, our video clips are by necessity small and fuzzy. But, even small and fuzzy they have been inaccessible to many due to platform incompatibility problems with the

continued page ... 2

The Moves

Editor

...continued from page 1

popular media viewers.

There's another limitation to video that is present even with high resolution and large image area. Critical information, essential to understanding a movement is often obscured or lost among less critical, non-essential data. For instance, when we show our athletes high-resolution video of well executed Olympic lifts, critical points like the point of maximum extension or the "scoop" are completely missed unless we slow the tape down or freeze the frame. Freezing the tape, or frame, typically reduces resolution to a point where the image is near worthless. The process of tape review is so fraught with slowing, stopping, and rewinding that we've found it useful, almost necessary, to convert our favorite instructional videotape to DVD to more readily replay, highlight, and focus on key moments within a movement.

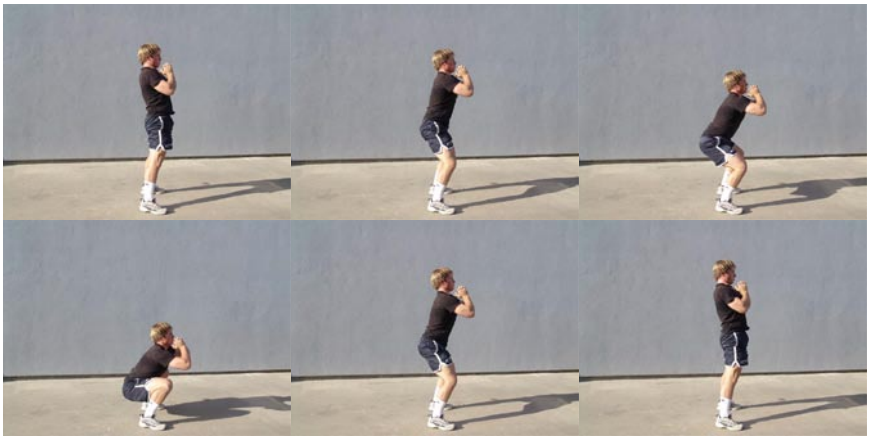
Our experiences with instructional video of complex movements has led us to discover that a series of well chosen still photos often better conveys critical points in movement by capturing them to the exclusion of extraneous, less important imagery. The drawback to the still photos, even when key moments are well caught, is that invariably a sense of the dynamics or process of the movement seems to be blunted and has to be imagined.

We'd been experimenting with carefully selected sequences of still photos when early this year one of our media friends, Dave Young told us about a company called 3cim, http://www.3cim.com/index.asp, that produces high-definition web imaging and compression technology.

The 3cim technology provides high-resolution images, viewable on almost any platform or operating system,

continued page ... 11

Air Squat | Link

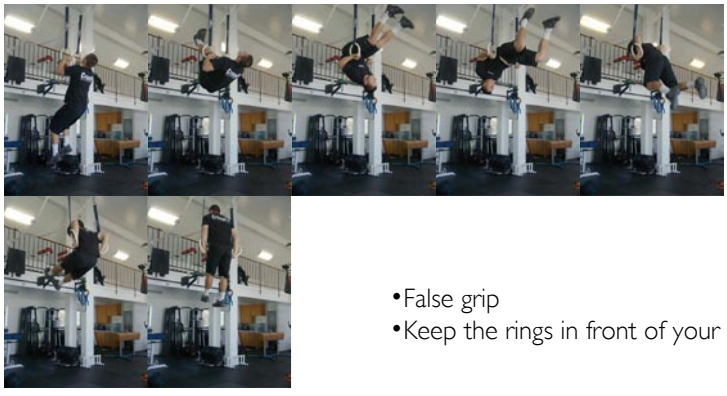


- Back arched
- Look straight ahead
- Keep weight on heels

- Good depth = below parallel
- Chest high
- Midsection tight

The squat is essential to human movement, a proven performance enhancer and a gateway movement to the best exercise in strength and conditioning.

Back Roll to Support on Rings | Link



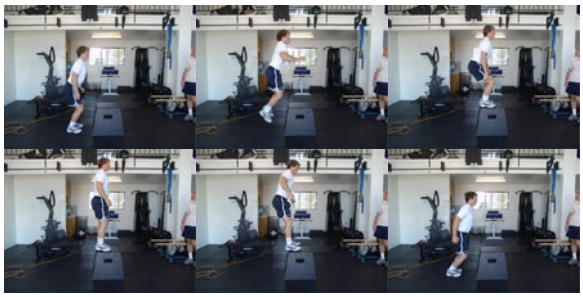
- False grip
- Keep the rings in front of your body

This move can be practiced on a bar (or roof edge). The backward roll gives a second method after the muscle-up of getting on top of the rings.

The Moves

Editor

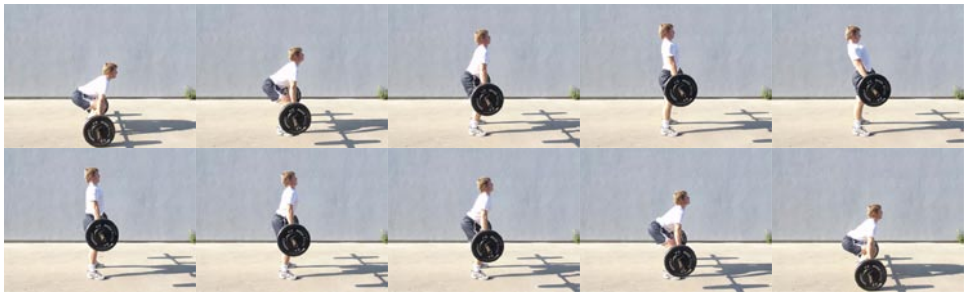
Box Jump | Link



•Look straight ahead
•Drive up with the arms
•Come to full extension on or above the box

It is a common fault to look at the feet and landing point in executing the jump. Keep the landing point in your peripheral vision only – look straight ahead. Big guys love this exercise.

Deadlift | Link



•Look straight ahead
•Keep back arched
•Arms don't pull, they're just straps
•Bar travels along legs
•Push with the heels

The deadlift, like the squat, is essential functional movement and carries a potent hormonal punch. This is core training like no other.

Dumbell Snatch | Link



•Start with body centered over dumbbell
•Pull dumbbell straight up
•Arm doesn't pull until hip and legs are done
•As dumbbell rises past hips, drop to catch
•Catch with arm locked
•Dumbbell travels straight up and down

Easy and graceful, even for beginners, the dumbbell snatch offers quick introduction to the basic mechanics of the snatch.

The Moves

Editor

Front Squat | Link



•Bar rests on chest and shoulders with loose grip – "racked"
•Mechanics like other squats

The hardest part of the front squat may be the "racked position". Practice until your wrists are "O.K." with it. Handstands help. This one will force shoulder and wrist flexibility.

Hang Power Clean | Link



•Starts in hang position
•Look straight ahead
•Keep back arched throughout the move
•Initial dip is to mid thigh
•Explosively extend hip and legs on rebound from dip
•Arms don't pull until hips/legs are extended
•Shrug powerfully before arms bend
•As bar is pulled up, dip under to catch
•Rise to full extension
•Lower bar to hang and repeat

The hang power clean derives its name from the fact that the bar never travels below the knee and is caught above the squat.

Hang Squat Clean | Link



The Hang squat clean starts from the hang and is caught in the squat. Catching above the squat and lowering is not the same movement. Not coming to full hip extension before dropping and pulling to soon commonly plague progress.

•Starts in hang position
•Look straight ahead
•Initial dip is to mid thigh
•Explosively extend hip and legs on rebound from dip
•Arms don't pull weight up
•Shrug powerfully before arms bend
•Drop under bar and catch in squat
•Squat to full extension
•Lower bar to hang and repeat

The Moves

Editor

Hollow Rock | Link



The idea is to rock like a rocking chair with your arms extended overhead and legs out straight. There's a flat spot that creates a visible "clunk" caused by weak contraction of the lower abs. Take the "clunk" out. The smoothness of your rocking speaks to your lower ab strength.

Kettlebell Swing | Link



- Keep back arched
- Look straight ahead
- Arms locked throughout move
- Chest high
- Flick hips up and forward

There are stylistic variants to the kettlebell swing. To swing to full overhead and keeping the chest as high as possible as the KB strafes the ground at the bottom is "Santa Cruz" style.

Knees to Elbows | Link



Touch the tip of your elbow to the tip of your knee

Overhand, underhand, bending the arms or not, find the toughest variants. Touching the knee to the upper arm misses the essence of the movement.

The Moves

Editor

L Pull-up | Link



Keep legs horizontal

When the heels fall below the butt, the set is done.

Muscle Up | Link



•Use false grip
•Pull rings to chest
•Keep rings in close
•Lean forward while pulling the elbows back
•Press to extension

The muscle-up is astonishingly difficult to perform, unrivaled in building upper body strength, a critical survival skill, and most amazingly of all, virtually unknown.

Overhead Squat | Link



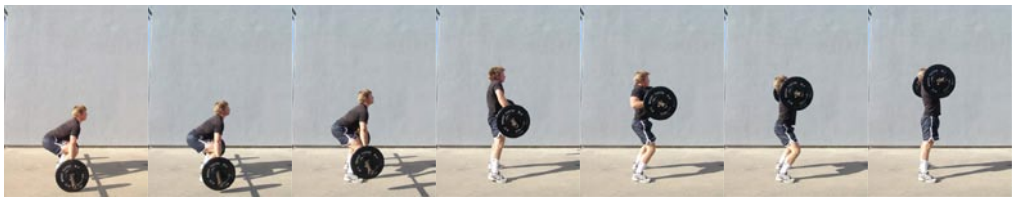
•Grip as wide as needed
•Go slowly
•Head up!
•Stay on heels
•Break parallel

The overhead squat is an important stretch, perfect for warm-ups, integral to the snatch and will expose most functional inflexibility and any mechanical deficiency in your squat.

The Moves

Editor

Power Clean | Link



Same as Hang Power Clean except that the Power Clean starts from the ground. The power clean is caught above the squat. The squat clean is caught at the squat or below. Both start from the floor unless the designation "hang" is used.

- Starts from ground
- Look straight ahead
- Keep back arched throughout the move
- Pull with hips and legs only
- Explosively extend hip/ legs as bar approaches mid thigh
- Arm don't pull until hip/ legs are extended
- Shrug powerfully before arms bend
- As bar is pulled up, dip under to catch
- Rise to full extension
- Lower to hang and then to ground

Push Jerk | Link



- Dip (quick drop of the hip)
- Drive (rebounding extension of leg and hip)
- Press and dip (press overhead while dropping hip again)
- Rise to full extension (extend hip and leg again)
- Lower bar to shoulders and repeat

More functional, efficient, and effective than the push-press, this is an important lift. The push-jerk with a great cycling time is a powerful conditioning tool.

Push Press | Link



- Dip (quick drop of the hip)
- Drive (rebound extension of leg and hip)
- Press

A gateway movement to the jerks, the push press is an important introduction to the "core to extremity" nature characteristic of most functional movement.

The Moves

Editor

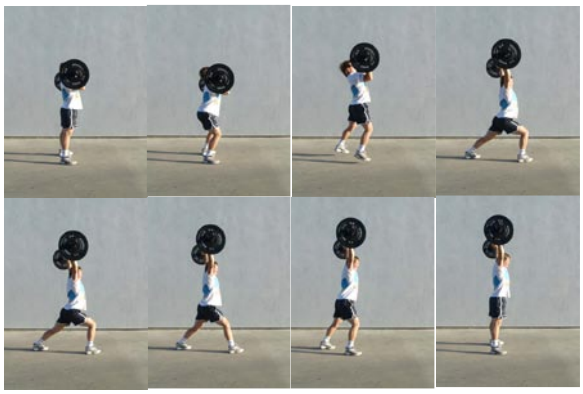
Snatch | Link



The snatch is the "quickest lift" and the other half of Olympic weightlifting – the "clean and jerk" being the other.

- Look straight ahead
- "Overhead squat wide" grip
- Back arched
- Extend hip and legs slowly
- Explode at top of thighs
- Keep arms locked until hip/legs are at full extension
- Duck under and catch in full squat with arms locked overhead
- Rise to full extension

Split Jerk | Link



- Dip
- Drive
- Jump and split one foot forward, one foot back
- Front foot back
- Back foot front

Land in a narrow stance/track but wide split. Land with the front leg bent and flatfooted and the rear leg nearly straight and on the ball of the foot.

Squat Clean | Link



- Start on the ground
- Look straight ahead
- Keep back arched
- Pull with hips and legs only
- Explosively extend hip and legs as bar approaches mid thigh
- Arms don't pull weight up
- Shrug powerfully before arms bend
- Drop under bar and catch in squat
- Squat to full extension
- Lower to hang and then to ground

Same as Hang Squat Clean except that the Squat Clean starts from the ground. The squat clean is caught at the squat or below. The power clean is caught above the squat. Both start from the floor unless the designation "hang" is used.

The Moves

Editor

Sumo Deadlift Highpull | Link



- Start on ground
- Wide, "Sumo", stance
- Take narrow grip on bar
- Look straight ahead
- Keep back arched
- Pull with hips and legs only until both are at full extension
- Flick hip near full extension
- Powerfully shrug
- Immediately pull with arms continuing the bars travel up
- Keep the elbows as far above your hands as possible
- Bring the bar right up under the chin briefly
- Lower to hang
- Lower to ground

For range of motion, line of action, and length and speed of action, the Sumo Deadlift High Pull is a great conjugate to the "Thruster". At low loads this is our favorite substitute for Concept II Rowing.

Thruster | Link



- Start from standing and "racked" (bar on chest and shoulders with loose grip)
- Lower to full Front Squat
- Rise to full hip and leg extension
- Continue the bars acceleration upward with a powerful press to lockout
- Lower bar to "racked" position
- Repeat

Long line of action against the normal force of gravity with a load plus bodyweight, the Thruster is one of the most profound accelerations possible. The movement works from full flexion to full extension at the ankle, knee, hip, shoulder, and arm.

Turkish Getup | Link



- Start flat on back with bar held overhead by one arm
- Keep eyes on bar
- Keep arm perpendicular to floor and perfectly straight
- Rise to stand by any means available
- Switch arms and lower to starting position
- Repeat

This tests and advances the margins of our capacity to stand from the ground. With a barbell and at bigger loads the TGU becomes interesting. Keeping your eyes on the load, moving slowly, and maintaining a straight arm are critical to the outcome.

The Moves

Editor

Walking Lunge | Link



- Step far and long
- Pull yourself forward with the leading leg
- Step past the supporting foot and reach out again
- Repeat

Try not to lean forward and squat up from the outstretched posture. Focus on pulling the body forward and up simultaneously.

Wall Ball | Link



- Start from full squat
- Look over top of ball at target
- Keep elbows in
- On catching, recoil to full squat
- Repeat

Our record for a ten-foot target and 20 pound Dynamax ball is 150 shots in 3:52.

Windshield Wipers | Link



- Keep legs straight
- Bring feet up to bar
- Rock legs 90, or more, alternately to the left and right

Great stretch! Don't let go!

The Moves

Editor

...continued from page 2

with textual overlays, and voiceover, a magnifier – all in a relatively small file size that can transition automatically from one image to another at a rate controlled by the viewer. Eureka!

The 3cim technology preserves much of the dynamics of video with all the advantages of resolution and focus available with still photos.

We have taken the moves for which we get asked most frequently to explain and produced 3cim files for them. After you, CrossFit Journal subscribers, have had the chance to review these files we are going to offer them from the exercises page of the CrossFit site.

We are also inviting anyone interested to submit a series of photographs taken of any move you'd like to see featured along with any text, arrows, and voiceover you feel will help teach your move. Most inexpensive digital cameras now have quick capture capacity for short bursts – perfect to capture a single movement.

We are asking the gymnastics coaches, lifting and throwing coaches, climbers, and the other experts within our community to make a contribution of photos and text to the CrossFit exercise media collection and we will sponsor the conversion to 3cim and host the images on our site giving the author credit.

If we could capture Roger Harrell's Drills and Skills, www.drillsandskills.com, some lifts and throws from Dan John, lifts from Mike Burgener, more gymnastics contributions from Chris Sommer, and some basic climbing moves from Mark Twight, the CrossFit digital exercise library would be the best collection of instructional fitness media anywhere on the Net.

Having a top-drawer digital fitness media library we'll be covered on the outbound – sending the right information. There is though the question of the inbound information – being able to review the technique and mechanics of individuals from our community. We are setting up a section on the CrossFit message board where anyone can post a short video clip or sequence of still photos of their performance and the gang on the board will critique the movement.

We can together build and support a community whose works are beyond the talents, genius, and capacities of anything seen before. Let's get at it.

end.

Are you having trouble seeing the 3cim images?

If so please [click here] to troubleshoot.

the CrossFit JOURNAL

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THE CrossFit JOURNAL

ZONE MEAL PLANS



All photos: Dave Re/ CrossFit Journal





Originally published in May 2004.

Our recommendation to "eat meat and vegetables, nuts and seeds, some fruit, little starch and no sugar" is adequate to the task of preventing the scourges of diet-induced disease, but a more accurate and precise prescription is necessary to optimize physical performance.

Finely tuned, a good diet will increase energy, sense of well-being and acumen, while simultaneously flensing fat and packing on muscle. When properly composed, the right diet can nudge every important quantifiable marker for health in the right direction.

Diet is critical to optimizing human function, and our clinical experience leads us to believe that Barry Sears' Zone Diet closely models optimal nutrition.

CrossFit's best performers are Zone eaters. When our second-tier athletes commit to strict adherence to the Zone parameters, they generally become top-tier performers quickly. It seems that the Zone Diet accelerates and amplifies the effects of the CrossFit regimen.

Unfortunately, the full benefit of the Zone Diet is largely limited to those who have at least at first weighed and measured their food.

For a decade, we experimented with sizing and portioning strategies that avoid scales and measuring cups and spoons, only to conclude that natural variances in caloric intake and macronutrient composition without measurement are greater than the resolution required to turn good performance to great. Life would be much easier for us were this not so!

The meal plans and block chart (on the following pages) have been our most expedient approach for eliciting athletes' best performances and optimal health.

Even discounting any theoretical or technical content, this portal to sound nutrition still requires some basic arithmetic and weighing and measuring portions for the first weeks.

Too many athletes, after supposedly reading Sears' book "Enter the Zone," still ask, "So what do I eat for dinner?" They get meal plans and block charts. We can make the Zone more complicated or simpler, but not more effective. We encourage everyone to weigh and measure portions for a couple of weeks because it is supremely worth the effort, not because it is fun. If you choose to "guesstimate" portions, you will have the result of CrossFit's top performers only if and when you are lucky.

Within a couple of weeks of weighing and measuring, you will have developed an uncanny ability to estimate the mass of common food portions, but, more importantly, you will have formed a keen visual sense of your nutritional needs. This is a profound awareness.

In the Zone scheme, all of humanity calculates to either 2-, 3-, 4-, or 5-block meals at breakfast, lunch and dinner, with either 1- or 2-block snacks between lunch and dinner and again between dinner and bedtime. We have simplified the process for determining which of the four meal sizes and two snack sizes best suits your needs. We assume that you are CrossFit athletes; i.e., active.

Being a "4-blocker," for instance, means that you eat three meals each day, where each meal is composed of 4 blocks of protein, 4 blocks of carbohydrate and 4 blocks of fat. Whether you are a "smallish" medium-sized guy or a "largish" medium-sized guy would determine whether you will need snacks of 1 or 2 blocks twice a day.

The meal plans we give stand as examples of 2-, 3-, 4- or 5-block meals, and the block chart gives quantities of common foods equivalent to 1 block of protein, carbohydrate or fat.

Once you determine that you need, say, 4-block meals, it is simple to use the block chart and select four times something from the protein list, four times something from the carbohydrate list and four times something from the fat list every meal.

One-block snacks are chosen from the block chart at face value for a single snack of protein, carbohydrates and fat, whereas 2-block snacks are, naturally, composed of twice something from the carbohydrates list combined with twice something from the protein list and twice something from the fats.

Every meal, every snack, must contain equivalent blocks of protein, carbohydrate and fat.

If the protein source is specifically labeled "non-fat," then double the usual fat blocks for that meal. Read "Enter the Zone" to learn why.

For those eating according to Zone parameters, body fat comes off fast. When our men fall below 10 percent body fat and start approaching 5 percent, we kick up the fat intake. The majority of our best athletes end up at X blocks of protein, X blocks of carbohydrate, and 4X or 5X blocks of fat. Learn to modulate fat intake to produce a level of leanness that optimizes performance.

The Zone Diet neither prohibits nor requires any particular food. It can accommodate paleo or vegan, organic or kosher, fast food or fine dining, while delivering the benefits of high-performance nutrition.



What Is a Block?

A block is a unit of measure used to simplify the process of making balanced meals.

- 7 g of protein = 1 block of protein
- 9 g of carbohydrate = 1 block of carbohydrate
- 1.5 g of fat = 1 block of fat

(This assumes that there is about 1.5 g of fat in each block of protein, so the total amount of fat needed per 1 block meal is 3 g.)

When a meal is composed of equal blocks of protein, carbohydrate and fat, 40 percent of its calories are from carbohydrate, 30 percent from protein and 30 percent from fat.

The following pages contain common foods in their macronutrient category (protein, carbohydrate or fat), along with a conversion of measurements to blocks.

This block chart is a convenient tool for making balanced meals. Simply choose 1 item from the protein list, 1 item from the carbohydrate list and 1 item from the fat list to compose a 1-block meal. Or choose 2 items from each column to compose a 2-block meal, and so on.

Here is a sample 4-block meal:

- 4 oz. chicken breast
- 1 artichoke
- 1 c. of steamed vegetables with 24 crushed peanuts
- 1 sliced apple

This meals contains 28 g of protein, 36 g of carbohydrate, and 12 g of fat. It is simpler, though, to think of it as a 4-block meal.

Block Prescription Based on Sex and Body Type

Breakfast	Lunch	Snack	Dinner	Snack	Total Blocks	Body Type
2	2	2	2	2	10	**Small female**
3	3	1	3	1	11	**Medium female**
3	3	2	3	2	13	**Large female**
4	4	1	4	1	14	**Athletic, well-muscled female**
4	4	2	4	2	16	**Small male**
5	5	1	5	1	17	**Medium male**
5	5	2	5	2	19	**Large male**
4	4	4	4	4	20	**Extra-large male**
5	5	3	5	3	21	**Hard gainer**
5	5	4	5	4	23	**Large hard gainer**
5	5	5	5	5	25	**Athletic, well-muscled male**

Sample Day | Block Requirements for Small (16-Block) Male

	Breakfast	Lunch	Snack	Dinner	Snack
Protein	4	4	2	4	2
Carbohydrate	4	4	2	4	2
Fat	4	4	2	4	2

Block Chart for Protein, Fat and Favorable Carbohydrates

Protein (Cooked)			
beef	1 oz.	ham	1 oz.
calamari	1½ oz.	lamb	1 oz.
Canadian bacon	1 oz.	lobster	1½ oz.
canned tuna	1 oz.	pork	1 oz.
catfish	1½ oz.	protein powder	1 oz.
cheese	1 oz.	ricotta cheese	2 oz.
chicken breast	1 oz.	salmon	1½ oz.
clams	1½ oz.	sardines	1 oz.
corned beef	1 oz.	scallops	1½ oz.
cottage cheese	¼ c.	seitan	1 oz.
crabmeat	1½ oz.	shrimp	1½ oz.
deli meat	1½ oz.	soft tofu	3 oz.
duck	1½ oz.	soy cheese	1 oz.
egg substitute	¼ oz.	soy burgers	½ patty
egg whites	2 large	soy sausage	2 links
feta cheese	1½ oz.	spirulina (dry)	½ oz.
firm tofu	2 oz.	swordfish	1½ oz.
flounder/sole	1½ oz.	tuna steak	1½ oz.
ground beef	1½ oz.	turkey breast	1 oz.
ground lamb	1½ oz.	veal	1 oz.
ground pork	1½ oz.	whole egg	1 large
ground turkey	1½ oz.		

Favorable Carbohydrate (Raw)			
alfalfa sprouts	7½ c.	lettuce, romaine	6 c.
apple	½	lime	1
applesauce	⅜ c.	mushrooms	3 c.
apricots	3 small	nectarine	½
bean sprouts	3 c.	onion	⅔ c.
blackberries	½ c.	orange	½
blueberries	½ c.	peach	1
broccoli	2 c.	pear	½
cabbage	2¼ c.	peppers	1¼ c.
cantaloupe	¼	pineapple	½ c.
carrot	1 large	plum	1
cauliflower	2 c.	radishes	2 c.
celery	2 c.	raspberries	⅔ c.
cherries	7	salsa	½ c.
cucumber	1 (9 in.)	snow peas	¾ c.
fruit cocktail	⅓ c.	spinach	4 c.
grapefruit	½	strawberries	1 c.
grapes	½ c.	tangerine	1
honeydew	½	tomato	1 c.
kiwi	1	watermelon	½ c.
lemon	1	zucchini	3 c.
lettuce, iceberg	1 head		

Favorable Carbohydrate (Cooked)			
artichoke	1 small	kale	1¼ c.
asparagus	12 spears	kidney beans	¼ c.
beet greens	1¼ c.	leeks	1 c.
black beans	¼ c.	lentils	¼ c.
bok choy	3 c.	oatmeal	⅓ c.
broccoli	1¼ c.	okra	¾ c.
brussels sprouts	¾ c.	onion	½ c.
cabbage	1⅓ c.	sauerkraut	1 c.
cauliflower	1¼ c.	spaghetti squash	1 c.
chick peas	¼ c.	spinach	1⅓ c.
collard greens	1¼ c.	swiss chard	1¼ c.
dill pickles	3 (3 in.)	tomato sauce	½ c.
eggplant	1½ c.	tomatoes	¾ c.
fava beans	⅓ c.	yellow squash	1¼ c.
green beans	1 c.	zucchini	1⅓ c.

Combo Items*			
milk	1 c.	tempeh	1½ oz.
soy milk	1 c.	yogurt (plain)	½ c.
soybeans	¼ c.		

Fat			
almonds	~3	olive oil	⅓ tsp.
avocado	1 tbsp.	olives	~ 5
bacon bits	2½ tsp.	peanut butter	½ tsp.
butter	⅓ tsp.	peanut oil	⅓ tsp.
canola oil	⅓ tsp.	peanuts	~ 6
cashews	~3	salad dressing	½ tbsp.
coconut oil	⅓ tsp.	sesame oil	⅓ tsp.
cream cheese	1 tsp.	sour cream	1 tsp.
cream, light	½ tsp.	sunflower seeds	¼ tsp.
guacamole	½ tbsp.	tahini	⅓ tsp.
half and half	1 tbsp.	tartar sauce	½ tsp.
lard	⅓ tsp.	veg. shortening	⅓ tsp.
macadamia nuts	~1	vegetable oil	⅓ tsp.
mayo, light	1 tsp.	walnuts (chopped)	1 tsp.
mayonnaise	⅓ tsp.		

*Note: combo items contain 1 block of protein and 1 block of carbohydrate

Block Chart for Unfavorable Carbohydrates*

Vegetables

acorn squash	⅜ c.	peas	⅓ c.
baked beans	⅛ c.	pinto beans	¼ c.
beets	½ c.	potato, baked	⅓ c.
black-eyed peas	¼ c.	potato, boiled	⅓ c.
butternut squash	⅓ c.	potato, mashed	⅕ c.
cooked carrots	½ c.	refried beans	¼ c.
corn	¼ c.	sweet potato, baked	⅓ (5 in.)
french fries	5		
hubbard squash	⅔ c.	sweet potato, mashed	⅕ c.
lima beans	¼ c.	turnip	¾ c.
parsnips	⅓ (9 in.)		

*Note: When building meals with “unfavorable carbohydrates” quantity becomes critical.

Fruit

banana	⅓ (9 in.)	kumquat	3
cranberries	¼ c.	mango	⅓ c.
cranberry sauce	4 tsp.	papaya	⅔ c.
dates	1	prunes	2
figs	¾	raisins	1 tbsp.
guava	½ c.		

Fruit Juice

apple juice	⅓ c.	lemon juice	⅓ c.
cranberry juice	¼ c.	orange juice	⅜ c.
fruit punch	¼ c.	pineapple juice	¼ c.
grape juice	¼ c.	tomato juice	¾ c.
grapefruit juice	⅜ c.		

Grains and Breads

bagel	¼	melba toast	½ oz.
barley	1 tbsp.	muffins	¼
biscuit	¼	noodles	¼ c.
bread	½ slice	pancake	½ (4 in.)
bread crumbs	½ oz.	pasta, cooked	¼ c.
breadstick	1	pasta, high protein	⅓ c.
buckwheat	½ oz.		
bulgur wheat	½ oz.	pita bread	¼
cereal	½ oz.	popcorn	2 c.
corn bread	1 in. square	rice	3 tbsp.
cornstarch	4 tsp.	rice cake	1
croissant	¼	roll (dinner)	½
crouton	½ oz.	roll (hamburger, hot dog)	¼
donut	¼	taco shell	1
English muffin	¼	tortilla (corn)	1 (6 in.)
flour	1½ tsp.	tortilla (flour)	½ (6 in.)
granola	½ oz.	udon noodles	3 tbsp.
grits	⅓ c.	waffle	½
instant oatmeal	⅓ c.		

Condiments

barbecue sauce	2 tbsp.	maple syrup	2 tsp.
brown sugar	1½ tsp.	molasses	2 tsp.
catsup/ketchup	2 tbsp.	pickle (bread & butter)	6 slices
cocktail sauce	2 tbsp.		
confectioner's sugar	1 tbsp.	plum sauce	1½ tbsp.
		relish (sweet)	4 tsp.
granulated sugar	2 tsp.	steak sauce	2 tbsp.
honey	½ tbsp.	teriyaki sauce	1½ tbsp.
jelly/jam	2 tsp.		

Alcohol

beer	8 oz.	wine	4 oz.
liquor	1 oz.		

Snacks

chocolate bar	½ oz.	potato chips	½ c.
corn chips	½ oz.	pretzels	½ oz.
graham crackers	1½	saltine crackers	4
ice cream	1/4 c.	tortilla chips	½ oz.

Sample Zone Meals and Snacks | 2-Block Menus

Breakfast

Breakfast Quesadilla
1 corn tortilla
¼ c. black beans
1 egg (scrambled or fried)
1 oz. cheese
2 tbsp. avocado

Breakfast Sandwich
½ pita bread
1 egg (scrambled or fried)
1 oz. cheese
Served with 2 macadamia nuts

Steak and Eggs
1 oz. steak, grilled
1 fried egg
1 slice toast with
⅔ tsp. butter

Fruit Salad
½ c. cottage cheese
Mixed with
¼ cantaloupe, cubed
½ c. strawberries
¼ c. grapes
Sprinkled with 6 chopped almonds

Smoothie
Blend together:
1 c. milk
1 tbsp. protein powder
1 c. frozen strawberries
6 cashews

Oatmeal
⅓ c. cooked oatmeal (slightly watery)
½ c. grapes
¼ c. cottage cheese
2 tsp. walnuts, chopped
1 tbsp. protein powder
Spice with vanilla extract and cinnamon

Easy Breakfast
½ cantaloupe, cubed
½ c. cottage cheese
6 almonds

Dinner

Fresh Fish
3 oz. fresh fish, grilled
1⅓ c. zucchini (cooked), with herbs
Serve with large salad with 1 tbsp. salad dressing of choice

Beef Stew
Sauté:
⅔ tsp. olive oil
⅓ c. onion (raw), chopped
⅝ green pepper (raw), chopped
~4 oz. beef (raw), cubed
Add:
1½ c. mushrooms (raw), chopped
¼ c. tomato sauce
Seasoned with garlic, Worcestershire sauce, salt and pepper

Chili (Serves 3)
Sauté:
⅓ c. onion (raw), chopped
⅝ c. green pepper (raw), chopped
in garlic, cumin, chili powder and crushed red peppers
Add:
9 oz. ground beef, browned
1 c. tomato sauce
½ c. black beans
¼ c. kidney beans
30 olives, chopped
Add fresh cilantro to taste

Turkey and Greens
2 oz. turkey breast, roasted
1¼ c. kale, chopped and steamed
Sauté garlic and crushed red peppers in
⅔ tsp. olive oil, add the steamed kale and mix.
Serve with 1 peach, sliced

Easy Chicken Dinner
2 oz. chicken breast, baked
1 orange
2 macadamia nuts

Lunch

Tuna Sandwich
2 oz. canned tuna
2 tsp. light mayo
1 slice bread

Tacos
1 corn tortilla
3 oz. seasoned ground meat
½ c. tomato, cubed
⅓ c. onion (raw), chopped
Lettuce (as garnish), chopped
10 olives, chopped
Served with Tabasco to taste

Deli Sandwich
1 slice bread
3 oz. sliced deli meat
2 tbsp. avocado

Quesadilla
1 corn tortilla
2 oz. cheese
2 tbsp. guacamole
Jalapeños and salsa as garnish
Serve with ½ orange

Grilled Chicken Salad
2 oz. chicken, grilled
2 c. lettuce
¼ c. tomato, chopped
¼ cucumber, chopped
¼ c. green pepper (raw), chopped
¼ c. black beans
2 tbsp. avocado

Easy Lunch
3 oz. deli meat
1 apple
2 macadamia nuts



Sample Zone Meals and Snacks | 3-Block Menus

Breakfast

Breakfast Quesadilla
1 corn tortilla
¼ c. black beans
⅓ c. onions (raw), chopped
⅝ c. green pepper (raw), chopped
2 eggs (scrambled or fried)
1 oz. cheese
3 tbsp. avocado

Breakfast Sandwich
½ pita bread
1 egg (scrambled or fried)
1 oz. cheese
1 oz. sliced ham
Serve with ½ apple and 3 macadamia nuts

Steak and Eggs
2 oz. steak, grilled
1 fried egg
1 slice toast w/
1 tsp. butter
¼ cantaloupe, cubed

Fruit Salad
¾ c. cottage cheese
¼ cantaloupe, cubed
1 c. strawberries
½ c. grapes
Sprinkle with 9 chopped almonds

Easy Breakfast
¾ cantaloupe, cubed
¾ c. cottage cheese
9 almonds

Smoothie
Blend together:
1 c. milk
2 tbsp. protein powder
1 c. frozen strawberries
½ c. frozen blueberries
9 cashews

Oatmeal
⅔ c. cooked oatmeal (slightly watery)
½ c. grapes
½ c. cottage cheese
3 tsp. walnuts, chopped
1 tbsp. protein powder
Spice with vanilla extract and cinnamon



Lunch

Tuna Sandwich
3 oz. canned tuna
3 tsp. light mayo
1 slice bread
Serve with ½ apple

Tacos
2 corn tortillas
3 oz. seasoned ground meat
1 oz. grated cheese
½ c. tomato, cubed
⅔ c. onion (raw), chopped
Lettuce (as garnish), chopped
Serve with Tabasco to taste
15 olives, chopped

Deli Sandwich
1 slice bread
3 oz. sliced deli meat
1 oz. cheese
3 tbsp. avocado
Serve with ½ apple

Quesadilla
1 corn tortilla
3 oz. cheese
3 tbsp. guacamole
Jalapeños and salsa as garnish
Serve with 1 orange

Grilled Chicken Salad
3 oz. chicken, grilled
2 c. lettuce
¼ c. tomato, chopped
¼ cucumber, chopped
¼ c. green pepper (raw), chopped
¼ c. black beans
¼ c. kidney beans
3 tbsp. avocado

Easy Lunch
3 oz. deli meat
1 oz. sliced cheese
1½ apples
3 macadamia nuts

Dinner

Fresh Fish
4½ oz. fresh fish, grilled
1⅓ c. zucchini (cooked), with herbs
Serve with large salad with 1½ tbsp. salad dressing of choice
1 c. strawberries

Turkey and Greens
3 oz. turkey breast, roasted
2½ c. kale, chopped and steamed
Sauté garlic and crushed red peppers in 1 tsp. olive oil, add the steamed kale and mix
Serve with 1 peach, sliced

Beef Stew
Sauté:
1 tsp. olive oil
⅓ c. onion (raw), chopped
⅝ green pepper (raw), chopped
~6 oz. beef (raw), cubed
Add:
1½ c. zucchini (raw), chopped
1½ c. mushrooms (raw), chopped
½ c. tomato sauce
Season with garlic, Worcestershire sauce, salt and pepper

Chili (Serves 3)
Sauté:
⅔ c. onion (raw), chopped
1¼ c. green pepper (raw), chopped
in garlic, cumin, chili powder and crushed red peppers
Add:
13.5 oz. ground beef, browned
1 c. tomato sauce
¾ c. black beans
½ c. kidney beans
45 olives, chopped
Add fresh cilantro to taste

Easy Dinner
3 oz. chicken breast, baked
1½ oranges
3 macadamia nuts

Sample Zone Meals and Snacks | 4-Block Menus

Breakfast

Breakfast Quesadilla
1 corn tortilla
½ c. black beans
⅓ c. onions (raw), chopped
⅝ green pepper (raw), chopped
2 eggs (scrambled or fried)
2 oz. cheese
4 tbsp. avocado

Breakfast Sandwich
½ pita bread
2 eggs (scrambled or fried)
1 oz. cheese
1 oz. sliced ham
Serve with 1 apple and 4 macadamia nuts

Steak and Eggs
3 oz. steak, grilled
1 fried egg
1 slice bread with 1⅓ tsp. butter
½ cantaloupe, cubed

Fruit Salad
1 c. cottage cheese
½ cantaloupe, cubed
1 c. strawberries
½ c. grapes
Sprinkled with 12 chopped almonds

Easy Breakfast
1 cantaloupe, cubed
1 c. cottage cheese
12 almonds

Smoothie
Blend together:
2 c. milk
2 tbsp. protein powder
1 c. frozen strawberries
½ c. frozen blueberries
12 cashews

Oatmeal
1 c. cooked oatmeal (slightly watery)
½ c. grapes
¾ c. cottage cheese
4 tsp. walnuts, chopped
1 tbsp. protein powder
Spice with vanilla extract and cinnamon

Lunch

Tuna Sandwich
4 oz. canned tuna
4 tsp. light mayo
1 slice bread
Serve with 1 apple

Tacos
2 corn tortillas
4½ oz. seasoned ground meat
1 oz. cheese, grated
½ c. tomato, cubed
⅓ c. onion (raw), chopped
Lettuce (as garnish), chopped
20 olives, chopped
Serve with Tabasco to taste
Serve with ½ apple

Deli Sandwich
2 slices of bread
4½ oz. sliced deli meat
1 oz. cheese
4 tbsp. avocado

Quesadilla
2 corn tortillas
4 oz. cheese
4 tbsp. guacamole
Jalapeños and salsa as garnish
Serve with 1 orange

Grilled Chicken Salad
4 oz. chicken, grilled
2 c. lettuce
¼ c. tomato, chopped
¼ cucumber, chopped
¼ c. green pepper (raw), chopped
½ c. black beans
¼ c. kidney beans
4 tbsp. avocado

Easy Lunch
4½ oz. deli meat
1 oz. cheese
1 apple
1 grapefruit
4 macadamia nuts

Dinner

Fresh Fish
6 oz. fresh fish, grilled
1⅓ c. zucchini (cooked), with herbs
Serve with large salad with 2 tbsp. salad dressing of choice
2 c. strawberries

Beef Stew
Sauté:
1⅓ tsp. olive oil
⅓ c. onion (raw), chopped
⅝ green pepper (raw), chopped
~8 oz. (beef (raw), cubed
Add:
1½ c. zucchini (raw), chopped
1½ c. mushrooms (raw), chopped
1 c. tomato sauce
Season with garlic, Worcestershire sauce, salt and pepper
Serve with 1 c. strawberries

Chili (Serves 3)
Sauté:
⅔ c. onion (raw), chopped
1¼ c. green pepper (raw), chopped
in garlic, cumin, chili powder and crushed red peppers
Add:
18 oz. ground beef, browned
2 c. tomato sauce
¾ c. black beans
¾ c. kidney beans
60 olives, chopped
Add fresh cilantro to taste

Turkey and Greens
4 oz. turkey breast, roasted
2½ c. kale, chopped and steamed
Sauté garlic and crushed red peppers in 1⅓ tsp. olive oil
add kale and mix
Serve with 2 peaches, sliced

Easy Dinner
4 oz. chicken breast, baked
2 oranges
4 macadamia nuts



Sample Zone Meals and Snacks | 5-Block Menus

Breakfast

Breakfast Quesadilla
2 corn tortillas
½ c. black beans
⅓ c. onions (raw), chopped
⅝ c. green pepper (raw), chopped
3 eggs (scrambled or fried)
2 oz. cheese
5 tbsp. avocado

Breakfast Sandwich
½ pita bread
2 eggs (scrambled or fried)
2 oz. cheese
1 oz. ham, sliced
Serve with 1½ apples and 5 macadamia nuts

Steak and Eggs
3 oz. steak, grilled
2 fried eggs
1 slice bread with 1⅔ tsp. butter
¾ cantaloupe, cubed

Fruit Salad
1¼ c. cottage cheese
½ cantaloupe, cubed
1 c. strawberries
1 c. grapes
Sprinkle with 15 chopped almonds

Smoothie
Blend together:
2 c. milk
3 tbsp. protein powder
2 c. frozen strawberries
½ c. frozen blueberries
15 cashews

Oatmeal
1 c. cooked oatmeal (slightly watery)
1 c. grapes
1 c. cottage cheese
5 tsp. walnuts, chopped
1 tbsp. protein powder
Spice with vanilla extract and cinnamon

Easy Breakfast
1¼ cantaloupe, cubed
1¼ c. cottage cheese
~ 15 almonds

Lunch

Tuna Sandwich
5 oz. canned tuna
5 tsp. light mayo
1 slice bread
Serve with 1½ apples

Easy Lunch
4½ oz. deli meat
2 oz. cheese
1½ apples
1 grapefruit
5 macadamia nuts

Tacos
2 corn tortillas
6 oz. seasoned ground meat
1 oz. cheese, grated
½ c. tomato, cubed
⅓ c. onion (raw), chopped
Lettuce (as garnish), chopped
25 olives, chopped
Serve with Tabasco to taste
Serve with 1 apple

Deli Sandwich
2 slices bread
4½ oz. deli meat
2 oz. cheese
5 tbsp. avocado
½ apple

Quesadilla
2 corn tortillas
5 oz. cheese
5 tbsp. guacamole
Jalapeños and salsa as garnish
Serve with 1½ oranges

Grilled Chicken Salad
5 oz. chicken, grilled
2 c. lettuce
¼ c. tomato, chopped
¼ cucumber, chopped
¼ c. green pepper (raw), chopped
½ c. black beans
½ c. kidney beans
5 tbsp. avocado

Dinner

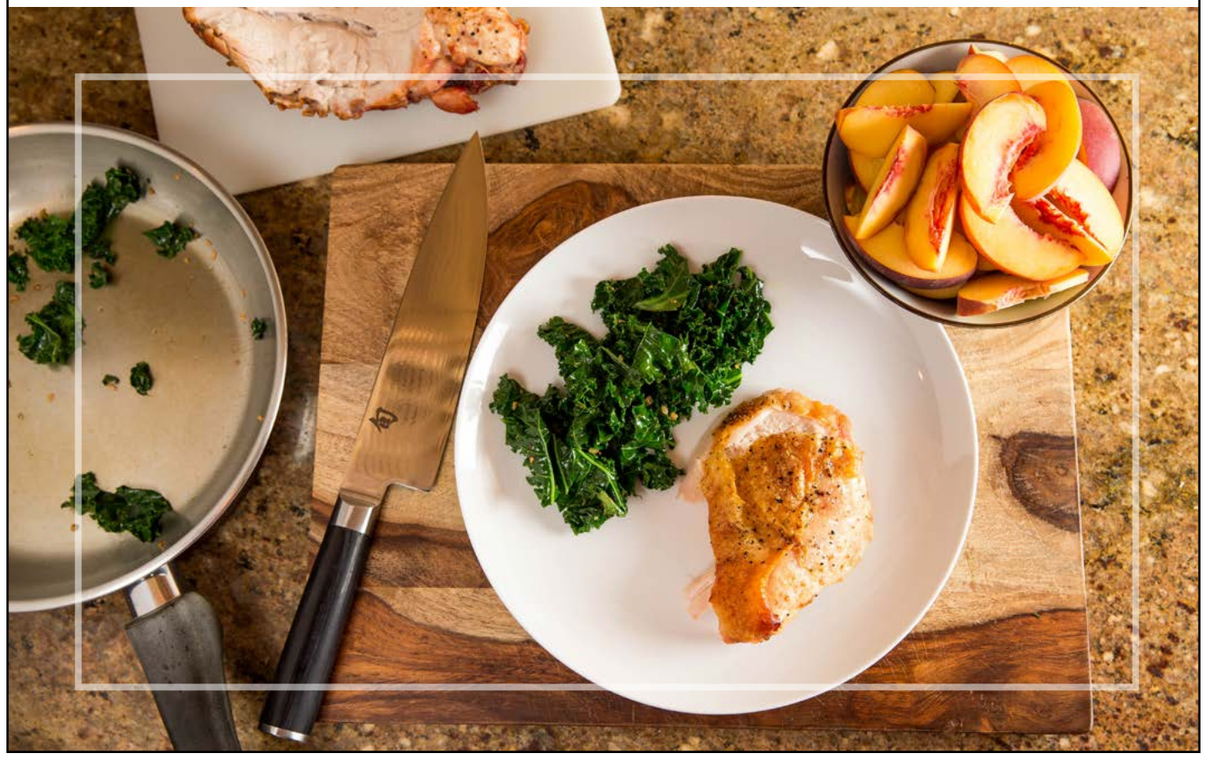
Fresh Fish
7½ oz. fresh fish, grilled
1⅓ c. zucchini (cooked), with herbs
Serve with large salad with ¼ c. black beans and 2½ tbsp. salad dressing of choice
2 c. strawberries

Beef Stew
Sauté:
1⅔ tsp. olive oil
⅔ c. onion (raw), chopped
1¼ c. green pepper (raw), chopped
~10 oz. beef (raw), cubed
Add:
1½ c. zucchini (raw), chopped
1½ c. mushrooms (raw), chopped
1 c. tomato sauce
Season with garlic, Worcestershire sauce, salt and pepper
Serve with 2 c. strawberries

Chili (Serves 3)
Sauté:
⅔ c. onion (raw), chopped
2½ c. green pepper (raw), chopped
in garlic, cumin, chili powder and crushed red peppers
Add:
22.5 oz. ground beef, browned
2 c. tomato sauce
1 c. black beans
1 c. kidney beans
75 olives, chopped
Add fresh cilantro to taste

Turkey and Greens
5 oz. turkey breast, roasted
2½ c. kale, chopped and steamed
Sauté garlic and crushed red peppers in 1⅔ tsp. olive oil, add steamed kale and mix
Serve with 3 peaches, sliced

Easy Dinner
5 oz. chicken breast, baked
2½ oranges
5 macadamia nuts



Snacks

1 hard-boiled egg
½ orange
6 peanuts

½ c. plain yogurt
Sprinkled with 3 cashews, chopped

1 oz. cheese
½ apple
1 macadamia nut

1 oz. canned chicken or tuna
1 peach
½ tsp. peanut butter

1½ oz. deli-style ham or turkey
1 carrot
5 olives

1 oz. mozzarella string cheese
½ c. grapes
1 tbsp. avocado

1 oz. jack cheese
1 tbsp. guacamole
1 c. tomato

1 c. strawberries
¼ c. cottage cheese
1 macadamia nut

1 poached egg
½ slice bread
½ tsp. peanut butter

¼ c. cottage cheese
½ carrot
3 celery stalks
5 olives

3 oz. soft tofu
½ apple
½ tsp. peanut butter

1 oz. tuna
1 large tossed salad
1 tsp. salad dressing of choice

1 hard-boiled egg
1 large spinach salad
1 tsp. salad dressing of choice

1 oz. grilled turkey breast
½ c. blueberries
3 cashews

Blend:
1 c. water
1 tbsp. protein powder
½ c. grapes
⅓ tsp. coconut oil

Blend:
1 c. water
½ oz. spirulina
1 c. frozen strawberries
3 cashews

1 oz. cheddar cheese melted over ½ apple
Sprinkled with 1 tsp. walnuts, chopped

¼ c. cottage cheese
½ c. pineapple
6 peanuts

1 oz. sardines
½ nectarine
5 olives

1½ oz. feta cheese
1 c. diced tomato
5 olives

1½ oz. salmon
12 asparagus spears
⅓ tsp. olive oil

1½ oz. shrimp
2 c. broccoli (raw)
6 peanuts

1 oz. Canadian bacon
1 plum
1 macadamia nut

1½ oz. deli-style turkey
1 tangerine
1 tbsp. avocado

¼ c. cottage cheese
1 c. sliced tomato
⅓ tsp. olive oil

1½ oz. scallops
1 sliced cucumber
1/2 tsp. tartar sauce

1 oz. lamb
¼ c. chick peas
⅓ tsp. tahini





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What About Cardio?

Greg Glassman

Conventional wisdom holds that extended bouts of monostructural training (run, bike, swim, row, etc.), commonly referred to as "cardio", confer distinct and powerful advantage to athletic conditioning. This month we explore the proposition that traditional "cardio" may be neither as distinct nor as powerfula contribution to general conditioning as widely believed. In fact, we assert that CrossFit-like programming provides a more effective stimulus for improving cardiorespiratory endurance than running, rowing, cycling, or other traditional monostructural protocols.

"What about cardio?" is an elaboration on the CrossFit approach to developing elite cardiorespiratory endurance.

As a point of reference and history, we stated in the August 2003 CrossFit Journal "elite runners, cyclists, swimmers, or triathletes crumble when exposed to simple CrossFit like stressors and their failure is obviously cardiorespiratory." And, "our athletes are increasingly doing very well in competitions based on skills and activities for which they've little or no training." Let's revisit these claims.

The idea that an endurance athlete might or could experience athletic failure due to cardiorespiratory insufficiency has been for many a tough pill to swallow, and admittedly, it is a curious thing to witness firsthand.

We must, however, begin with an explanation as to our standard for assessing "cardiorespiratory insufficiency" as the cause for performance failure. Our standard is simple, if not crude, and admittedly somewhat subjective. The behaviors and symptoms we associate with cardiorespiratory insufficiency are often referred to as "gassing" in the training world.

Apart from gassing, we recognize a second manner of performance failure or limitation that is largely neuromuscular in origin and refer to behaviors associated with it as "muscular failure."

If, during a set of "thrusters" (front squat/push-press), the reps continue smoothly until the athlete suddenly stops, pallor ashen or green, lips blue, ventilation rate high, heart rate high, non-communicative, and he's "flag poled" the bar to hold himself up, we say he's "gassed".

In contrast, if during a set of thrusters, each passing rep is slower than the one before until one rep finally stops at three-quarter extension, pauses only to come thundering back to the chest, the athlete is flushed (not ashen), ventilation rate and heart rate are less significant, and the athlete is immediately communicative on unloading. This is "muscular failure".

Much of this distinction is paralleled in the comparison Dr. Jim Cawley has made between "cardiorespiratory endurance" (the ability of body systems to gather, process, and dilever oxygen) and stamina (the ability of body systems to process, deliver, store and utilize energy).

Without a doubt the distinctions we are making gloss over a lot of interaction and interdependence of factors and mechanisms, but being able to distinguish between failures more systemic in origin and those more localized is (and always has been) an absolutely indispensable coaching skill and tool.

Here's what typically happens when we dump an elite endurance athlete into a typical CrossFit circuit like "Fight Gone Bad". The endurance athlete cannot come close to the reps CrossFitters post on each station and often explains that the loads, though none are over 75 pounds,

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are too heavy. Indeed, much of the endurance athlete's difficulties at the initially prescribed loads look, with partial, slow, or even failed reps, like muscular failure.

If we then reduce the load so that the endurance athlete can match the reps of our regulars, then they "gas" – often spectacularly.

The performance of elite and world-class endurance athletes exposed to CrossFit like workouts (mixed modal, high intensity, functional movements) reveals them to be closer to sedentary than CrossFit.

More broadly, the performance advantage of elite endurance capacities within a single domain may suggest very little about performance capacity at dissimilar challenges, and importantly, this applies equally and specifically to "gassing". As an example, riding a bike to develop Jiu-jitsu cardiorespiratory endurance does not work. Running works a little better, and rowing is better yet. We think we know why. More on that later.

The second claim we made back in August, that "our athletes are increasingly doing very well in competitions based on skills and activities for which they've little or no training" continues to be the case, but, relatedly we are finding that the regimens like CrossFit's Workout of the Day (WOD) are excellent preparation for longer events and greater distances than the WOD stimulus.

Carl Herzog's letter was one of hundreds we've received in this same vein:

"Somewhere in another issue, you state your belief that Crossfit training is superior to biking or running in preparation for any sport other than biking or running. Well, I decided to test that claim in a small way. Toward the end of this past year's biking season, when I would normally incorporate some running in anticipation of the upcoming cross-country ski season, I started CrossFit style workouts instead. I have, as you say, crumbled when faced with the CrossFit stressors, but that hasn't stopped me from at least following the principles.

After only 3 months I am, in a word, stunned. My skiing fitness is better at the beginning of the season than what I usually attain by the season's end. I find myself wondering who spent the summer bulldozing the tops off these hills, because they have never been easier to climb. Cross-country is supposed to be a cardiorespiratory activity! How is it possible that 15-30 minute workouts make it so easy to ski hard for 2 hours?"

This sentiment has been echoed by many of the world's best coaches and athletes. The CrossFit approach to fitness has proven to be a highly effective general physical preparation for training and competition for ultra endurance (alpining), endurance (triathlon), power endurance (rugby and martial arts), power (skiing), and ultra-power (throwing and weightlifting) events. In the domain of unknown/unknowable physical demands (police, military, fire personnel) the CrossFit approach to fitness is peerless. In every environment our athletes not only perform well they DO NOT GAS.

Summarizing, CrossFit trained athletes are prepared for the cardiorespiratory demands of any activity and traditional endurance athletes are not. This leads us to the inescapable conclusion that cardiorespiratory fitness possesses breadth and depth, depth being the cardiorespiratory capacity and breadth it's measure across multiple modalities.

Not only does cardiorespiratory endurance possess breadth and depth, but it also does not exist or develop independently of neuromuscular function. A resting heart rate of 32 and a VO_2 max of 70 bring utility or advantage depending on the manner, or mode, in which it was developed.

We've observed that cardiorespiratory capacity is transferable to other activities depending on the manner in which it was developed. The transferability of endurance training is greatest when it best matches the intended application. We mentioned earlier that rowing was better than running, which in turn was better than cycling for developing the cardiorespiratory endurance required of Jiu-jitsu. What does Jiu-jitsu's movements look most like: rowing, running, or cycling?

Endurance work built from activities employing functional movement, long lines of action, full range of motion, more joints involved, and predisposed mechanically to high work output offer fuller application and greater transferability of cardiorespiratory endurance generally to other activities which makes sense, in light of the above, because the bulk of human movement is largely constituent of these same movements. Most of human movement can be seen as either combinations or subsets of running, throwing, jumping, pushing, climbing, and lifting. Ultimately, functionality of the endurance work determines the effectiveness of its transference.

This brings us back to the issue of breadth and depth of cardiorespiratory adaptation. The functional movements that CrossFit employs are designed to be

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elemental to or irreducible constituents representative of all productive movement. It would follow then that the CrossFit protocol is developing an enormously broad cardiorespiratory adaptation. For our athletes the depth of cardiorespiratory capacity across multiple, even unknown tasks is then solely a function of, and closely correlated to, their performance or ranking on, for instance, our WOD. Anyone getting "smoking" times or scores on the WOD is, relative to other athletes, in better cardiorespiratory shape.

On this basis of the breadth and depth of cardiorespiratory response we can claim to be developing some of the best aerobically conditioned athletes on earth. Lance Armstrong could only do one thing better than our guys, just one.

This view of cardiorespiratory endurance is clearly at odds with popular, even professional, opinion. For many this makes understanding the point quite difficult. The title for this issue was, in fact, inspired by an athlete asking while profoundly out of breadth, "What about the cardio?" inquiring what it was we did for "cardio".

For too many people "cardio" is something good that happens to their heart and lungs only while sitting on a bike or running.

For these people we thought that seeing an athlete's heart rate during CrossFit workouts and during more traditional "cardio" protocols might open the door to the possibility that workouts comprised of exercises traditionally seen as resistance or strength training exercises could be used to illicit a potent cardiorespiratory stimulus. So we strapped a downloadable heart rate monitor (Polar S720i) to several athletes and put them to work.

Here are the protocols.

A Mike Weaver, bike 2.89 miles
A Mike Weaver, 150 wall-ball shots

B1. Dave Leys, Running 1 mile
B2. Dave Leys, "Fran" (21-15-9 reps of 95lb. thruster and pull-ups)

C1. Mike Weaver, row 20 minutes
C2. Mike Weaver, 5 pull-ups/10 pushups/15 squats for 20 minutes

D1. Matt Mast, row 2K
D2. Matt Mast, row 1K, 45 lb. X 50 rep thruster, 30 pull-ups

See graphs starting on page 4.

We caution against trying to read too much into our little experiment. The point is simply that CrossFit like stressors are, at least in terms of heart rate, quite similar to traditional "cardio".

It also warrants mentioning that we wouldn't trade all the heart rate monitors in the world for a coaches whistle or ball cap. We never use heart rate monitors in our clinical practice and they offer very little benefit to athletes other than endurance specialists. We measure and train for outputs, the focus is on function not its correlates. Were we racing hearts, we'd all have heart rate monitors.

If a workout of pull-ups, push-ups, and squats carries a cardiorespiratory stimulus similar to rowing, are there, perhaps, other advantages to stamina, strength, speed, power, flexibility, agility, balance, accuracy, and coordination to the calisthenic routine that the rowing may not offer? We suggest the answer is a resounding, "yes!"

This brings us to another important point. For elite fitness, the general physical skills (cardiorespiratory endurance, stamina, strength, speed, flexibility, power, agility, balance, accuracy, and coordination – See "What is Fitness? October 2002) might not be optimally developed independently of one another. It seems to us a false reductionism on an order with developing strength one muscle group at a time – a demonstrably fruitless approach.

Cardiorespiratory endurance and the rest of the general physical skills are best perceived of as aspects or qualities of functional movement.

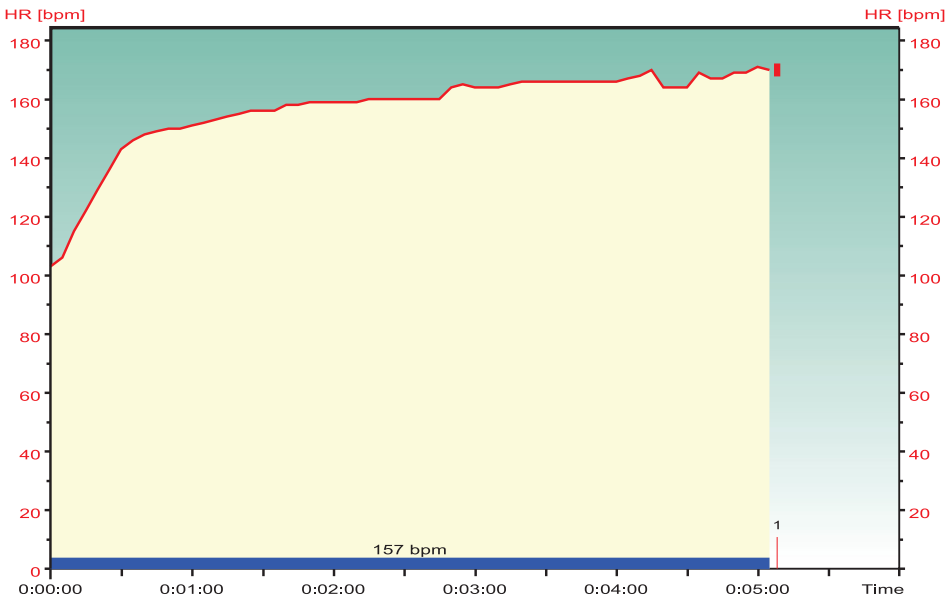
Finally, CrossFit is not an analytical or theoretical approach to fitness. It is entirely clinical and empirical. What we've presented here is in large part conjecture about the "how?" and "why?" of some seeming paradoxes surrounding the successes of our protocol.

◇

Greg Glassman is the Founder of CrossFit, Inc. and Crossfit Santa Cruz and is the publisher of the CrossFit Journal. He is a former competitive gymnast and has been a fitness trainer and conditioning coach since the early 1980s.

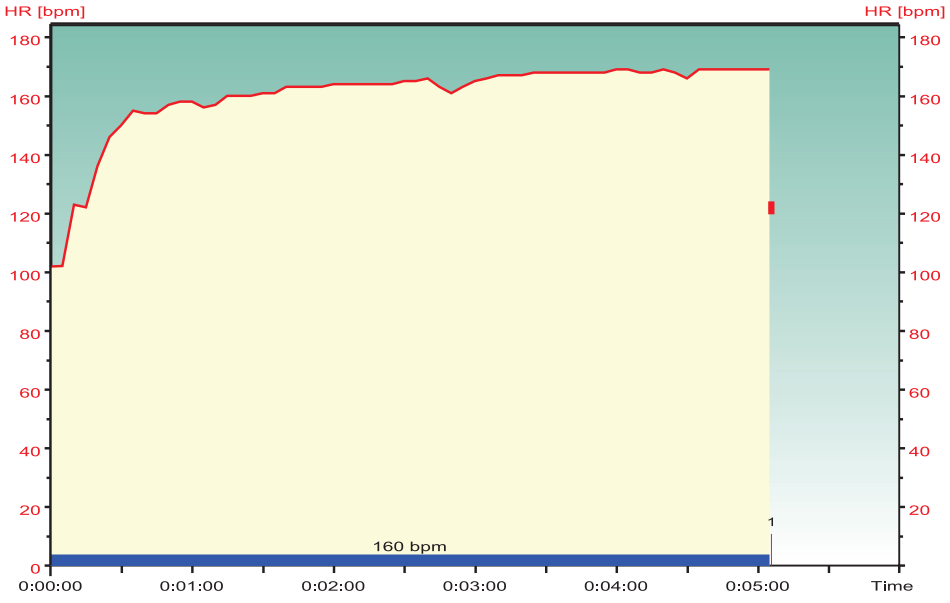
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Graph A1



Person	Mike Weaver	Date	5/24/2004	Time	11:22:51 a.m..
Exercise	5/24/2004 11:22 a.m.	Heart Rate	157 bpm	Heart Rate	171 bpm
Sport	Cycling	Duration	0:05:08.3	Selection	0:00:00 - 0:05:05 (0:05:05.0)
Notes	Stationary bike, Level 20, 5 minutes, 2.89 miles				

Graph A2



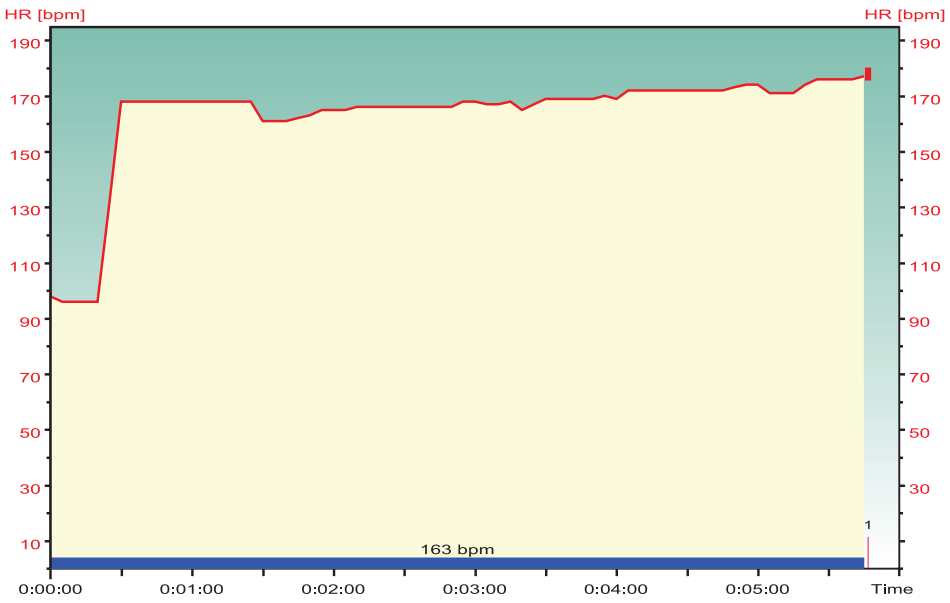
Person	Mike Weaver	Date	5/24/2004	Time	11:11:25 a.m..
Exercise	5/24/2004 11:22 a.m.	Heart Rate	160 bpm	Heart Rate	169 bpm
Sport	Wall ball 150 shots	Duration	0:05:05.9	Selection	0:00:00 - 0:05:05 (0:05:05.0)
Notes	150 shots/4:43, 20 lb ball, 10 ft target				

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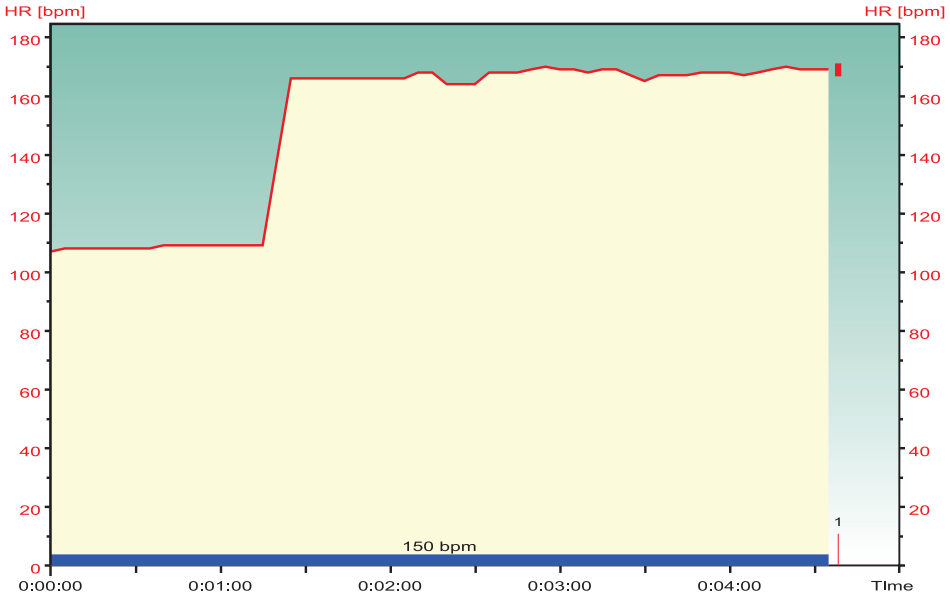
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Graph B1



Person	Dave Leys	Date	5/24/2004	Time	3:27:00 p.m.
Exercise	5/24/2004 3:27 p.m.	Heart Rate	163 bpm	Heart Rate	177 bpm
Sport	Running	Duration	0:05:46.9	Selection	0:00:00 - 0:05:45 (0:05:45.0)
Notes	1 mile				

Graph B2



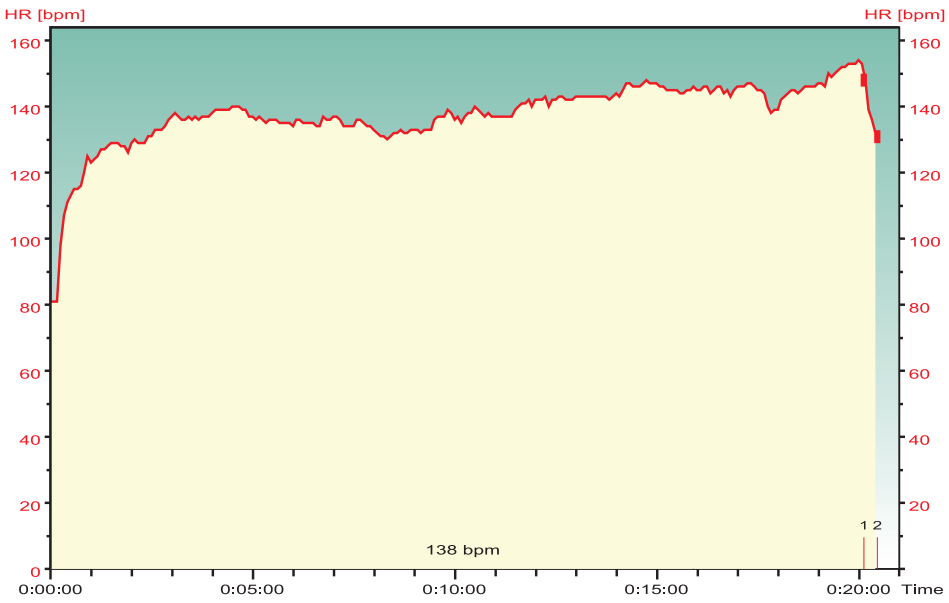
Person	Dave Leys	Date	5/24/2004	Time	9:30:16 a.m.
Exercise	5/24/2004 9:30 a.m.	Heart Rate	150 bpm	Heart Rate	170 bpm
Sport	"Fran"	Duration	0:04:38.5	Selection	0:00:00 - 0:04:35 (0:04:35.0)
Notes	95 lb BB Thruster/Pull-ups (21-15-9) 4:28				

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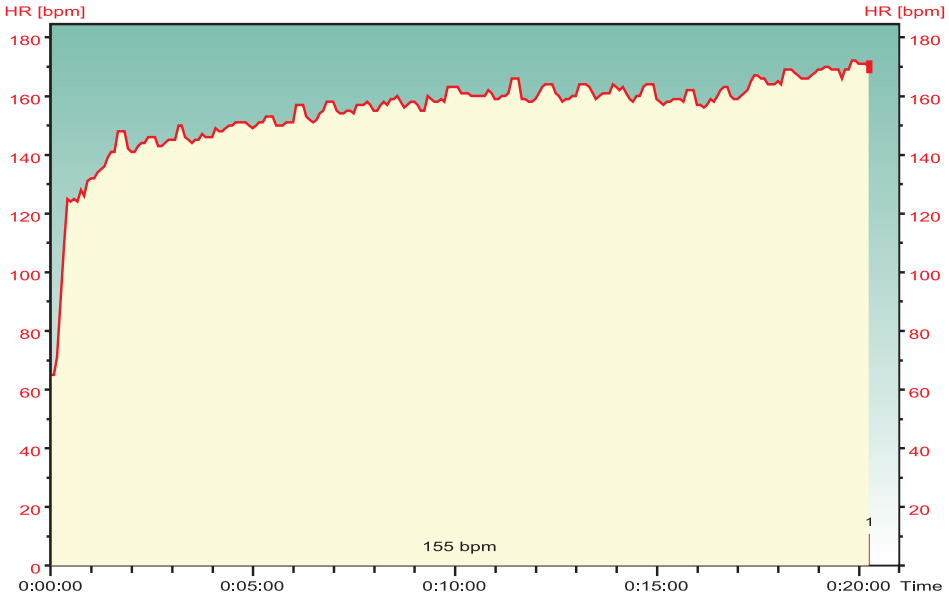
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Graph C1



Person	Mike Weaver	Date	5/26/2004	Time	6:23:22 a.m.
Exercise	5/26/2004 9:12 a.m.	Heart Rate	138 bpm	Heart Rate	154 bpm
Sport	Row	Duration	0:20:28.2	Selection	0:00:00 - 0:20:25 (0:20:25.0)
Notes	20 minute row, 5403 meters				

Graph C2

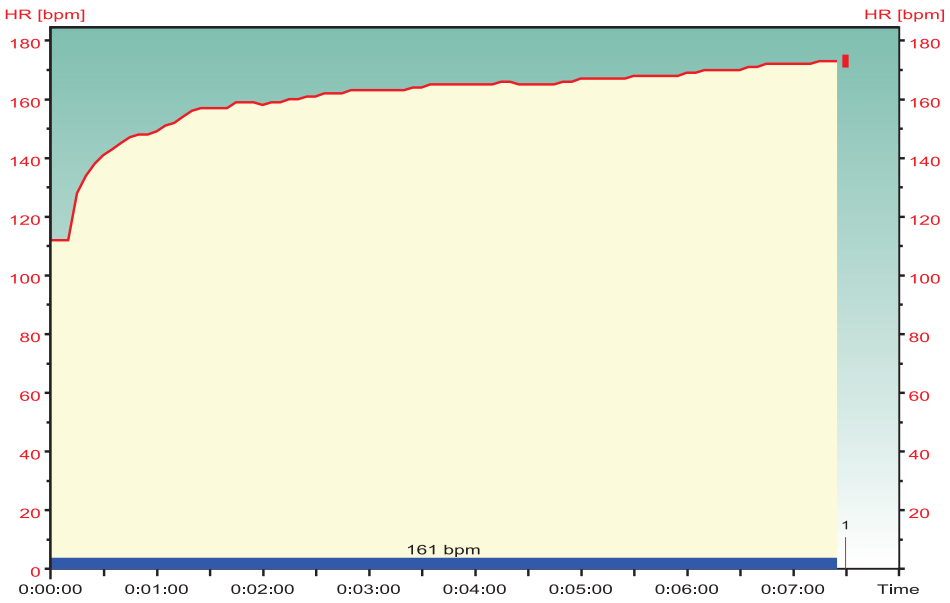


Person	Mike Weaver	Date	5/26/2004	Time	9:12:29 a.m.
Exercise	5/26/2004 9:12 a.m.	Heart Rate	155 bpm	Heart Rate	172 bpm
Sport	Pull-up/Push-up/Squat	Duration	0:20:16.2	Selection	0:00:00 - 0:20:15 (0:20:15.0)
Notes	5-10-15, 20 minutes, 26 rounds				

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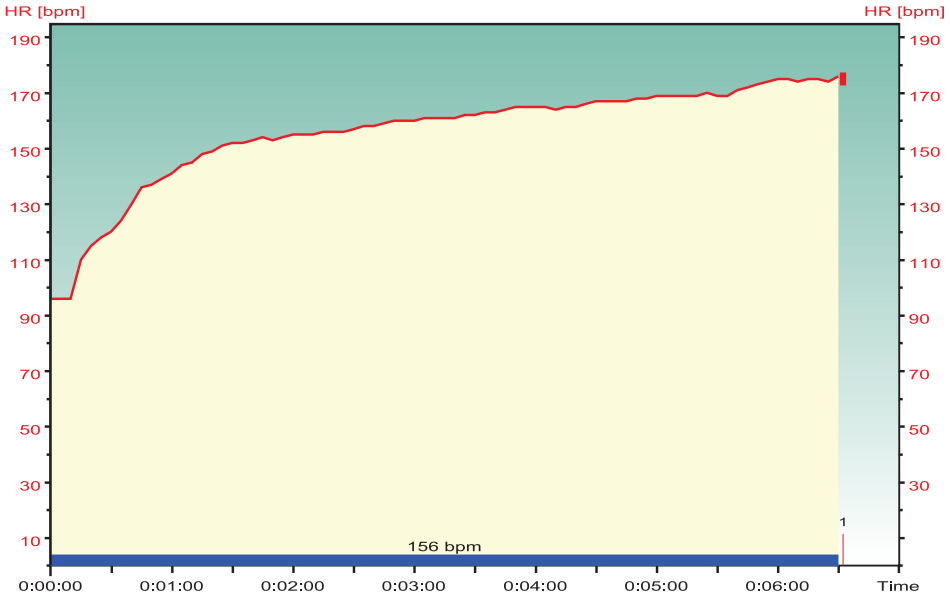
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Graph D1



Person	Matt Mast	Date	5/28/2004	Time	9:24:46 a.m.
Exercise	5/28/2004 9:24 a.m.	Heart Rate	161 bpm	Heart Rate	173 bpm
Sport	Row	Duration	0:07:29.9	Selection	0:00:00 - 0:07:25 (0:07:25.0)
Notes	2000 meter row 7:25				

Graph D2



Person	Matt Mast	Date	5/28/2004	Time	8:43:06 a.m.
Exercise	5/28/2004 8:43 a.m.	Heart Rate	156 bpm	Heart Rate	176 bpm
Sport	Row,Thruster,Pull-up	Duration	0:06:32.5	Selection	0:00:00 - 0:05:30 (0:06:30.0)
Notes	1000 meter row, 50 BB thrusters, 30 pull-ups 6:28				

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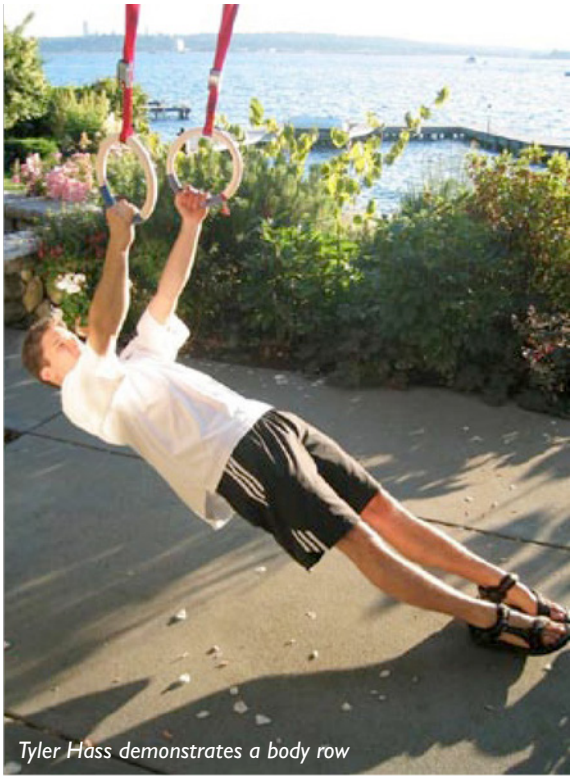
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Ring Strength

Greg Glassman

The exact time and place where rings first appeared is unknown but it is widely accepted that they evolved from a trapeze-like device that by 1816 featured loops fashioned from knotted rope.

What is more certain but poorly understood is that for nearly 150 years the men that worked the rings were in possession of an upper body strength that finds no equal in weightlifting or other calisthenics. The ringman, pound for pound, presents more upper body strength, along more lines of action, than any other athlete.



Tyler Hass demonstrates a body row

The fitness that CrossFitters demonstrate cannot be found without ring training. Gymnastics rings occupy a place in our training that only the barbell can match. Kettlebells and dumbbells, medicine balls and stretch bands, while essential to our practice, are second tier tools to the rings.

Unfortunately, introduction to the rings has traditionally been available only from involvement in sport gymnastics and then only through progressions that quickly discouraged all but those coming to the sport with exceptional strength to weight ratios and gripping tenacity.

Our exhortations to buy and train with rings have been successful but the number of reported muscle-ups reflects only a percentage or two of the people claiming participation in our program.

We've long worked to reintroduce ring training to athletic strength and conditioning – they were in the gyms for longer than they've been gone – but unfamiliarity stops most people and the brutishly tough progressions thwarted the small remainder brave enough to try new things. The rings need a champion.

All great causes need great supporters. Ring training is a great cause and Tyler Hass is ring training's best champion.

Twenty-one year old gymnastics novice, Tyler Hass, friend of CrossFit and publisher of Power Athletes Magazine, has produced an instructional DVD, "Ring Strength", that stands as the best introduction to the rings for athletic strength and conditioning available anywhere, ever.

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"Ring Strength" packaging promises "over 40 exercises in a carefully designed progression to accommodate every level of strength from beginner to advanced." This gem of a DVD delivers as promised. You will never outgrow or tire of "Ring Strength".

Ringtraining.com, the site offering "Ring Strength" does a great job of supporting the budding community of ring enthusiasts with a forum and a few supplemental training articles. Training rings (not competition rings) are also available from the site and are perfect tools for the job at an unbeatable $80.

Not only do the DVD's progressions allow access to the rings for an audience of wide abilities, but the exercise are performed by the 2003 World's Gymnastics Championships Gold Medallist in the rings, Jordan Jovtchev. Workable ring progressions for general conditioning demonstrated by a gymnastics legend puts this DVD on our "CrossFit must have media" list.

"Ring Strength" concludes with Jordan's gold medal performances at the World's Championships and some unbelievable footage of some advanced ring strength work that supports the claim that Jordan Jovtchev is the strongest athlete in the world and our claim that ringmen hold the greatest upper body strength of all athletes.

The skills and drills in "Ring Strength" mesh wonderfully with our WOD (Workout of the Day). Ring training could be incorporated before, after, or instead of any workout, especially those workouts with a strong upper body component.

With training and practice many of the exercises that were once tough or impossible on the rings can be developed where they become elements in your warm-up or "rest days" goofing off. Imagine "goofing off" or warming up with a planche on the rings!



...the men that worked the rings were in possession of an upper body strength that finds no equal in weightlifting or other calisthenics. The ringman, pound for pound, presents more upper body strength, along more lines of action, than any other athlete.

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"Why Fitness"

Greg Glassman



The CrossFit family mourns the recent passing of Dr. Roy Walford, the world's preeminent longevity researcher. Dr. Walford published over 300 scientific articles on the biology of ageing. From his laboratories at U.C.L.A., where he worked for nearly forty years, Dr. Walford's work centered on extension of life span via caloric restriction.

Dr. Walford's untimely death at 79 (he'd long and publicly planned for 120) from ALS does not, in the least, challenge the validity or contribution of his scientific work on ageing. The suspicion among many researchers that caloric restriction might, as it has in lab animals, extend human life span, should, and will at least in the short term, survive Dr. Walford's death.

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Sadly, we expect Dr. Walford's shortfall to marshal, somewhere, a case for gluttony. We will honor the Dr.'s life and work by helping keep perspective. We do the same for the late Dr. Atkins when we remind some of his detractors that terminal brain injury from accidental head trauma could not have been realistically prevented by his or any other diet.

The culture we endeavor to nurture within the CrossFit community is focused on practice and results above theory and theory above personality. For us too much of fitness, nutrition, medicine, and health is marketed, associated, promoted, understood, debated, and even recognized in connection to a personality first, a theory second, and clinical practice or efficacy only third.

By shifting the focus from Dr. Walford's personal demise to the body of his scientific work we hit upon another question of considerable interest, "How important is longevity to fitness and CrossFit?" which in turn provoked an even more important question, even if so only because we're ready to answer it, "Why be fit?" Or "Why fitness?"

A wise old gym owner used to tell the story that when people are asked publicly "Why do you want to be fit?" the overwhelming response is to live long and healthy, but when asked anonymously the dominant answer will be to attract the opposite sex.

The "why?" of fitness is complex and individualized but we've the duty and honor of offering our perspective as engineers and advocates of a fitness system that quite clearly recognizes both longevity and health as highly desirable.

Luckily, for most of us, the "look better naked" vs. "live longer" debate is confidently resolved by adopting lifestyles that we smugly believe optimize the two simultaneously. But, what if that weren't possible?

How much quality does fitness add to life independent of hopes and guarantees of health and longevity? Examining this question builds a framework from which the broader question "Why fitness?" might be answered.

As a tease or enticement to examine non-health and longevity aspect to fitness, we share that it is the reasoned assessment of some longevity experts that collectively the research data on diet, exercise, and longevity support the view that caloric restriction and exercise may not be as beneficial to longevity as caloric restriction and being sedentary. Were this true, what would you do?

Again, to answer, we need first to examine the non-health and longevity aspects to fitness before we even begin to consider what may or may not be an equitable or even possible balance or trade off between quality and quantity of life.

For CrossFitters, fitness is part of a distinctly human enterprise – conscious and deliberate self-actualization. Being, very deliberately, all we can be. Our various capacities certainly include many that are physical. In some circles, affecting complete disdain for physical activity and achievement, artfully suggests intellectual focus, and hopefully, superiority. For us, evidence, experience, and logic favor models that recognize a vast and often irreducible interaction of mental and physical domains. We believe that exercising is smart and makes us smarter.

Recent analysis of the profound difference in genetic expression between exercising and sedentary people and the resulting disorder in multiple body systems of the sedentary suggest to us that normal brain function in sedentary individuals may eventually be shown by disadvantage of gene expression to be impossible. http://jp.physoc.org/cgi/content/full/543/2/399

Anyone who exercises regularly can quickly speak to its impact on mood and mental function. Someday, science will show that exercise doesn't exactly produce unnaturally ebullient or buoyant mental states as much as being sedentary induces unnaturally depressive brain chemistry environments.

There's another nonhealth advantage to becoming fit that doesn't require blurring conventional or colloquial distinctions between mind and body but, rather, acknowledges the distinction and uses physical experience and successes to draw effective strategies for success in non-physical domains.

At CrossFit we call this the "transference effect". What we know is that the gym is a testing ground for improving and developing the will. Physical achievement, fitness, requires repeatedly converting thought to action or giving expression to your will. The costs to physical achievement are real, painfully tangible, measurable, and fleeting while the rewards are equally real and measurable but sweet, not painful and long lasting rather than fleeting.

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Fitness training can be an ideal place to learn strategies for success. Return on our efforts is more certain, tangible, and immediate in the physical domain than, say, the emotional, spiritual, or financial, but the lessons aren't fundamentally different; they just come easier.

CrossFitters see physical education as a primary vehicle for teaching virtues essential for achievement. For us, the world of physical challenge and achievement have become metaphors for harvesting life's riches and battling its plagues. As metaphors our efforts enlighten, instruct, encourage, and explain much of what is everywhere and dear to us. Fitness, ultimately, exercises and develops the will. Shakespeare said, "Our bodies are our gardens, to which our wills are gardeners."

One CrossFitter famous for his intimacy with and successful management of physical danger observed that our intense workouts develop courage. Does the panic of crushing output acquaint us with fear so that we, in part through training, deflate the true cost - fear, of courage?

Similarly, lessons and expressions of self-discipline, responsibility, friendship, work, perseverance, and faith come easily and regularly in the best training environments.

The impact on character of athletic training has even caught the attention of academics. Numerous studies have demonstrated that athletes compared to non-athletes:

- Are more extroverted and open in their outward communications
- Have a stronger achievement need
- Have a stronger stimulation need
- Are more aggressive
- Are more psychologically stable
- Have better emotional self-control and are emotionally more stable
- Are less anxious
- Are more confident
- Show a higher degree of dominance
- Show a higher degree of responsibility

While scientists study and debate whether these traits develop athleticism or if physical training builds these traits, coaches from a hundred athletic disciplines regularly, and in the course of their daily work, hone these capacities to a razor's edge in tens of thousands of athletes.

Physical movement, overcoming obstacles, and exercising the will is required of life and is the very essence of being human. We believe that purpose is not bestowed upon us but created by the very act of turning thoughts and dreams into physical events in a continuous chain of efforts. The value and the cost of achievement are paradoxically contained within the struggle and nobility of the endeavor, and it is noble struggle that leads to purpose.

Even beyond this, for CrossFitters, highly developed human performance is art and personal participation in these arts, at all skill levels, is a transcendent experience. Athletes, for us, are like musicians, painters, and poets.

A physical culture that inspires, guides, and enriches every aspect of our being may add years to our lives but certainly adds life to our years.

Longevity independent of achievement, capacity, independence, productivity, and self-sufficiency potentially becomes grotesque. One discomforting scenario for the future is that life expectancy will rise to 150 with the last 75 years being spent in a nursing home.

Discussion about trading quality for quantity of life is largely hypothetical because current knowledge about fitness and longevity offers no such trade. It is our hope and belief that longevity will optimize under conditions where functional capacity does as well.

For CrossFitters the answer to "Why fitness?" is because fitness is transcendent of all but virtue, which it nourishes, and longevity and even health are but aspects of fitness.



Greg Glassman is the Founder of CrossFit, Inc. and Crossfit Santa Cruz and is the publisher of the CrossFit Journal. He is a former competitive gymnast and has been a fitness trainer and conditioning coach since the early 1980s.

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Assistance for Bodyweight Exercises

Greg Glassman



"With enough rubberbands anyone can do gymnastics."

Our often-repeated claim that CrossFit is "designed for universal scalability making it the perfect application for any committed individual regardless of experience" finds its greatest challenge with bodyweight exercises – the stuff we call "gymnastics."

By contrast, weight training and weightlifting exercises scale readily, if not obviously, by simply reducing loads.

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With training bars and training plates we've been able to introduce the major lifts like squats, deadlifts, presses and jerks, cleans, and the snatch to all comers, including seniors, regardless of ability. This approach is not novel; many of the most successful and sophisticated weightlifting programs start everyone out with PVC pipe or wooden dowel systems of negligible weight and only increase loads in tiny increments when execution is good.

But bodyweight exercises create a special dilemma. Most women, seniors, and larger men are typically challenged to complete a single rep of even the most rudimentary bodyweight movements. This is most true of basic upper body exercises like the pull-up, push-up, or dip.

For years assisted pull-up and dip machines like the Stairmaster Gravitron have been our staple for introducing, training, and developing bodyweight exercises.

While we've met with considerable success with this approach it does have several nagging shortcomings including the substantial cost of the machines themselves, their discontinued production in the case of the Gravitron, less than optimal or natural lines of action, limited accessibility with larger numbered groups, and the inherent limitation of developing only two exercises – the pull-up and dip.

This month we explore additional assistance strategies that broaden both the pool of athletes able to participate in basic bodyweight exercises and the number of bodyweight exercises.

We'll show how not only the pullup and dip, but also the muscle-up, rope climb, iron cross, and handstand push-up can be worked by anyone.

Additionally, we'll present strategies by which the front lever, planche, maltese cross, inverted cross, elevator, and ring handstand pushup can be practiced by athletes more capable yet still far from strong enough for these classics.

None of the strategies we've explored are our design – most can be found in Cuk and Karacsony's book *Rings – Methods, Ideas, Curiosities, and History*. What is uniquely CrossFit is both using these techniques with special populations and advocating their use for nongymnastics athletic strength and conditioning.

The gymnastics realm is every bit as potent as weightlifting and weight training and nearly untapped in fitness programs, commercial gyms, military and law enforcement training, and athletic strength and conditioning worldwide.

Weight training is a critical component of fitness training but, ultimately, represents a vehicle for tapping only half of your physical potential – the rest depends on gymnastics. This is true of strength in general and upper body and core strength in particular, but in the arena of neurological development the gymnastics stimulus is singularly unique.

No discipline approaches gymnastics' capacity for developing strength to weight ratio, upper body strength, core strength, flexibility, coordination, accuracy, agility, and balance. (Pilates fans, yogis, Swiss ballers, wobble and Indo boarders take note: you are playing, not training!)

The barrier to participation in gymnastics is twofold. The first difficulty is scaling load. Imagine if the only load available in gyms were bodyweight loads. What would that do to the popularity of weight training? It would close nearly every gym in the world. There would be as many people lifting weights as there are doing gymnastics – damned few.

The second barrier to gymnastics participation is less apparent to most athletes and coaches but every bit the impediment that scalability is. Gymnastics movements at every level require extraordinary body control. Gymnastics is to weight training as the tambourine is to the violin. Weak mindedness manifested as a low tolerance for frustration culls the herd.

Benefit from and need for the gymnastics stimulus is not blunted by age, weight, or gender. In fact, those populations least likely to find themselves above the rings or upside down benefit greatest from the exposure.

Toughen up, get some rubber bands, and get to work.

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Jimmy Johnson/Handstand push-ups:

Santa Cruz Sheriff's Deputy Jimmy Johnson is a big, strong man but not ready for unassisted handstand push-ups. We attached him to a Yates ankle harness to which we added a couple of FlexBands and hauled him up to the handstand with a 4:1 block and tackle system. By controlling the tension on the bands we could precisely determine the amount of assistance Jimmy was getting and he was able to do his first handstand push-ups. On failure, we could pull a little more rope, which stretched the bands a little more, and he was good for a few more reps.









"ChemGirl"/Handstand Push-up:

By controlling the amount of pre-stretch on the FlexBands "ChemGirl" can be made as light as needed for practicing handstand push-ups.





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Ernie Ellender/Front Lever &
Mary Poteete/Iron Cross

Both can practice their iron cross and front lever with FlexBands attached to a climbing harness and pulled tight with block and tackle.



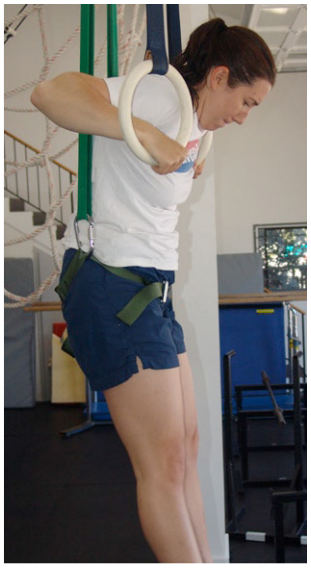


Jonna Mendes/Muscle-up:

Two time U.S. Olympian Jonna Mendes needs a little assistance for the muscle-up. We put her in a climbing harness to which we attached two FlexBands and hauled the bands upward with block and tackle precisely controlling the amount of assistance needed to get her on top of the rings.









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Garth Taylor/Muscle-up:

With FlexBands and block and tackle Brazilian Jiu-jitsu champion Garth "Mountain Man" Taylor can do a muscle-up.







Sally Stade/Iron Cross:

Sally Stade is holding an iron cross on rings tied to ropes that run up to the ceiling, through pulleys and down to loading pins and plates. Her iron cross can be measured as a percentage of her body weight telling her how close she is to the real thing.

Sally Stade/Iron Muscle-up:

Again with rings tethered to a rope that runs up to a pulley and back down to two loading pins and plates we can measure how close Sally actually is to the muscle-up.







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Sally Stade/Muscle-up:

This time with our rings attached to the ceiling with FlexBands, Sally Stade can practice the muscle-up without her feet ever leaving the ground. Setting the false grip becomes easy, the transition manageable and the dip adequately challenging







Jack Hespel/Inverted Cross:

It's been 40 years since Jack Hespel's gymnastics days, but with rings attached to a rope that runs up through a pulley and back down to the ankle harness Jack is back in action with an inverted cross. Again, this system cuts Jack's weight in half.







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Lani Lau/Ring Handstand Push-ups:

Lani Lau is attached to the Yates ankle harness, which in turn is attached to a rope that runs up to a Petzl pulley and back down to the rings. This halves the bodyweight and allows Lani to do still-ring handstand push-ups, preserving a lot of the live feel of the real movement.





Matt Mast/Planche:

With rings, rope, pulley, and climbing harness Matt does a planche.



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Matt Mast/Elevator:

The "elevator" starts with an inverted hang and false grip. The movement is performed by curling to the shoulder stand and then pressing to the handstand. This is like an upside down muscle-up and handstand push-up combination. It's a whole lot easier at half body weight.



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Garth Taylor/Front Lever:

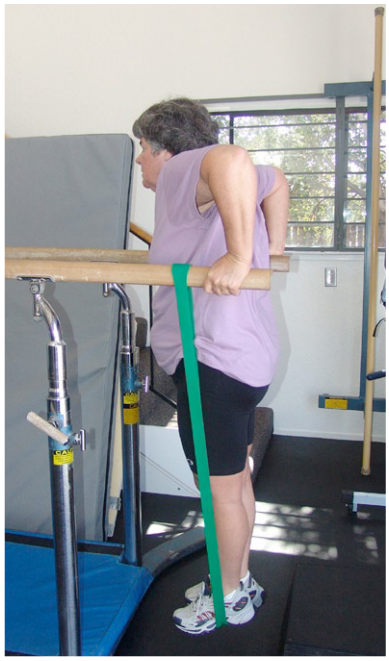
Not too many guys at 270 pounds can do a front lever. With the ring and pulley set-up attached to a climbing harness his hips are lifted enough to make the move possible.



Sally Stade/Bar Dips:

Standing on a FlexBand looped over the ends of the parallel bars Sally Stade is able to perform dips. The assistance can be increased by adding another band or by twisting another loop around either or both bars.



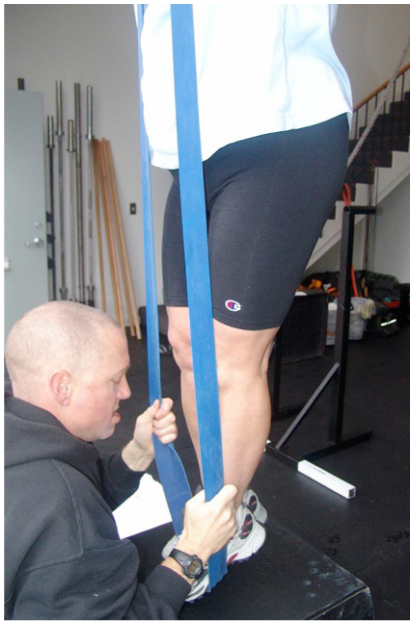




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Sally Stade/Pull-ups:

Looping a FlexBand over the pull-up bar forms a loop into which Sally can stand and receive enough assistance to do pull-ups.





Sally Stade/Rope Climb:

Here Sally Stade, in a climbing harness, is attached to a FlexBand stretched and fixed to the same attachment point as the top of the rope. With the addition of another band Sally could climb the rope without using her legs.





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Equipment

Yates Gear Wristlet

Our old ankle harness looked like a leg restraint on an electric chair. It was designed with the same comfort in mind. This Yates harness is fantastic. Though featured as a wrist harness, it was tested and approved for ankle use. Not one athlete complained about discomfort. We can't imagine a better, safer, more comfortable way to haul someone upside down.

Petzel Oscillante Pulley

This inexpensive pulley squeaked intolerably until we hit it with some WD-40. It seems to have moderate rolling resistance.





Climbing Harness

Our harness was manufactured by our military friends. Our next one will come from Metolius.

Jump Stretch FlexBands

Band set. One pair each of mini, light, average, and strong bands. We're looking for cheaper rubber bands. Let us know if you find them.

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Medicine Ball Cleans

Greg Glassman



The clean and jerk and the snatch, the Olympic lifts, present the toughest learning challenge in all of weight training. Absent these lifts, there are no complex movements found in the weight room. By contrast, the average collegiate gymnast has learned hundreds of movements at least as complex, difficult, and nuanced as the clean or snatch. In large part because most weight training is exceedingly simple, learning the Olympic lifts is for too many athletes a shock of frustration and incompetence.

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Sadly, many coaches, trainers, and athletes have avoided these movements precisely because of their technical complexity. Ironically, but not surprisingly, the technical complexity of the quick lifts exactly contain the seeds of their worth. They train for, that is, they simultaneously demand and develop strength, power, speed, flexibility, coordination, agility, balance, and accuracy.

When examining the reasons offered for not teaching the Olympic lifts we cannot help but suspect that the lifts' detractors have no first hand (real) experience with them. We want to see someone, anyone, do a technically sound clean or snatch at any weight and then offer a rationale for the movement's restricted applicability. Were they dangerous or inappropriate for any particular population, we'd find coaches intimate with the lifts articulating the nature of their inappropriateness. We do not.

At CrossFit everyone learns the Olympic lifts – that's right, everyone.

We review here the bad rap hung on the Olympic lifts because we've made exciting progress working past the common misconceptions and fears surrounding their introduction, execution, and applicability to general populations. The medicine ball clean has been integral to our successes.

In the June 2003 issue of the CrossFit Journal we covered the foundation of one of the lifts, the clean. In that issue we made brief mention of our use of the medicine ball to teach the clean. This month we revisit and update that work.

The Dynamax medicine ball is a soft, large, pillowy ball that ranges in weight from four to twenty-eight pounds available in twopound increments to twenty pounds. It is unthreatening, even friendly.

Working with Dynamax balls we introduce the starting position and posture of the deadlift then the lift itself. In a matter of minutes we then shift our efforts to front squatting with the ball. After a little practice with the squat we move to the clean. (A similar approach is used to teach the shoulder press, push press, and push jerk.)

The clean is then reduced to "pop the hip and drop – catch it in a squat" and it's done. The devil's in the details, but the group is cleaning in five minutes. It's a legitimate, functional clean. This clean may in fact have clearer application, than cleaning with a bar, to heaving a bag of cement into a pick-up or hucking up a toddler to put in a car seat.

Common Faults ...and Their Corrections



Heels up



Back rounded



Head down



Corrected starting position: heels down, head up, back arched

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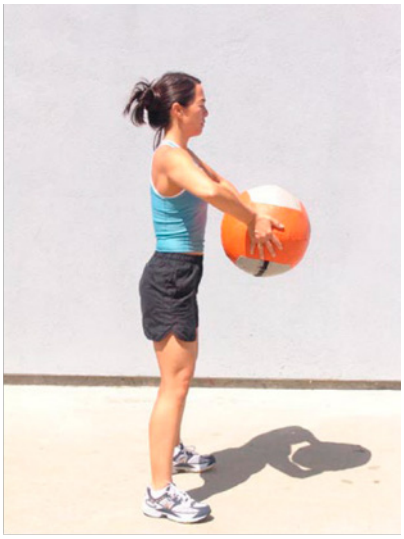
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Common Faults ...and Their Corrections *(cont'd)*



Arms bent



Pulling too high



No hip extension



No shrug



Curling the ball



Corrections:
Arms locked, full extension, shrug, not pulling too high, ball kept close to body

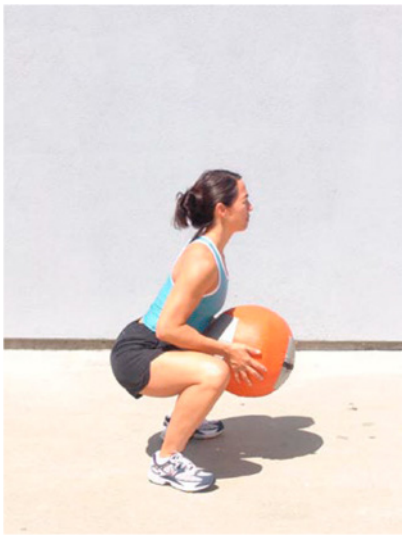
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The faults universal to lifting initiates are all there in as plain sight with the ball as with the bar. Any subtleties of matured and modern bar technique not possible with the ball are not immediate concerns, and their absence is plainly justified by the imparted understanding that this is functional stuff and applicable to all objects we may desire to heave from ground to chest.

In a group of mixed capacities the newbies get the light balls and the veterans get the heavy ones. In thirty rep doses whoever ends up with the twenty-eight pound ball is going to get a workout regardless of their abilities. The heavier balls impart a nasty wallop far beyond the same work done with a bar or dumbbell of equal weight; considerable additional effort is expended adducting the arms, which is required to "pinch" the ball and keep it from slipping.

Common Faults ...and Their Corrections *(cont'd)*



Low slow elbows in catch



Correction: Catch with elbows high

We use the medicine ball clean in warm-ups and cool downs to reinforce the movement and the results are clearly manifest in the number and rate of personal records we're seeing in bar cleans with all our athletes. Yes, the benefit transfers to the bar - even for our better lifters!

In the duration of a warm-up there are uncountable opportunities to weed out bad mechanics. Pulling with the arms, not finishing hip extension, failing to shrug, pulling too high, lifting the heels in the first pull, curling the ball, losing back extension, looking down, catching high then squatting, slow dropping under, slow elbows… all the faults are there.



Arms bent overhead



Arms not straight overhead



Corrected overhead position

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With several weeks practice, a group will go from "spastic" to a precision medicine ball drill team in perfect synch. In fact, that is how we conduct the training effort.

We put the athletes in a small circle, put the best clean available in the center as leader, and ask the athletes to mirror the center. Screw-ups are clearly evident by being in postures or positions out of synch. Attention is riveted on a good model while duplicating the movement in real time. The time required for "paralysis through analysis" is wonderfully not there. Thinking becomes doing.

Individuals generally impervious to verbal cues become self-correcting of faults made apparent by watching and comparing to others. It is not uncommon for shouts of correction to be lobbed across the circle from participant to participant. The number of coaching cues and discussion becomes reduced to the minimum and essential as the process is turned into a child's game of "follow the leader".

Where this becomes "dangerous", "bad for the joints", "too technical to learn" or any other nonsense routinely uttered about weightlifting we don't know.

◇

We review here the bad rap hung on the Olympic lifts because we've made exciting progress working past the common misconceptions and fears surrounding their introduction, execution, and applicability to general populations. The medicine ball clean has been integral to our successes.

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The Kettlebell Swing

Greg Glassman



"CrossFit is a great system, but they don't utilize kettlebells well because of a lack of qualified kettlebell instruction."

- T.C., RKC

At CrossFit we swing the kettlebell overhead while the kettlebell community swings to eye or shoulder height. No matter how many times we're admonished for our excessive swing we proceed unabated? What gives? Are we in need of additional, more "qualified", kettlebell instruction?

While admitting a penchant for iconoclasm, we are not contrary solely for the sake of being contrary. Rational foundations for our programming, exercises, and technique are fundamental to CrossFit's charter. We swim against the current only when we believe that doing so delivers a stimulus truer to our product – elite fitness.

In the March 2004 issue of the CrossFit Journal we stated that, "Criteria for (exercise) selection include, range of joint motion, uniqueness of line of action, length of line of action, strength of line of action, commonness of motor pattern, demands on flexibility, irreducibility, utility, foundational value, measurable impact on adherents, and, frankly, potential for metabolically induced comfort."

This month we apply some of these criteria to an analysis of the two kettlebell swings and then assess two other CrossFit staples, the clean & jerk and the

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"thruster" for comparison and further elucidation of our thinking in selecting exercises for regular inclusion in our program.

Examining why we've rejected the shorter, "Russian", swing, and adopted the longer, "American", swing offers an opportunity to examine and share the thinking that is part and parcel of the CrossFit method.

A little background is in order. The modern era of the kettlebell is largely the work of Russian émigré, Pavel Tsatsouline. Long ignored in the West, kettlebell training has a long and distinguished history in Russia http://www.cbass.com/Kettlebell.htm.

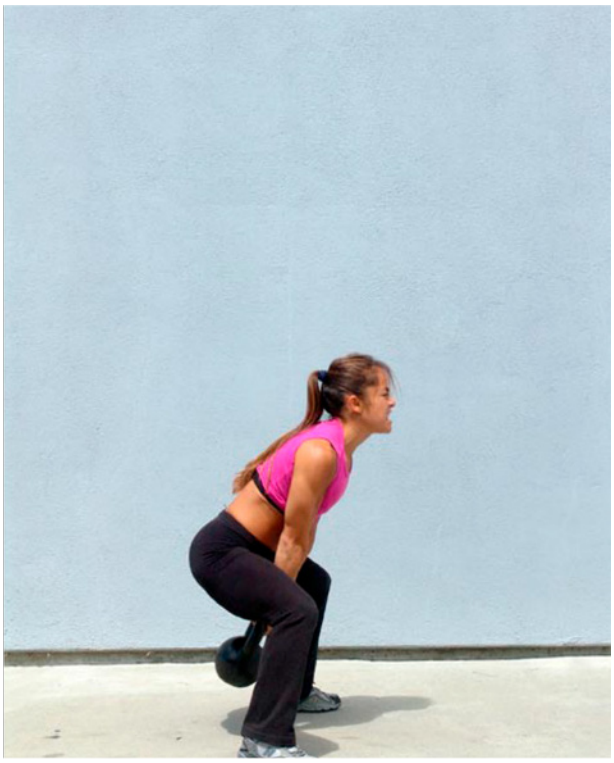
At CrossFit the rise of the kettlebell movement was cause for excitement. The kettlebell itself was somewhat unfamiliar; the kettlebell movements we'd long known from their dumbbell analogs, but Mr. Tsatsouline brought something more important than the kettlebell or kettlebell movements to the U.S. He came with a forceful and compelling rationale for high-rep weightlifting in elite strength and conditioning.

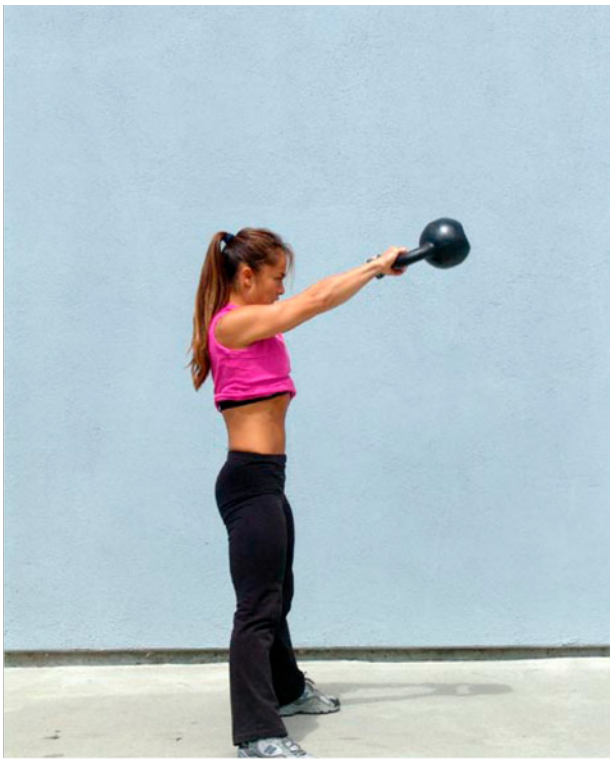
Understanding the unique potential of high rep weightlifting puts the kettlebellers and CrossFitters in rare company. Whatever else distinguishes our approaches this commonality is more important than our differences. Our two communities are, in our opinion, separated more by the number of tools we use than anything else.

On first being introduced to the kettlebell swing our immediate response was, "Why not go overhead?" Generally, we endeavor, somewhat reflexively, to lengthen the line of travel of any movement. Why?

There are two reasons. The first is somewhat intuitive. We don't do half rep pull-ups, we don't do half rep squats, and we don't do half rep push-ups. If there is a natural range of motion to any movement we like to complete it. To do otherwise seems unnatural. We would argue that partial reps are neurologically incomplete. The second reason deals with some fundamentals of physics and exercise physiology.

From physics we know that the higher we lift something, and the more it weighs, the more "work" we are performing. Work is in fact equal to the weight lifted multiplied by the height we lift the object. Work performed divided by the time to completion is equal to the average "power" expressed in the effort.





"Russian Swing"

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Power is exactly identical to the exercise physiologist's "intensity". Intensity, more than any other measurable factor, correlates to physiological response. So more work in less time, or more weight moved farther in less time, is largely a measure of an exercise's potency.

When we swing the kettlebell to overhead, the American swing, we nearly double the range of motion compared to the Russian swing and thereby double the work done each stroke. For any given time period, the power would be equivalent only if the Russian swing rate was twice the American swing rate.

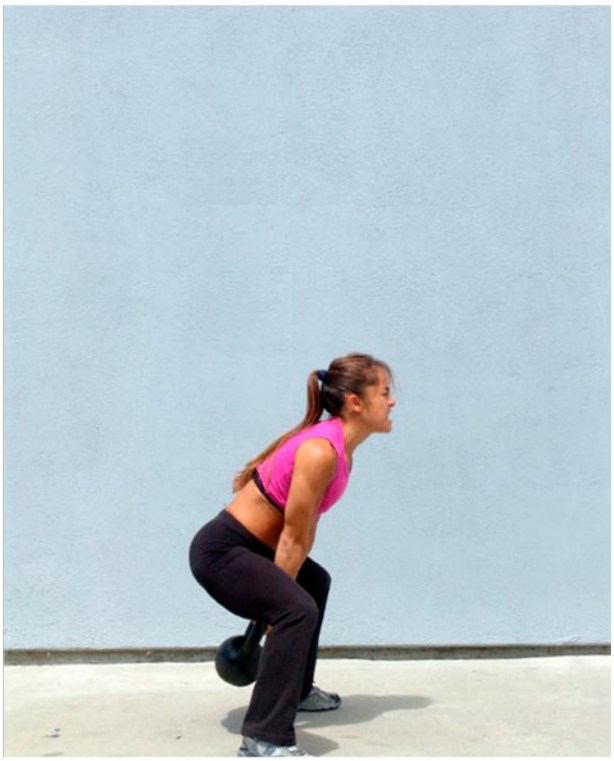
In fact, "T.C.", the gentleman who decried our lack of "qualified" instruction, recently claimed, "you will be able to get two low swings in for every one overhead." Were this true, and all other things equal, the two swings would require equal power to perform and consequently be similar in effect.

We have, however, tested the "period", or time to complete each swing, for both the American and Russian methods and we've found that the American swing rather than being half the rate of the lower Russian swing was closer to eighty-five percent of the Russian swing. This would require that the advocates of the lower, shorter, Russian swing perform the movement with nearly twice the load to improve on the power of the American swing. We don't think that is very likely to occur. Most of our guys can swing the 2-pood (32kg or 70.5lb) to overhead with control and precision.

After measuring the swing height and displacement for both the American and Russian swings we had several athletes swing 1.5 pood kettlebells, counting the repetitions, for one minute employing the Russian method. After an extended rest, we repeated the test with the same size kettlebells while employing the American swing. What we found was that the Russian swing demanded only sixty-five percent of the power required of the American swing - hardly close.

Power a measure of intensity can certainly be perceived, and it is the perception of all our athletes who have tried both swings that the longer American swing is substantially harder than the shorter Russian swing. Many offered, "it's twice as hard".

Curious about other physiological measures we repeated the tests with a downloadable heart rate monitor. Heart rate being a reliable correlate of power or intensity, we'd expect the American swing to generate higher heart





"American Swing"

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Exercise	*Natural Frequency (reps/min)*	*Range of Motion (feet/reps)*	*Velocity (feet/min)*	*Load required to match Power (pounds)*	*Average Power (footxpounds/ min)*
American Kettlebell Swing	40	6.5	260	X	260X
Russian Kettlebell Swing	47	3.25	153	1.7X	260X
Barbell Thruster	38	3.25	124	2.1X	260X
Barbell Clean & Jerk	18	6.5	117	2.22X	260X

rates compared to the Russian method. Consistent with our calculations and our athlete's perceived exertion, the heart rates recorded while employing the American swing averaged nearly twentyfive beats per minute higher than recorded employing the Russian swing.

We analyze most of our exercises in this way. Vertical displacement, load, and period or rate of repetition are critical to measuring power or determining intensity and, collectively with heart rate and perceived exertion, lend themselves to our determination of whether an exercise is worthy of regular inclusion in our workouts. On this basis alone, the half or Russian kettlebell swing doesn't make the cut.

In examining the mechanics and physics of exercises it is readily apparent that range of motion or line of action are fairly fixed. What is less apparent but generally the case is that our exercises also have a natural period or frequency of repetition.



"Russian Swing"



"American Swing"

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The natural frequency or period of an exercise can be found by performing it deliberately and quickly with an insignificant load. As we gradually increase the load what we see is that the period long remains fixed until, eventually, sufficient load slows the movement precipitously. The rate of performance prior to this threshold is the natural period or frequency of the movement.

We've seen videotape where U.S. Olympic weightlifter Shane Hamman is juxtaposed side by side clean and jerking both an empty bar and eighty percent of his max. The two movements are in perfect synch. The clean and jerk like many exercises has a natural period.

From watching videotape we've determined the natural frequency of the American kettlebell swing, the Russian swing, the thruster, and clean and jerk.

For the Russian Swing this rate is forty-seven strokes per minute, for the American swing it was forty, for the "thruster" (front squat/push-press) thirtyeight, and for the "touch and go" clean and jerk it was 18 strokes per minute.

Similarly, we analyzed the range of motion for these movements and found that the Russian kettlebell swing and thruster both traveled about three and a quarter feet and that the American swing and clean & jerk both traveled about six and one half feet. All of these measures were averaged from two male athletes standing nearly six feet tall.

Knowing the range of motion and natural period of these exercises we can determine what loads would be required to produce equivalent expressions of power among the four exercises. The answers are revealing.

Using this information we can show that the Russian kettlebell swing would have to be performed with loads nearly twice that of the American swing to exact similar power and intensity demands. This may not be possible.

In the case of the thruster and the clean & jerk the loads would have to be a little over twice as large and this is readily doable.

Indeed, it is our considered opinion that the Russian kettlebell swing becomes too heavy before it approaches the power of our preferred American kettlebell swing and that the thruster and clean and jerk are both vehicles for outpacing the power demands of the American swing. Physical analysis, measured heart rates, observed impact, and our athlete's perceived exertion support these contentions beautifully.



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A Beginner's Guide to CrossFit

Greg Glassman



"Universal scaleability" is the language we've routinely used in describing CrossFit to suggest that your grandma could and should be working out with us. In this issue we are not only sticking by that claim but examining it in some detail.

We look this month at common obstacles to CrossFit participation and some possible solutions. Chief among the barriers we most frequently hear expressed are a lack of familiarity or ability with the exercises, lack of equipment or space, and inability to complete the workout as prescribed in the workout of the day (WOD). We describe these as problems with the movements, equipment, and intensity.

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Before looking at these barriers and their solutions let's further set the stage for our discussion with three ancillary points, the first of which is important to all new CrossFitters and the second and third important for veterans, many of whom we know have been frustrated by trying to introduce CrossFit to their friends, colleagues, or family.

First, over the past three years thousands of people have acquainted themselves with the CrossFit website, gotten the hang of our core theme of "functionality, intensity, and variance", learned our basic exercises, acquired most of our equipment, and made amazing physical gains. Included among these self-starters are many who were initially challenged to participation by varying combinations of advanced age, being self-taught, poverty, inexperience, disability, and fear.

All of the strategies that we are offering this month have been fruitfully employed by a legion of CrossFitters left to their own devices and common sense - proving our stand on scaleability.

Second, if you are a regular reader of the *CrossFit Journal* it is more than likely that you are long past the 99th percentile for fitness even among those who regularly exercise. Our typical reader is seen by his friends, acquaintances, and family members as, quite frankly, a freak – a fitness freak, but still a freak. Your endorsement may not carry the weight you would hope or think it would.

Your retching behind the garage after our workouts may not hold the attraction for your wife that it does for you. When you tell your fat sergeant that these workouts will bring him to his knees in five minutes, you may have just then vaccinated him for life against ever wanting to even try your program. Ironically, your legendary fitness status may render you bizarrely unqualified for lending advice to your mortal friends.

Third, CrossFit presents a fitness model that is contrary to popular practice and is, therefore, for most people, scary. Nearly every aspect of our model is at odds with the fitness magazines and programming in commercial facilities. For too many people there is no greater fear than being out of step with the rest of their community. The terrible pain of "looking funny" at Gold's or 24-Hour Nautilus while "training like no one else" has made its way to our desk in dozens of emails.

Doing CrossFit makes you a leader in the fitness community. You CrossFit veterans have scooped most of the world's best-known trainers and coaches – be patient with your friends, coworkers, family, and fellow athletes.

For you beginners, unfamiliarity with our exercises, lack of equipment, or the blistering demands of the WOD are not the obstacles they might seem. Let's give perspective and then offer solutions to the problems with movements, equipment, and intensity separately.

CrossFit is based extensively, if not exclusively, on functional movements. (See *CrossFit Journal* Issue 19, "What is CrossFit?" for our perspective on functional exercise.) As daunting as learning to snatch, clean, overhead squat, jerk, and muscle-up, may be, especially never having heard of them, they, like the rest of the CrossFit exercises, are movements that largely mimic and reproduce natural efforts like standing, throwing, lifting, pulling, climbing, running, and punching.

Resources

What is CrossFit? - http://crossfit.com/cf-info/what-crossfit.html

Get Started - http://www.crossfit.com/cf-info/start-how.html

Exercises - http://www.crossfit.com/cf-info/excercise.html

Lynne Pitts's Official CrossFit FAQ - http://www.crossfit.com/cf-info/faq.html

CrossFit Message Board - http://www.crossfit.com/discus/messages/board-topics.html

Fighttraining - http://www.geocities.com/fightraining/

Power Ring Training - http://www.ringtraining.com/

Outside Magazine July 2004 - http://outside.away.com/outside/bodywork/200407/whitewater_rafting_workouts_1.html

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There is no circumstance of disability, gender, age, stature, weight, or fitness level that reduces the need, safety, or effectiveness of functional movement. This is not the same as saying that everyone should do muscle-ups or even squats. Where muscle-ups are impossible, substituting pull-ups and dips largely preserves the training stimulus and prepares for the muscle-up. Where the hip and legs are too weak to squat, hanging on to a rope or racked bar with the arms for assistance largely preserves the training stimulus and prepares for the squat.

Every functional exercise contains an essential bit of human capacity. Due to strength or injury, often a particular exercise is not immediately possible. In nearly every case what we do is find a method to reduce the load to insignificant levels while preserving precisely the line of action or substitute movements of similar lines of action that will prepare for the missing capacity.

Any weightlifting exercise can be done with a broomstick or PVC pipe. Every bodyweight exercise can be substituted with gateway movements. Look what we can do with one of our more challenging workouts, "Diane." Diane is a couplet of 225-pound deadlift and handstand push-ups for rounds of 21, 15, and 9 reps each. You have to be pretty fit to even finish the workout, much less do it in Matt Mast's 3:41. If we substitute light dumbbell shoulder press for the handstand push-ups and use a broomstick for the deadlifts we could take that workout to the senior center.

All of the weightlifting movements can be safely, enjoyably, and productively self-taught. A coach or trainer is nice, but not always available. The key is committed study and practice of the basic movements. The resources available on and through the Internet are fantastic. Those who take a keen interest in these movements have been able to quickly establish safe and effective lifts. Much too much has been made of the potential for injury. In our view the benefits of learning the CrossFit lifts far outweighs the risks of learning them – even at home alone and uninitiated.

The CrossFit approach is to embrace, study, practice, and train for functional mastery. CrossFitters at every level are on the same path – moving from functional competence to functional dominance. Our almost complete reliance on functional movements is vital to the potency of the CrossFit protocol. We say, "The magic is in the movements".

Where functionality defines the CrossFit path, it is intensity that most controls the rate of progress for any particular individual. Intensity is essentially the rate of work or power expressed in completing work. It correlates to heart rate and how quickly you complete anyWOD where we're looking for time to completion.

The WOD is responsible for quite a bit of confusion about the CrossFit method. CrossFit is a strength and conditioning system built on constantly varied, if not randomized, functional movements executed at high intensity. The WOD is but one example, designed by CrossFit's founders, of CrossFit programming. The WOD is designed to tax the capacities and improve the performance of athletes working at the outer margins of human capacity.

Not being able to complete a WOD doesn't mean that you can't do CrossFit. Taking a WOD and reducing the load, cutting the reps, dropping a set, taking longer rests, and sitting down three times during the workout is still doing CrossFit. In making these modifications the athlete is merely turning down the intensity.

Strength and conditioning gains come fastest for athletes who hold the highest average intensity over sustained periods. Consistency must be established at any general intensity level before it is appreciably turned up, or the specter of burnout looms. Countless people have after three spectacular CrossFit workouts stated a preference for a fiery death over coming back for a fourth workout. They went too hard – too intense.

This brings us to a few final important points about intensity. Intensity and results are directly proportional, but intensity and comfort are inversely proportional. Choosing for greater intensity is choosing for more fitness, but, also, greater personal sacrifice in the form of discomfort. Expecting elite fitness from comfortable efforts is naïve, while going too fast is dooming. No formula can sort these issues out for you; the intuition of athletes and coaches everywhere has smartly outperformed all formalized approaches.

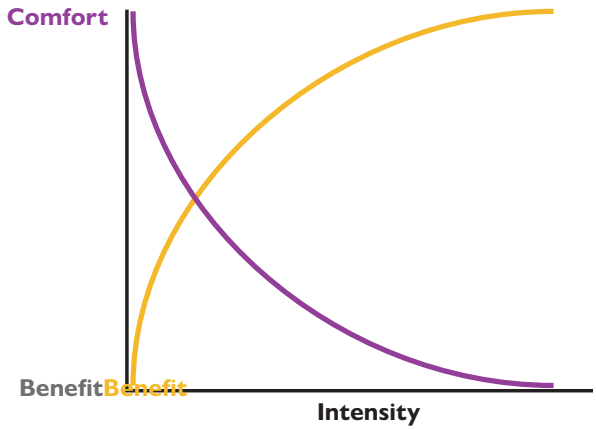
Knowing the taste and feel of intensity is no less than coming face to face with the real cost of elite fitness.

The natural movements which we believe everyone can readilylearn,evenontheirown,requiresolittleequipment, and our simple charter of functionality, intensity, and variance gives so much latitude that resources cannot be a serious obstacle to CrossFit training.

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With a pair of 15-pound dumbbells, 9 feet of rope, and a pull-up bar you can adopt the CrossFit program. For about the cost of cable TV you can, over months, build a strength and conditioning facility that will support world-class programming.

Those disposed to handiwork have made rings, weights, plates, kettlebells, glute ham developers, and nearly every other piece of equipment we regularly use.

Space is a minor issue. CrossFitters are meeting in parks in Miami, building gyms in apartments and dorms, repurposing home garages, and corrupting the layout and gear of their local gyms everywhere.

The recurring themes in overcoming obstacles to CrossFit training are ingenuity, moderation, and commitment. And nowhere is this better understood or expressed than within the community of CrossFitters who have on their own undertaking, with the same limitations and challenges found everywhere, grabbed the essence of the CrossFit concept and forged their best fitness.

These folks are found on the CrossFit Message Board and their ability and willingness to help is the beginner's best resource. The board's moderators support an environment where experts and beginners roost in friendship.

How far can $1000 be stretched towards a home gym? Get the experts' opinions

Here's what I have in my garage.

- Pull-up dip station $100
- 160lb dumbbell barbell set $100
- Homemade 30lb medicine ball (basketball filled with sand and old t-shirts) free
- Homemade 30lb kettlebell $20 for handle at hardware store
- A 70lb sandbag $10
- Free standing heavy-bag $200

- Randy

In my mind, the first $200 or so can cover something like 75% of the WODs and the rest aren't too hard to substitute for. I spent the summer with just Tyler's $80 rings and a 300 lb Olympic barbell set for $130.

- Mark G.

- $150 BFS "Super" barbell
- $250 squat stand
- $170 homemade Olympic lifting platform (5 sheets plywood + rubber
- horse stall mats)
- $100 pair of 10kg bumpers
- $145 pair of 20kb bumpers
- $55 iron plates (pair of 1.25kg, pair of 2.5kg, two pair 5kg)
- That still leaves over $100 in the budget.

- Lincoln

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How far can $1000 be stretched towards a home gym? Get the experts' opinions (cont'd)

A thousand dollars. That is way too much for me. Most of my gym was donated, but let me add a few extras:

1. A variety of heavy rocks or boulders for doing sprints while carrying said rock. Throw 'em, too.
2. A big military duffel bag filled with bags of rock salt. Rock salt is for your water softener, so the whole thing might cost 6 bucks for the salt and $20 for the duffel at an army surplus store. Shoulder this and walk a long way with it.
3. Some plywood (borrowed... vow to return) and a few pieces of 2 X 4 for a platform. A couple of pieces of rubber matting for where the plates hit. You can also use old car mats.
4. Discarded wheelbarrow shell. Loop a rope through the holes and you have a sled...

Go cheap.

- Danny John

Rings - $80

1.5 pood kettlebell $125

Olympic bar and bumper plates (10/25/45) - $250

Homemade medicine ball - no more than $5

Jumprope - $10

Bench - $150

Pull-up bar and dip bar - $150 each from your local welder

CFJ subscription - $25

- Rick W.

- $125 300-lb barbell set
- $125 dumbbells
- $150 dip/pull-up station
- $100 bench
- $5 medicine ball
- $5 wall clock
- $50 used treadmill/exercise bike (lots available)
- $50 boombox
- $25 *CrossFit Journal*
- $15 jumprope
- $80 power rings
- $150 squat stand

That leaves a couple hundred bucks for stocking the fridge with quality foods.

- Fred

If you buy used you can go long way on a grand. Here's what I outfitted my garage with.

- Power rack w/ dip and pull-up station: $550
- New 300 pound Oly weight set with bar: $99
- Used Oly bar and 8- 45 pound plates at a garage sale: $100
- Heavy bag : $50
- Bag gloves: $30
- Jump rope: $10
- Medicine ball: $40
- Used bench: $50
- Adjustable thick handled dumbbells: $80.
- Two used weight trees: $100
- Misc: $100

Approx total: $1,209

- John Walsh

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"The Girls" for Grandmas!

Greg Glassman

In the September 2003 issue of the *CFJ* we introduced six benchmark workouts to test performance and improvements through repeated, irregular appearances in the WOD. These workouts were given the names Angie, Barbara, Chelsea, Diane, Elizabeth, and Fran.

We figured these six workouts were as good as any to demonstrate our concept of scalability. Here we offer versions of those workouts that have been "tuned down" in intensity and had exercises substituted to accommodate any audience.

"Angie"

Original	Modified
For time:	For time:
100 pull-ups	25 ring rows
100 push-ups	25 push-ups off the knees
100 sit-ups	25 sit-ups
100 squats	25 squats





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"Barbara"

Original	Modified
5 rounds for time of: 20 Pull-ups 30 Push-ups 40 Sit-ups 50 Squats 3 minutes rest between rounds	3 rounds for time of: 20 Ring Rows 30 push-ups 40 sit-ups 50 squats 3 minutes rest between rounds





"Chelsea"

Original	Modified
5 Pull-ups 10 Push-ups 15 Squats Each minute on the minute for 30 minutes	5 Ring rows 10 push-ups 15 squats Each minute on the minute for 20 minutes

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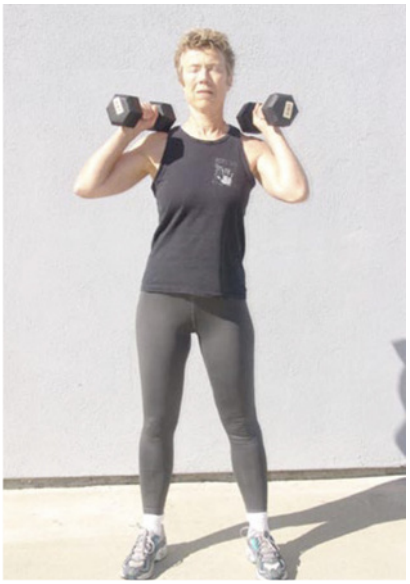
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"Diane"

Original	Modified
For time: Deadlift 225 lbs Handstand pushups 21-15-9 reps	For time: Deadlift 50 lbs Dumbbell shoulder press 10 lbs 21-15-9 reps

"Elizabeth"

Original	Modified
For time: Clean 135 lbs Ring dips 21-15-9 reps	For time: Clean 25 lbs Bench dips 21-15-9 reps





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"Fran"	
Original	Modified
For time: Thruster 95 lbs Pull-ups	For time: Thruster 25 lbs Ring rows
21-15-9 reps	21-15-9 reps





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Pull-up Challenge

Last winter we challenged the message board crew to drive towards 40+ pullups by September '04. After a couple of deadline extensions the contest officially ended with seven winners – Lynne Pitts, Kelly Moore, Aaron Fisher, Adam Walinsky, Larry Lindenman, Ryan Atkins, and Graham Hayes. Each received a CrossFit Champion T-shirt.

From a contest intended to demonstrate that the secret to high rep pull-ups is desire and that all methods couple successfully with desire, here are Larry Lindenman and Lynne Pitts recounting their paths to success.

"My pull-up challenge started when the contest was first posted. I had been completing the Workout of the Day since September 2003. I have been doing the WOD, as written, with no modifications, since February 2004. Along the way I have picked up or made every piece of equipment necessary to stock a Crossfit Gym, except I still substitute towel chins for rope climbs and I haven't purchased a GHR bench yet. I am a 43 year old police officer, with approximately 20 years of weight training experience and 37 years of athletic experience. I rockclimb and teach and practice martial arts. I am currently 6'0", 200 lbs, approximately 6-7 % bodyfat.

The 40 pullup challenge struck me as a great goal and a way to focus my efforts on the one exercise, which is the staple of the Crossfit program: pullups. Being an active member of the on-line community I devoured all of the posts related to increasing pullups. I then conducted a pretest, with disappointing results: 8 wide grip, overhand, strict form (chest to bar), slow, pullups performed on the bar attached to my power rack. I had a long way to go.

Then IT struck. A profiteer entered the online community and began trashing training methods without offering alternatives. The message board became a mini battle ground and the idea of the 40 pullup challenge seemed tainted. I wanted to train for the wide variety of physical and mental adaptations, not just one event. I dropped any speciality training and forgot about the challenge.

However another goal came to surface. I wanted to lose body fat. At six feet, I weighed 218 pounds. I was at my heaviest ever in my life. Although I completed the WOD's my dietary discipline was almost non-existent. My max lifts were up but my cardiorespiratory efficiency was horrible. I was taking long rest periods during the WOD and my "running" times were pitiful.

My wife, who is an athlete, wanted to try out the South Beach Diet. I went along for the ride and lost a large amount of fat. I added a 3 mile walk on rest days to my training; this acted as a recovery workout and, I believe, accelerated fat loss. Once I entered the maintenance phase of the SBD, I switched to the Zone diet (5 block meals / 2 block snacks). Bottom line, I lost 18 pounds and now hover around 200# at 6 -7% body fat. When I completed the pullup challenge I weighed about 196#.

Pull-up Challenge - Champions!



Adam Walinsky *Ryan Atkins* *Graham Hayes* *Lynne Pitts*

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Since I started with Crossfit, I have completed the Crossfit warmup. I started with 3 X 5 pullups as part of a warmup circuit. By the time I completed the challenge I was completing 3 X 10 pullups very easily. I just added pullups when I felt the current rep range was easy. I now complete 3 X 12 pullups for warm-ups, circuit fashion, with overhead squats, situps, dips, 20# med ball cleans, and Sampson stretches, I also work on hand walking and presses to handstands. If the WOD calls for pullups, I drop them from the warm up circuit.

Within the last three to four months, the subject of kipping came up on the message oard. I was very familiar with kipping due to my background as a ring specialist in highschool and one year of college competitive gymnastics. As a police officer, I believe in training for reality, not training to pass a test. There has been some recent discussion about kipping being cheating. Quite frankly, if I have to get up on a second story balcony, from the ground, during combat, no one is giving style points and I'm kipping my ass off. During my final test, I kipped, every rep. The first 5-10 pullups felt like the bar was going through my chest, I was pulling so hard.

On to the final test: Kipping is hard to do properly on my power rack / pullup bar because I have to bend my knees. I went to a nearby park with a high, thin pullup bar, kicked my shoes off, and completed the challenge in approximately 1 -1.5 minutes. The last three or four reps were a little slow, the rest were rapid fire full extension. These are the points I posted on the message board as I progressed towards 40 pull-ups.

1. Only did the WOD (as prescribed 3 on 1 off) with supplemental pullups for warm-up (went from 3x5 to 3x10 in WU increased number in warmup about 1 per month barely noticed).

2. First set of pullups (in Feb) were from dead hang, on the pullup bar attached to my power rack, so I had to bend my knees. I did not kip when I got my original 8 and I pulled up and lowered slowly.

3. Yesterday's 33 were done on a bar at a park, my feet did not touch the ground at full hang, the bar was thinner than my bar, and I kipped, like a mad man. Also took off my shoes. The full 33 took about 1:00 or less (I didn't time it).

4. Since February I lost 18 pounds, maintaining around 6-7% body fat level (Zone + WOD, did a little South Beach Diet in February-March because my wife was doing it and she cooks so what the heck).

5. Since that time all WOD times have dropped drastically (Today's benchmark Helen dropped by 3 min and 20 seconds).

6. I haven't tested pullups since February, but believed I could hit 30 because the 3x10 in the warmup are easy and done in a circuit fashion and during the WOD's with pullups, I'm able to string together greater numbers of reps to lower times.

7. Pullup technique with the kipping came easy to me due to my background in gymnastics, I think the addition of kipping, weight loss, and consistent practice in warm-ups and WOD's were the greatest factor in my increased pullups.

8. No Ben Gimbal required!"

"On the pullup challenge, I started with a density protocol, but quickly burned out on it. (The concept of the density protocol is to double your desired reps and break them into bite-sized chunks, done at the top of each minute. So, to get to 40, pick 80. Start with 20 sets of 4. Then 16 sets of 5, 13 sets of 6, etc. Idea being that when you get to 2 sets of 20 (with a full minute break, not at the top of the minute) you should be able to get your 40. The earlier rounds were easy; once I got to 8 sets of 10, I couldn't complete them all. Even taking the next step, which is a full minute between rounds, instead of starting at the top of the minute, wasn't enough to allow me to complete them. I suspect I should have stuck with it, but I'm not patient. So I started adding weighted pullups and holds at the top, and they seemed to make the difference. They were in small doses - 3-5 sets of 5 with 25 lbs, for example, once or twice a week, in addition to the WODs and an odd near-max attempt about every week or 10 days.

Other keys were probably that I didn't have a huge gap to cross; I started the challenge with about 25 pullups. Also, I stayed pretty consistent with extra pullup work from March to Sept. I bet that a lot of folks looked at that long time, and procrastinated themselves out of the contest."

- Lynne Pitts

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The New Girls

In the September 2003 CrossFit Journal we introduced our first benchmark workouts - "The Girls": "Angie, Barbara, Chelsea, Diane, Elizabeth, and Fran". In the following months we introduced two more: "Grace", and "Helen".

These benchmark workouts serve to measure and benchmark your performance and improvements though repeated, irregular, appearances in the "Workout of the Day".

This month we introduce six new beauties, "Isabel, Jackie, Karen, Linda, Mary, and Nancy." You will certainly be seeing them in the lineup.

"Isabel"

Snatch 135 pounds, 30 reps for time

This workout is clearly Grace's (135X30 C&J for time) best friend.

"Jackie"

For time:

Row 1,000 meters
Thruster 45 pounds, 50 reps
30 Pull-ups

Not everyone has a rower, but "Jackie" is reason enough to buy one. A second round at 500/25/15 and a third at 250/15/10 make for a perfect workout.

"Karen"

Wall-ball 150 shots

Simple and elegant, "Karen", has the effect of three girls. Mike Weaver's 4:52 is the mark to beat. The target is at ten feet, the ball is 20 pounds, and each shot requires a full squat.

"Linda"

10-9-8-7-6-5-4-3-2- and 1 rep rounds for time of:

Clean ¾ bodyweight
Bench bodyweight
Deadlift 1 ½ bodyweight

This workout first appeared July 5th, 2003. More than a year later, September 23, 2004, Steve M., Rutman, Steve S., Ross Hunt, Barry Cooper, and Scott Kustes offered it as the toughest WOD to date. Mr. Kustes referred to this workout as "Three Bars of Death".

"Mary"

Complete as many rounds in 20 minutes as you can of:

5 Handstand push-ups
10 1-legged squats, alternating legs
15 Pull-ups

"Chelsea" (Pull-up, push-up, squat 5/10/15) proved that a powerful cardiorespiratory stimulus could be generated through simple calisthenic workouts. "Mary", shows how tough calisthenic workouts can be. First seen October 30th, 2004, the time to beat is Dr. Todd Hockenbury's blistering 12 and 2/3 rounds. (This West Point gymnast and Orthopedic Surgeon can be counted on to keep the bar high.)

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"Nancy"

Five rounds for time of:

Run 400 meters

Overhead squat 95 pounds, 15 reps

Finesse and control at high heart rate is critical.
"Nancy" demands it.

The Girls

Angie

100 Pull-ups 100 Push-ups 100 Sit-ups 100 Squats	For time

Barbara

20 Pull-ups 30 Push-ups 40 Sit-ups 50 Squats	5 rounds for time 3 minutes rest between rounds

Chealsea

5 Pull-ups 10 Push-ups 15 Squats	Each minute on the minute for 30 minutes

Diane

Deadlift 225 lbs Handstand push-ups	21-15-9 reps 3 rounds for time

Elizabeth

Clean 135 lbs Ring Dips	21-15-9 reps 3 rounds for time

Fran

Thruster 95 lbs Pull-ups	21-15-9 reps 3 rounds for time

Grace

Clean and Jerk 135 lbs	30 reps for time

Helen

400 meter run 1.5 pood Kettlebell swing (21 times) Pull-ups (12 reps)	3 rounds for time

Isabel

Snatch 135 lbs	30 reps for time

Jackie

1000 meter row Thruster 45 lbs (50 reps) Pull-ups (30 reps)	For time

Karen

Wall-ball 150 shots	For time

Linda

Clean 3/4 BW Bench BW Deadlift 1 1/2 BW	10-9-8-7-6-5-4- 3-2 and 1 rep rounds for time

Mary

5 Handstand push-ups 10 1-legged squats 15 Pull-ups	Complete as many rounds possible in 20 minutes

Nancy

400 meter run Overhead squat 95 lbs (15 reps)	Five rounds for time

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CrossFit PT

Greg Glassman



Rising popularity of CrossFit within military and law enforcement circles has led to sufficient institutional and group adoption of our program to draw important lessons on the differences between traditional military PT and CrossFit PT. Some of the differences were wholly expected others were less expected but no less significant.

One glaring advantage with the adoption of CrossFit PT is improved fitness – dramatically improved fitness, but what is singularly unique about our program is the manner in which the improved fitness has been demonstrated. CrossFit PT has been measured against other PT programs by testing its adherent's performance against the testing standards of the program it replaced! At first this may not seem significant but testing of traditional PT trained athletes against CrossFit-like demands produces more DNF's on test day than above average performances.

One striking and important example of this is running. CrossFit programming calls for infrequent long distance runs and frequent sprints of 400 meters. Repeatedly, CrossFit has produced better long distance running times in head to head comparisons with programs where distance running is a staple. Better running times at less than 1/3 the volume has been the trend.

Constantly varied programming built from functional exercises executed at high intensity is the key to CrossFit's physiological advantage. Our distillation of load, range of motion, exercise, power, work, line of action, flexibility, speed, and all pertinent metabolics to a single value – usually time, has conferred other less expected benefits as well.

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With CrossFit PT every workout provides a useful data point. We collect relative and absolute performance measures every single workout. Measurement is important and no PT program we know of offers as many opportunities for metrics as CrossFit. The information that can be mined from an individual's, team's, or company's performance is incredible, invaluable, and generally not available with traditional PT.

Distillation of every workout to a single value turns PT into sport. Relative and absolute measures readily convert to "points", and "men will die for points". Colonel Jeff Cooper observed in "Principles of Personal Defense" that, "fear of sporting failure is usually greater than the fear of death." We routinely watch warriors push themselves harder for a "win" or "placing" than any coach would ever consider wise or prudent to push the athlete. Our scoreboards (whiteboards) inspire each round of competitors to ask, "What are we doing today?" "Who did what?" and then internally, "What do I have to do to take it?"

Our police academy graduates ask to come back for PT after graduation and soldiers ask for PT on weekends. CrossFit is fun, the kind of fun that can boost morale and save lives - Army Captain Michael Perry offered among the benefits of his men's first 5 months of CrossFit that, "first and most importantly lifelong friendships forged from extreme physical and mental challenges. Rarely does a day go by without laughter and agony which must be the recipe for strong camaraderie."

One surprising result of the deliberate and public performance ranking for each workout has been the motivation and acceleration of improvement of those less physically capable by temperament, training, or natural limitation. Ranking has seemingly done more for bottom performers than top performers.

Our reliance on functional movements, including many presumed too complex or technical for mass application, has returned skill to PT. Over the past 60 years traditional PT has been flensed of nearly all skill elements that train for coordination, accuracy, agility, and balance. The costs here are enormous and extend to losses in speed and power as well producing an athlete generally less capable of dealing with variances and vagaries of opponents, movement, and terrain.

The skill elements included in CrossFit PT further the sense of sport that so motivates men. CrossFit PT feels like sport; traditional PT at even lower intensities feels like punishment.

Our use of functional movements has also reduced the chronic overuse injuries that plague traditional PT program participants. Injuries to the back and knees, shin splints, and other "sick day" maladies have been greatly reduced with implementation of CrossFit.

Finally, the intensity of our workouts was designed with the sole objective of maximizing adaptation. One critical side benefit has been a dramatic reduction in PT training time while greatly improving the payout.

Where tested, CrossFit PT has been shown to be a dramatic improvement to traditional PT in these regards:

- Efficacy
- Time required
- Safety
- Fun
- Motivation
- Testing/metrics
- Psychological demands
- Battlefield/street engagement

For corroboration from military and law enforcement professionals for ANY of these claims drop us a line at info@crossfit.com and we'll put you in touch with the guys who really count.



Greg Glassman is the Founder of CrossFit, Inc. and Crossfit Santa Cruz and is the publisher of the CrossFit Journal. He is a former competitive gymnast and has been a fitness trainer and conditioning coach since the early 1980s.

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What About Recovery?

Coach's Spin

Greg Glassman



At CrossFit's certification/seminar in Golden Colorado this fall, an event commonly referred to as the "First CrossFit Summit", several presenters spoke of the importance of rest and recuperation in athletic training and alluded to valuable current trends and research on the subject of recovery.

Chief among those inspired by the conversation were Dan John, Tyler Hass, and Robb Wolf. My respect and admiration for Dan, Tyler, and Robb coupled with my bad attitude and admitted ignorance of "modern recovery techniques" made Tyler's suggestion to dedicate an issue of the CFJ to recovery an interesting idea - especially if Dan and Robb could be cajoled to help.

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For the record, my bad attitude towards any established corpus of recovery information stems from several quirks of my intellectual temperament and the nature of my clinical practice. It has been my professional experience that successful training protocols present themselves over time through superior performance among their adherents. Repeatedly over my career exceptional performance has been easily and quickly rooted out and attributed to the particulars of the performer's training regimen. A natural process of question and answer mines more potent strategies quickly: "Where does this guy come from; he learns so quickly?" "He's a gymnast." "Why are these guys so much stronger than the others?" "They powerflifted for years." How did she get so lean so quickly? "By cutting her intake of high glycemic carbohydrate." By watching, learning, asking, and experimenting we have been able to build a successful program whose methods were harvested entirely from elite performers. I want to ask, someday, "Who are those amazing athletes?" to which the answer comes, "the new resters."

"Much of the talk about recuperative techniques centers on avoiding or curtailing "overtraining". It is my considered opinion that overtraining is indicated by retrograde performance and specifically does not include symptoms mitigated or alleviated by additional sleep, fluids, massage, or pampering alone"

I am waiting for a group, or even a single elite performer, to lay the fruit of his training on superior recovery techniques. If and when an athlete bests Greg Amundson or Josh Everett and differs from them largely in his penchant for cold beers, massage, ice baths, or the company of pretty woman – we're going to tinker, analyze, and evaluate these predilections with ourselves and then with other athletes. I'm still waiting. I am personally hopeful that pampering and advanced recuperative techniques will make a substantial difference. Wouldn't that be cool?

The reports, this month, don't give me reason for encouragement. Stress control, massage, sleep, contrast hydrotherapy, hydration, recreation, stretching, and chiropractic treatment top the list of promising recuperative techniques. While none of these are foreign to us, or even new to sport training, we've no evidence that they make measurable differences in accelerating the development of elite performance. I can appreciate the potential these modalities offer to comfort, but I'm not seeing the increased performance.

In spite of this curmudgeonly view of recuperative technologies I must add that our nutritional prescription may be lending it's value via accelerated recovery. We know, through regular observation, that most fad dieters (low fat/high carb/low protein, chiefly) never stand a chance of surviving our protocol regardless of rest or ramping up. We've further noted that close adherence to our nutritional protocol, by initially, at least, weighing and measuring food to establish accuracy and precision to the diet confers an advantage that less diligent compliance cannot match. The suspicion is that our nutritional strategy accelerates recovery allowing for one or two more super productive workouts each week. Over time this creates distinct athletic advantage.

It must be pointed out that whle acknowledging that sleep deprivation, dehydration, and inflexibility are detriments to performance I've seen no evidence that sleep, water, or flexibility beyond "normal" levels help performance. Playing basketball in handcuffs will limit your game, but I'm not going to suggest that the removal of handcuffs is the key to increased basketball performance for all basketball players.

If we clump the recuperative modalities together as "pampering" what my clinical practice suggests is that the pampered athletes are generally performing below the 50-percentile mark. Those most inclined, for instance, to yoga, meditation, and chiropractic tratment are not our fire-breathers. I don't think that yoga, meditation, and chiropractic treatment are injurious to performance; I think that self-pampering and longing for comfort are, however, correlative with low drive and success. Why is it that those most inclined to worry and ask about "overtraining" are about as likely to set a new record in the Olympic Decathlon as they are to ever overtrain?

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Much of the talk about recuperative techniques centers on avoiding or curtailing "overtraining". It is my considered opinion that overtraining is indicated by retrograde performance and specifically does not include symptoms mitigated or alleviated by additional sleep, fluids, massage, or pampering alone. Overtraining is not sleep deprivation, soreness, or systemic or musculo-skeletal fatigue due to excessive training volume. Overtraining is a neuroendocrine beat down associated with excessively intensive work – more rest won't necessarily help, reduced intensity will.

While insufficient recuperative techniques may be a factor in limiting training adaptation, it most clearly, obviously, and certainly, pales compared to the limitations inherent in not training hard enough. One powerful and obvious difference between the CrossFit approach to athletic strength and conditioning and other protocols is that we work harder, i.e., at higher intensity. There may be temptation to think that a program that advocates workouts lasting about 30 minutes offers more rest than those lasting several hours, but the problem with three-hour workouts is not that they leave two and one half hours less recuperation time, but that they are not nearly intense enough to optimize adaptation.

Does my contention that undertraining is much the greater monster than overtraining imply that I think overtraining is rare or impossible? No, no, no, and hell no, but I do believe that the biggest factor in overtraining is not under-recuperation but inadequate ramp up to higher intensity levels. Nowhere is this more apparent than with our Workout of the Day (WOD).

We have counseled in "Getting Started" and repeatedly elsewhere that the WOD is designed to exceed the capacities of the world's fittest humans and that starting CrossFit by throwing yourself at the WOD 100% will result in devastating failure. We've recommended that anyone attempting CrossFit first get through a month of "going through the motions" before diving in with full intensity – "establish consistency before intensity". Countless bad-asses from sporting and special operations communities, long regarded as bullet proof, have been burned at the stake of ego and intensity. More or better rest could not have helped.

Furthermore, though discomforting, counterproductive, and generally ugly, overtraining is not the dread monster to be avoided at all costs as commonly portrayed. Overtraining is similar in disruption to a cold and never as severe as the flu. Show me an athlete who has never overtrained and I'll show you someone far from his potential. It is actually very, very, easy to make sure that you never overtrain, but optimal development comes on the margins of overtraining. That's right, if you are far from overtrained, you are far from peak performance.

Everything that isn't exercise is recuperation, but for me the benefits of off time come not from enhancing athletic performance but from enhancing life. Exercise, fitness, sport, and even health are only important in that they serve a broader purpose – life. We are made more alive by exercise and fitness but reading, playing, studying, and loving also make us more alive and enrich us greatly entirely independent of our physical well being. I wholly recommend that you focus the 23-½ hours daily of non-exercise not on increased physical performance but on enriching your soul. If you should, however, find a path to athletic greatness that necessitates luxuriating, alcohol, massage, and perhaps, pretty woman, send us the particulars and we'll get busy resting. In the meantime we're going to keep pushing for more work, done quicker, and getting on with the business of life in our off time.



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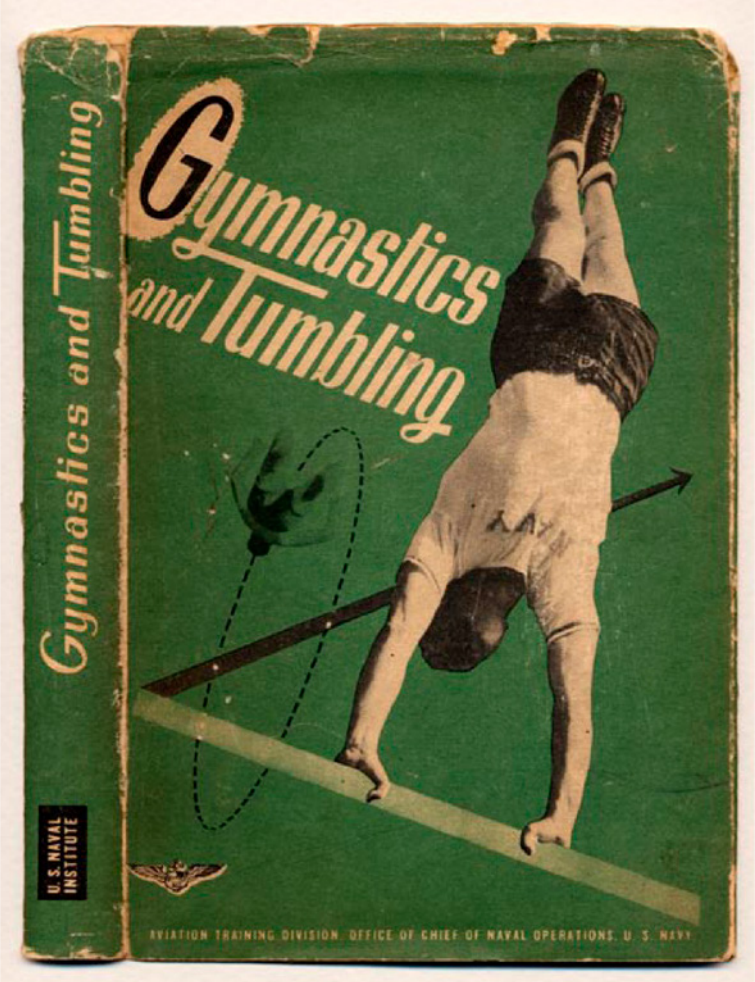
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Gymnastics & Tumbling

Greg Glassman



Gymnastics and Tumbling
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This month we review a small yet dense out-of-print book titled *Gymnastics and Tumbling*. First published by the U.S. Navy in 1944, Gymnastics and Tumbling is today an obscure reference in danger of extinction. We believe it is an indispensable resource for CrossFitters and intend to keep it alive.

Shortly after the United States' entrance into World War II, the United States Navy implemented a physical training program for future pilots based on training and practicing various sports: "Successful coaches were commissioned so that the Navy might have the best instruction available." The successes, methods, and refinements of these coaches-turned-officers culminated in the issuance of the Naval Aviation Physical Training Manuals by the U.S. Navy in 1944.

The manuals were prepared by and for the newly commissioned officers from their experiences in teaching thousands of aviation cadets. Their titles include: *Hand-to-Hand Combat*; *Boxing*; *Wrestling*; *Football*; *Gymnastics and Tumbling*; *Soccer*; *Basketball*; *Swimming*; *Mass Exercise, Games, Tests*; *The Sports Program*; *Labor Engineering*; and *Military Track*.

While our focus this month is on the *Gymnastics and Tumbling* manual in particular, much of its virtue may lie in the fact that the U.S. Naval Aviator's physical

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training program in total was inspired by war; modeled from successful sport practice, not science; designed and implemented by coaches, not professors; considers sport in the military training sense of physical and mental development and not for the sake of sport or recreation alone; and, finally, was successfully taught to young men of ordinary physical capacity.

The unique and essential contribution of gymnastics to fitness, and by extension to war fighting, is brilliantly articulated in *Gymnastics and Tumbling* (G&T). At the end of the chapter titled "Brief History of Gymnastics," we find the powerful statement that "gymnastics and tumbling contribute in large measure to the demands of a democracy at war."

British author D.W. Brogan said of America's entry into WWII, "For Americans war is almost all of the time a nuisance, and military skill is a luxury like Mah-jongg. But when the issue is brought home to them, war becomes as important, for the necessary period, as business or sport. And it is harder to decide which is likely to be the more ominous for the Axis – an American decision that this is sport, or that it is business." That we turned to sport and not science to forge defenders was a wise move at a critical moment. It is also pure CrossFit to let successful practice trump more academic approaches.

The link between the values and physical benefits developed through sport training and the demands of war are demonstrated pointedly throughout G&T. The doubleedged benefit of mind and body development through fitness and sport are also well noted:

- "It is our duty to train the cadets to be superior to that enemy, mentally and physically. Rigorous, tough, competitive sports offer an excellent medium to fulfill this mission. Records have proven that mental improvement of the cadets goes hand in hand with better physical condition" (v).
- "Basedow…regarded physical activities as a means to a complete education embracing both the body and mind" (4).
- "Pestalozzi…believed that methodical exercising trained the pupil intellectually, morally and aesthetically" (5).
- "Jahn, the father of German gymnastics… wanted to create "liberty loving, social and independent thinking … by strengthening the degenerated muscle groups of

Sports Program Stunts and Record Performance

For complete descriptions and diagrams, refer to pages: 322-334 of the book.

On Floor

1. Balance on toes – record: 49 sec.
2. Forearm balance – record: 1 min. 47 sec.
3. Hand balance – record: 1 min. 50 sec.
4. Hand walk (floor) – record: 186 ft.
5. Hand walk (low parallels) - record: 6 trips
6. Kneeling back-bend – record: 64
7. Leg lifts and sit-ups – record: 500/500
8. Left side support – record: 130
9. Right side support – record: 130
10. Extension press-up – record: 4 min. 15 sec., no. of times – 25
11. a. One-arm extension press-up – record: 2 mins.
12. Push-ups on hands – record: 325
13. Push-ups on fingers – record: 84
14. Push-ups slapping chest – record: 75
15. Push-up with 9 lb. medicine ball – record: 305
16. One-arm push-ups – record: 84
17. One-half lever – record: 80 sec.
18. Sit-ups (feet not anchored) – record: 2326
19. a. Sit-ups – back arched – record: 75
20. Skip forward and backward over leg – record: 21
21. Squat (right leg forward) – record: 47
22. Squat (left leg forward) – record: 41
23. a. Jump over stick – record: 30
24. Wrestler's bridge – record: 33
25. Eight-foot jump agility test – record: 2.5 sec.

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the body, thus liberating man from the shackles of an environment that made him feeble, that allowed his muscles, and consequently his mental vigor, to decay" (5).

- "It is of interest to note throughout history, the rise and fall of nations has seemed to coincide with the rise and fall of the physical stamina of their people" (7).
- "Athletic professionalism for the few and a lack of strenuous participation among the many brought about a decline in the national physical stamina and a consequent decline in the power of Greece" (7).

Inspired by the demands of a world at war, these historically conscious authors denounce the then-current (1944) level of gymnastics instruction in the U.S. and blame the declining use of gymnastics apparatus in American public schools and colleges on the trend toward "mild recreational activities for the majority while strenuous competition was encouraged for the small minority." Ironically this complaint came at a time when there were 100,000 American members in one gymnastics organization alone; today there may be fewer than 1,000 American male gymnasts over ten years old.

The Navy utilized gymnastics for the discipline's training effects, not to make competitive gymnasts. This, in the words of Captain F.T. Ward, the Director of Aviation Training in 1943, "is the reason that the books are unlike other sports publications." This distinction drives the program's practical approach and explains why the authors of G&T might have stated the value of gymnastics to physical development and general physical preparedness better than most modern authors.

In the introduction to G&T the authors explain that "Gymnastics and Tumbling is included in the Naval Aviation Physical Training Program because of the strength and skills that are developed through participation in this sport. These include improvement of upper body strength, and training in quick and correct decision and action. Since there is no other activity to develop full upper body strength, agility and balance this sport occupies a prominent place in the Naval Aviation Training Program."

The brief and powerful chapter titled "Values of Gymnastics and Tumbling" provides a list of further benefits derived from gymnastic training:

Sports Program Stunts and Record Performance *cont'd*

23. Elbow lever on deck – record: 3 min. 46 sec.
24. Forearm balance walk for distance – record: 43 ft. 9 in.
25. Hand walk fifty feet for time – record: 8.3 sec.
26. Hand walk with 9-lb. medicine ball – record: 132 ft.
27. Head balance to hand-balance – record: 8
28. Head balance, straight leg lifts – record: 45
29. Push-ups, crab position – record: 91
30. Squat balance touch knees – record: 45
31. Squat jumps – record: 156
32. Wrestler's turnover on medicine ball – record: 33
33. Wrist twist –record: 9 1/2
34. Diving roll –record: 14 ft. 4 in.
35. Number of sit-ups in 5 min.; feet unanchored – record: 132
36. Number of sit-ups in 5 min.; feet anchored – record: 157
37. "V" position – record: 20 min. 25 sec.
38. Forearm balance to hand balance – record: 2
39. V-Roll – record: 32
40. Burpees – record: 40 in 30 sec.

On High Bar

1. Back lever – record: 53 sec.
2. Front lever – record: 19.5 sec.
3. Belly grinds – record: 26
4. Chins:
   a. Ordinary grasp, no kip – record: 46
   b. Reverse grasp, no kip – record: 46

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1. Gymnastics contributes to the development of upper body strength. Over fifty percent of the cadets admitted to the pre-flight schools have been found to be deficient in the upper body strength, especially in the muscles of the shoulder girdle, the triceps, the abdomen, and the back. *4 of 9*

2. Gymnastics provides opportunity for the development of power. Rope climbing, throwing the medicine ball for distance, and gymnastic routines require maximum effort and hence develop power.

3. Gymnastics provides for the development of muscular coordination or neuromuscular control. The fundamental activities of running, climbing, and jumping are combined in a unique way in gymnastic routines. Twisting or turning, bending, circling, and swinging movements occur in rapid succession during the routines in the upright or standing position, in the hang, the support, and in various other positions. Perhaps no athletic activity other than gymnastics and tumbling provides the opportunity for the development of maximum muscular coordination and neuromuscular control and perhaps no war activity demands the acme of muscular coordination and neuromuscular control as much as aviation.

4. Gymnastics contributes to the development of suppleness, elasticity, litheness, and flexibility, permitting full range of body movement and control.

5. Gymnastics develops a sense of relocation. A series of fast forward rolls on the mats, or hip circles on the horizontal bar, or a workout on the aerowheel or trampoline, leaves the cadet extremely dizzy at first. Two weeks of practice, however, conditions him effectively so that he makes satisfactory adjustment in a short time. Both the poise and equilibrium are outcomes of the sense of re-location, which affords an awareness on the part of the aviator that he is inverted when he is flying upside down.

6. Gymnastics develops agility – quick, easy, dexterous movements. Vaulting in a variety of positions teaches the fundamental principles of body control. The naval aviator or paratrooper may be called upon to overcome unforeseen hazards and obstacles during landing operations; hence he must be adept in vaulting and in jumping. He must have overlearned the art of vaulting to the side, in a squat position, in a straddle, end-over-end, or in a dive, easily and with minimum effort. Gymnastics, then, dovetails with training on the obstacle course

Sports Program Stunts and Record Performance *cont'd*

c. Reverse grasp, weighted with 50 lbs. – record: 11

d. Reverse grasp, weighted with 9-lb. medicine ball – record: 21

e. Ordinary grasp, wide grasp and touch back of neck – record: 20

f. Forearm grasp – record: 21

g. Bicep grasp – record: 6

h. Ordinary grasp; raise legs to half lever – record: 21

i. One finger – record: 14

j. One arm – record: 2

k. Chin dips – record: 15

5. Pull-up both hands leading – record: 12

6. Fence vault – record: 6ft. 3 in.

7. Monkey hang – record: 20

8. Skin the cat – record: 25

9. Drop kips – record: 25

10. Free hip circles – record: 19

11. Forward hip circles – record: 42

12. Giant swings –record: 20

On Side Horse

1. Giant hip circles – record: 28
2. Scissors, ordinary – record: 58

On Low Bar

1. Short underswing dismount for distance – record: 10 ft. 3 in.

Parallels

1. Dips
   a. Ordinary – record: 34
   b. Reverse grasp – record: 20

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since the most effective runner is the one who can skillfully, safely, and quickly adapt his gymnastics vaulting experience to the difficulties of the course.

7. Tumbling teaches falling safely. Practically every phase of his life as a cadet, or aviator, (or as a civilian, for that matter) may be materially aided by a knowledge of tumbling. When he first takes "boot" training, when he takes conditioning hikes when he participates in football, basketball, or any other sports activity, the cadet who can tumble is that much better equipped to save himself from injury caused by falling than one who cannot tumble.

8. The cadet who is temporarily incapacitated by minor injuries may participate in specially selected gymnastics, thus keeping in condition despite his handicap.

9. Gymnastics and tumbling develop body balance which is useful to the individual throughout life. Together with climbing, vaulting and falling, these skills are directly useful in various emergency situations.

10. Gymnastics teaches the cadet how to ascend, descend, and rest on a rope, - skills which are of paramount importance from a practical standpoint.

11. Gymnastics develops a sense of daring and courage, yet discourages foolhardiness.

12. Gymnastics develops attitudes vital to the successful naval aviator: fearlessness, initiative, decisiveness, courage, perseverance, presence of mind, selfconfidence, as well as an analytical outlook and the ability to size up a situation quickly.

The intended audience for *Gymnastics and Tumbling*, aviator cadets, were more physically ordinary than might be presumed. Pre-Flight School standards included 20 push-ups, 6 pull-ups, and a 16-inch vertical leap. The endurance and agility tests were similarly lax. Most CrossFitters would easily qualify. The G&T curriculum is designed so that "even the inexperienced officer may do a commendable job in gymnastics if he studies and follows the manual and the lesson program thoroughly."

If the pretest qualifications are too tough, Chapter XII, "Supplementary Programs," offers "Sub-Squad" programs designed to bring the cadet up to snuff. A program is offered so that "an inferior cadet may be brought up to the standards of the base within a five-week period." The sub-squad activities listed

Sports Program Stunts and Record Performance *cont'd*

c. Ordinary, weighted with 50 lbs. – record: 15

d. Swinging dips backward – record: 30

e. Swinging dips forward – record: 43

f. Swinging dips forward and backward – record: 31

2. Grasshopper walk forward and dips – record: 29

2 a. Grasshopper walk backward and dips – record: 31

3. Grasshopper jump and dips – record: 29

4. Grasshopper walk forward and backward dips – record: 22

5. Lion's crawl and dips – record: 16

6. Pirouettes – record: 8

Low Parallels

1. Hand balance – record: 2 min. and 16 sec.

2. Hand balance on one bar – record: 60 sec.

3. Push-ups – record: 202

4. Parrot hand balance on parallel bars – record: 24 sec.

5. Shoulder balance to hand balance – record: 6

6. Push-up (back) – record: 89

7. Tune-table (legs in half lever) – record: 31

8. Elbow lever – record: 3 min. 30.5 sec.

8 a. One-hand elbow lever

9. Pirouettes – record: 9

10. Straight-leg, bent-arm press to hand balance

Ropes

1. Rope climb 19 feet – record: 4.9 sec.
2. Double rope climb – record: 7.3 sec.

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by apparatus on pages 271- 277 provide hundreds of spectacular drills on the horizontal bar, side horse, stall bars, rings, parallel bars, and medicine balls. Remember, these drills are used to ramp you up to 20 push-ups and 6 pull-ups. Most of the exercises here could be done by anyone. How long have we searched for interesting regimens preparatory to basic calisthenics?

In 450 pages, nearly one thousand exercises, and hundreds of photographs there isn't one exercise of advanced or even intermediate difficulty. The progressions are gentle, sweet, and easy. They were designed for full-grown men of moderate fitness and ability, largely inexperienced and quite possibly terrified, and, as likely as not, disinclined to falling or being upended or inverted. We say the progressions are "gentle" or "universal."

The aviation cadets' training attention was split among eleven "conditioning departments" of which gymnastics and tumbling was but one. Gymnastics was "one period" each day. Not every facility had adequate equipment, so a section titled "When Regulation Equipment Cannot Be Secured" describes homemade substitutions for mats, horizontal bars, parallel bars, vaulting box, springboard, and beat boards. The spirit of G&T is one of inclusiveness and "can-do" resourcefulness.

Mining gymnastics for even fractions of the adaptations of the gymnast and not for artistic expression; employing doable progressions; coupling and compromising gymnastic training with other fitness goals and efforts; and emphasizing the mental and character demands of training are all fundamental to the aims of Gymnastics and Tumbling and a near perfect match to the CrossFit charter.

Essential to the CrossFit concept is balanced competency in the ten general physical skills: cardiovascular/ respiratory endurance, stamina, strength, flexibility, power, speed, coordination, agility, balance, and accuracy. Gymnastics has no peer among training modalities for developing the four neurological components of the ten skills—coordination, agility, balance, and accuracy.

In our Santa Cruz, CA, facility, our better athletes play with and practice basic gymnastics movements regularly if not daily. We have parallel bars, rings, mats, and a pommel horse set up at all times. Unfortunately, this aspect of our local athletes' training hasn't carried over strongly to our Internet friends following the WOD (Workout of the Day). A lack of equipment and general unfamiliarity with the fundamental exercises of gymnastics within our larger community has resulted in the neurological skills development of the CrossFit community not keeping pace with the other components of fitness.

To remedy this, i.e., to increase our community's coordination, agility, accuracy, and balance, we commit to the following:

- Familiarizing the CrossFit community with the U.S. Navy's Gymnastics and Tumbling book (G&T).
- Encouraging those following the WOD to practice and train one of the basic movements from G&T before each workout as part of an extended warm-up.
- Encouraging CrossFitters everywhere to acquire access to parallel bars, rings, mats, etc.
- Posting pictures of athletes' efforts and successes with the basic movements.

Sports Program Stunts and Record Performance *cont'd*

3. Rope climb with 27.5-lb. pack – record: 8.2 sec.

4. Inverted rope climb – record: 7 sec.

Rings

1. Hand balance – record: 45 sec.

2. Pull-ups both hands leading – record: 9

2 a. Inverted hang – record: 36

2 b. Chins with legs in half-lever – record: 20

Stall Bars

1. Flags – record: 23 sec.
2. Leg lifts – record: 81 times
3. Half lever with 9-lb. medicine ball – record: 41 sec.

Medicine Ball

1. Throw for distance - 9-lb. ball – record: 50 ft.
2. Throw for distance - 6-lb. ball – record: 63 ft. 6 in.

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Sadly, our raving about G&T over the past few months has quickly removed enough copies from the market that the few that remain available have risen nearly 400% in price to over $40. We don't relish *Gymnastics and Tumbling* reaching $500, but there will always be more CrossFitters than copies—unless we are able to persuade the US Naval Institute to commission another printing. Until that time, we have resolved to share our copy with everyone.

We scanned our copy of Gymnastics and Tumbling, sacrificing one book for the cause, and we're making it available chapter by chapter for everyone to download free of charge.

Get to work! Post your frustrations, wounds, and successes to comments.



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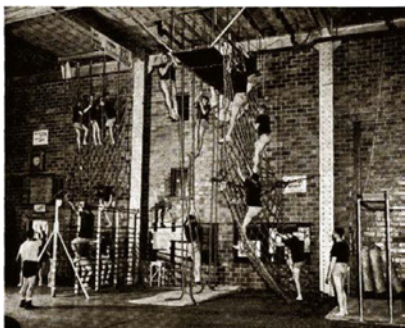
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Greg Glassman is the Founder of CrossFit, Inc. and Crossfit Santa Cruz and is the publisher of the CrossFit Journal. He is a former competitive gymnast and has been a fitness trainer and conditioning coach since the early 1980s.

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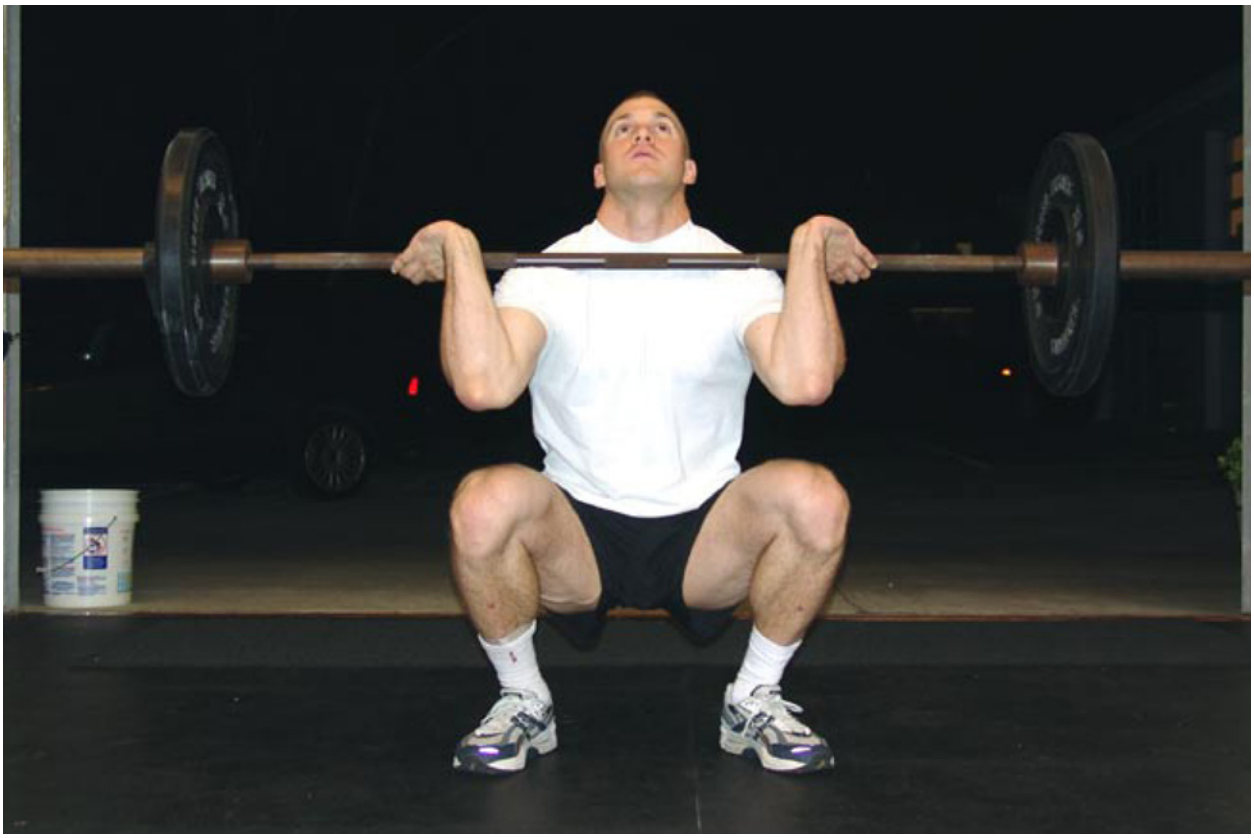
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Fooling Around with Fran

Greg Glassman



This month we examine "Fran," one of our benchmark workouts. The opportunity this affords for insights into human performance, programming, and ways of measuring and motivating progress is strong.

First and foremost, Fran is a couplet of barbell thrusters (front squat/push-press combo) and pull-ups. More specifically, her structure is 21 thrusters followed by 21 pull-ups, then 15 thrusters followed by 15 pull-ups, and, finally, 9 thrusters followed by 9 pull-ups. We score the workout by time to completion. Our notation for this, and other similar workouts is, "Three rounds, 21-15- and 9 reps, for time, of 95-pound barbell thrusters and pull-ups." (See video.)

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First exposure to this workout reveals Fran's penchant for throwing a beating. Repeated exposures, where the goal is improved time, demonstrate a ferocity that speaks to the painful cost of elite fitness. Considering the thruster's position as the most draining of all exercises and the pull-up's reputation for winnowing athlete pools, there may be little surprise in Fran's effects.

Coupled, the thruster and the pullup work all major muscle groups, are perfectly complementary in that each contains exactly what the other lacks, and constitute three superfunctional core movements–the squat, push press, and pull-up. But a closer analysis offers even greater appreciation and understanding of Fran's character.

For any particular athlete, Fran represents a fixed amount of "work" in both the colloquial sense of work and in the more technical sense of work as a physicist would use the term. For the physicist, work is "the transference of energy that is produced by the motion of the point of application of a force and is measured by multiplying the force and the displacement of its point of application in the line of action." In practical terms this means that we can measure work performed by multiplying an object's weight by how high we lift it.

In the case of Fran we are performing 45 thrusters and 45 pull-ups in the course of the workout. Each thruster moves the same amount of weight the same distance, as does each pullup. Measuring the work performed in lifting the bar alone is straightforward. We just multiply the bar's weight by the distance each thruster rep takes the bar. But the work required to raise the bar is accompanied by the work required to raise the body for the squat and the arms overhead, and that's just for the thruster. By adding the work required to lift the bar to the work required to squat and raise the arms overhead we can reasonably determine the work required of one thruster. Multiplying that total by 45 reps would yield the amount of work required to complete Fran's thrusters. By measuring the work required of the pull-up and again multiplying by 45 reps we can determine the work required to complete Fran's pull-ups. Adding the thruster total work to the pull-up total work gives us the total work required to complete Fran. For any athlete this value—the quantity of work—is fixed, regardless of capacity or performance.

But measuring the work required to squat and raise the hands overhead and to perform the pull-up is a bit nettlesome. We greatly simplified that task for the thruster movement by multiplying the travel of the center of mass, presumed to be between the athlete's pubic bone and navel and in the frontal plane, by the weight of the athlete. We similarly approximated the work required to perform one pull-up by multiplying the travel of the center of mass by the athlete's weight.

In the case of the squat to overhead thrust movement, much of the leg isn't elevated the distance that the center of mass travels, and therefore our estimation of the work required to squat is high. Some of that is compensated for by the travel of the arms from start to finish, which exceeds the distance traveled by the center of mass.

It is the same in the case of the pullup. Most of the arm isn't elevated as much as the center of mass is, so our estimation of the work required to perform each pull-up will also be somewhat high. Because the arms are considerably lighter than the legs, we expect our overestimation of the pull-up's work to be less than our overestimation of the work required to squat.

These measures derived from the travel of an athlete's center of mass are less than ideal, but may still offer insight. While admitting that our methods are zero-order (we've not considered dynamics, for instance), we leave it to others more interested to refine our methods to make the same or other conclusions and leave them with noted physiologist Richard Burton's offering that "the mechanics of human movement would seem to offer considerable scope for quantitative treatment involving muscle tensions and the arithmetic of levers. However, a simple limb movement may call on a number of muscles working together, and the relevant measurements may be hard to elicit, even from many shelves of anatomy books."

If we take our measures from CrossFit athlete Greg Amundson, who is about 6 feet tall and weighs 200 pounds, we find that in the pull-up his center of mass travels 24 inches and in the thruster it travels 26 inches while the bar travels 47 inches.

From this data we calculate that each pull-up requires 400 foot-pounds of work and each thruster requires 805 foot-pounds of work—about 433 foot-pounds to move the body and 372 foot-pounds to move the load. Multiplying the sum of the work required doing one pull-up and one thruster by forty-five reps gives us the total work required to complete Fran—a whopping 54,225

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foot-pounds of work. This figure is constant for Greg regardless of the time it takes him to complete Fran.

Already a couple of interesting things present themselves. First, the (unweighted) squat to overhead thrust and the pull-up are nearly equivalent in the amount of work required to complete a single rep. This was counterintuitive for the CrossFit staff. Second, with a 200-pound athlete, bodyweight accounts for about two thirds of Fran's demands. The first observation may offer programming ideas derived from the understanding that the squat and pull-up are metabolic equals. The second observation makes us curious about the performance potential of lighter vs. heavier athletes with Fran. After playing with the numbers we now believe that Fran selects for athletes lighter than 200 pounds.

While the amount of work required to complete Fran is constant for any given athlete, the average power, and therefore intensity, of the workout varies inversely with the time to completion. The faster the time, the greater the average power expressed throughout the workout--and power (intensity) is fundamental to the CrossFit creed. This encourages us to make some more calculations.

If we divide each of Greg's last three efforts at Fran (his constant 54,225 foot-pounds of work) by the time to completion in seconds we find the average power for each effort in footpounds per second–a unit of power. These three efforts average to 315 foot-pounds per second.

For comparison we had Greg perform a modified Fran with 115 pounds instead of the regular 95 pounds. This twentypound increase in the barbell load brings the work required to complete Fran from 54,225 foot-pounds of work to 57,735 foot-pounds.

What did it do to Greg's average power to complete this "Fat Fran"? It brought the average power down from 315 foot-pounds per second to 253 foot-pounds per second.

Table I Greg Amundson's Work and Power for "Fran" at 95 lbs

Force	X	Distance	=	Work
200 lbs (Greg's weight)	X	24 in (Pull-up distance)	=	400 ft-lbs per Pull-up
200 lbs (Greg's weight)	X	26 in (Thruster distance)	=	433 ft-lbs per Thurster (Greg only)
95 lbs (barbell's weight)	X	47 in (barbell's distance)	=	372 ft-lbs per Thruster (barbell only)

Work / (Greg's) Time = Average Power

54,225/2:48 (168 sec) = 323 ft-lbs/sec
54,225/2:57 (177 sec) = 306 ft-lbs/sec
54,225/2:51 (171 sec) = 317 ft-lbs/sec

Average = 315 ft-lbs/sec

Totals 400 ft-lbs per Pull-up
805 ft-lbs per Thruster
45(805 + 400) = 54,225 ft-lbs
to complete Fran at 95 lbs

Table II Greg Amundson's Work and Power for "Fran" at 115 lbs

Force	X	Distance	=	Work
200 lbs (Greg's weight)	X	24 in (Pull-up distance)	=	400 ft-lbs per Pull-up
200 lbs (Greg's weight)	X	26 in (Thruster distance)	=	433 ft-lbs per Thurster (Greg only)
115 lbs (barbell's weight)	X	47 in (barbell's distance)	=	450 ft-lbs per Thruster (barbell only)

Work / (Greg's) Time = Average Power

57,735/3:40 (220 sec) = 262 ft-lbs/sec
57,735/3:57 (237 sec) = 244 ft-lbs/sec
57,735/3:48 (228 sec) = 253 ft-lbs/sec

Average = 253 ft-lbs/sec

Totals 400 ft-lbs per Pull-up
883 ft-lbs per Thruster
45(883 + 400) = 57,735 ft-lbs
to complete Fran at 115 lbs

Table III Greg Amundson's Work and Power for "Fran" at 75 lbs

Force	X	Distance	=	Work
200 lbs (Greg's weight)	X	24 in (Pull-up distance)	=	400 ft-lbs per Pull-up
200 lbs (Greg's weight)	X	26 in (Thruster distance)	=	433 ft-lbs per Thurster (Greg only)
75 lbs (barbell's weight)	X	47 in (barbell's distance)	=	294 ft-lbs per Thruster (barbell only)

Work / (Greg's) Time = Average Power

50,715/2:30 (150 sec) = 338 ft-lbs/sec

Average = 338 ft-lbs/sec

Totals 400 ft-lbs per Pull-up
727 ft-lbs per Thruster
45(727 + 400) = 50,715 ft-lbs
to complete Fran at 75 lbs

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This is a reduction in average power through the workout of nearly 20%.

For comparison we had Greg also work one effort at a modified Fran with 75 pounds instead of the regular 95 pounds. This twenty-pound decrease in the barbell load brings the work required to complete Fran from 54,225 foot-pounds to 50,715 foot-pounds.

What did it do to Greg's average power to complete this "Anorexic Fran"? It brought the average power up from 315 foot-pounds per second to 338 foot-pounds per second. This is an increase in average power from the standard Fran of about 7%.

With a 75-pound load Greg completed the workout in 2:30. We know that Fran maximally compresses to about 2:20-2:25. That is the time required to complete Fran empty handed, i.e., with no load on the thrusters and moving the arms simulating a pull-up. A further reduction in load would only decrease the power. Greg's maximum power lies somewhere between 75 and 95 pounds.

More on Greg later. Let's look at another family of variations on Fran where the load and reps are held constant. These variants are, borrowing a term from chemistry, "isomers" of Fran—variants where the parts are the same but the structure is different.

At rounds of 21, 15, and 9 repetitions of thrusters and pull-ups Fran includes 45 thrusters and 45 pull-ups. What would happen to the time and consequently to the average power if Fran's instructions were 45 thrusters at 95 pounds followed by 45 pull-ups?

One round of 45 thrusters and 45 pull-ups (1x45), three rounds of 15 thrusters followed by 15 pull-ups (3x15), 5 rounds of 9 thrusters and 9 pull-ups (5x9), and 9 rounds of 5 thrusters and 5 pull-ups (9x5) are exactly equivalent in mechanical work, yet very, very different in feel and effect. They will also return different times for any given athlete.

Looking at Fran's isomers, the 45/45 split might seem to yield the fastest theoretical time because of the lack of transitions. The facts of muscle strength and stamina will, however, exert a dominating influence in all but the strongest athletes.

In the 9x5 split the transitions are numerous but they provide relief—8 breaks of effort type rather than one. This would allow someone with muscular weakness in the thruster and pull-up to shift efforts before bogging down or stalling. For athletes having trouble with fewer splits, the 9x5 split may keep them moving but might also bring the cardiorespiratory demands through the roof because any work is harder than resting.

Our expectation is that, generally, times for the different splits would rank, quickest to slowest, 9x5, 5x9, 3x15, and 1x45. The 21/15/9 split of Fran will, for most people, likely come between 3x15 and 1x45.

If this has suggested a continuum, applicable to most athletes, from strength to metabolic wallop based on degree of fracture in the couplet, you're seeing what we are seeing. The less fractured isomer, 1x45, is more demanding of strength and stamina than the more fractured isomer of 9x5.

As athletes develop, CrossFitting, we would expect their best times to move from the 9x5 side of the continuum to the 1x45 side as their strength, stamina, and metabolic conditioning advance. The advantage of the more fractured split should disappear with continued athletic development. An athlete rests to recover from weakness— whether metabolic or muscular.

Back to Greg. How might Greg Amundson best his Fran time of 2:48? Here's what we see. When he goes a little lighter (20 pounds), his power goes up 7% and won't be further increased by going lighter. When he goes a little heavier (20 pounds), his power drops 20%. We would predict that spending more time with Fran's heavier sisters would be the most efficacious route to Greg's improved performance. Improving Greg's Fran is not our goal, however, and neither is analysis. But analysis opens our minds and more importantly opens our eyes. We cannot, yet, derive fundamental principles more valuable than measure, think, and experiment. The better part of measurement may lie in knowing what we are doing, so that we can do something different.



Greg Glassman is the founder of CrossFit, Inc. and CrossFit Santa Cruz and is the publisher of the CrossFit Journal. He is a former competitive gymnast and has been a fitness trainer and conditioning coach since the early 1980s.

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The Kipping Pull-up

Greg Glassman



Every manner of pull-up has its diehard fans. Wide and narrow grip, single and double suspension points, wide handle, rotating bar, slow, and behind the head all have their staunch supporters.

The default CrossFit pull-up, however - a violent, kipping, "anyhow" pull-up - has few supporters even among pull-up connoisseurs. Ours has always been the "cheating" pull-up.

Kipping comes in a myriad of styles, and each athlete has a signature kip, but in its most elegant form the kip is a transference of movement first generated in the horizontal plane, where it comes cheap and easy, to the vertical plane, where momentum and a perfectly timed pull from the back launch the athlete forcefully upward.

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This "cheat" derives from a powerful and athletic reversal of hip direction – like that of the clean and the snatch – and expands the primary movers from just the back and arms down through the torso and hip to include the power zone. Far from being a cheat, kipping is a gateway skill with functional utility on the rings, parallel bars, high bar, and floor (the quickest way to get to your feet). Where most athletic communities avoid the kip, we go to great lengths to teach and learn it.

The dynamism and athleticism of CrossFit training is often confusing and frequently alarming to would-be athletes whose experience has been limited to pop fitness and its near complete reliance on bodybuilding exercises. An Australian trainer for an America's Cup sailing team reported back to his team after visiting CrossFit HQ last year that "CrossFit athletes and trainers use poor form. They even use their legs on their military press," apparently ignorant of the push-press.

Kipping is whole-body, athletic, and demands coordination and agility. It is plyometric, requires flexibility of the shoulders, allows for rapid cycle time, and in totality represents an essential, unique, and powerful core to extremity motor recruitment pattern. None of which could be said of the strict pull-up.

For any given athlete, every manner of pull-up requires the same amount of mechanical work to perform. The kipping pull-up is faster than the strict pull-up and therefore elicits more power from the athlete. The kipping pull-up makes a contribution to workouts of super-high average power that the other pull-ups cannot.

In a pull-up-intensive CrossFit workout such as "Fran" or "Helen," strict pull-ups would substantially increase the time to completion. We'd be doing the same amount of work in more time. The same amount of work in more time is a reduction in average power. Power is intensity. We'd have reduced the intensity of the workout.



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We would not expect to reduce the intensity of a workout without blunting the majority of adaptations possibly and desirably derived through the effort. Strict pull-ups would likely reduce the fitness of CrossFitters if they were to supplant our kipping pull-ups.

What is so far known about neuroendocrine response suggests to us that the kipping pull-up contributes substantially to a change in hormonal milieu that potently promotes athletic development. It would be hard to make the same claim for the slower, less powerful, strict pull-up.

To argue the value of strict pull-ups as a focused exercise that dramatically increases upper-body pulling strength is sound, but much of that need can be addressed with "L" pull-ups (the cleanest pull-up of all), rope climbs, the Bachar ladder, cargo nets, and our rotating thick handled pull-up bar. Wonderful pulling exercises each, and none amenable to kipping.

We have not found that communities of non-kippers are capable of performing more strict pull-ups than CrossFitters, and we have found that our athletes' rankings for pull-ups do not change appreciably testing with different pull-up types. Fourth place kipping seems to be fourth place strict, slow, or wide.

Revealingly, seeing non-kippers competie against our athletes has been the easiest way to demonstrate the strengths of the kip. Advocates of the strict pull-up have found the superiority of their method impossible to defend in person. The debate is largely an Internet phenomenon.

We teach the kip from the hang by having the athlete push his hips and shoulders forward and then relax, push forward and then relax, until a swing develops. The athlete moves from "arched to hollow" forming a "C" alternating between belly forward, shoulder open (arched), and belly retreating, shoulder closing (hollow).

Once the swing is developed, the athlete will find the kip by giving a sharp tug upward at the back of the swing while leaning back slightly, which heaves the athlete toward the bar in a beautiful arc.

Starting from the top of the pullup and hurtling yourself downward as Christopher Sommer teaches http://www.crossfit.com/discus/messages/20/4098.html is appropriate for teaching the kipping movement to 60-pound children on a super flexible horizontal bar, not a 200-pound SEAL on two feet of galvanized pipe.

Kipping pull-ups have the same advantages over strict pull-ups that the jerk has over the shoulder press. Each is a fundamentally more potent stimulus than its less dynamic, less powerful counterpart. Our program's extensive reliance on the more dynamic, powerful movements holds the seeds of our athletes' successes.

Links

CrossFit Forum – kipping is essential:

http://www.crossfit.com/discus/messages/22/4926.html

http://www.crossfit.com/discus/messages/20/4319.html

Dragon Door – swinging weights is OK, but not the body:

http://forum.dragondoor.com/training/message/326530/

http://forum.dragondoor.com/training/message/318350/

Greg Glassman is the Founder of CrossFit, Inc. and Crossfit Santa Cruz and is the publisher of the CrossFit Journal. He is a former competitive gymnast and has been a fitness trainer and conditioning coach since the early 1980s.

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Working Wounded

Greg Glassman



Injury, like illness, is an ineluctable fact of life. In sport, elite performers are more marked by the attitude and manner with which they deal with injury than by their elected course of treatment or by the severity or frequency of their injuries.

Whereas treatment and rehabilitation receive considerable attention and focus in discussing injury, compensatory strategies for maintaining or improving fitness while recovering from injury are generally given short shrift.

This month we reveal the CrossFit approach to training with injury through the hypothetical case of an athlete medically restricted from all weight bearing movements for eight weeks following surgical repair of the meniscus in his right knee.

Remember, our concern here is not how to "rehab" the knee specifically but how to keep the athlete training to ensure that he continues to develop while he is injured and unable to use the affected limb.

Being dealt a bad hand (or leg)
is only as bad as you play it.

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Here's an Example of 3 Days Programming:

Day 1:

For time:

21-18-15-12-9-6- and 3 rep rounds of straight-arm, straight-leg pull to inverted hang on rings and low ring push-ups.

Practice L-sits for twenty minutes.

Day 2:

Complete as many rounds as you can in twenty minutes of: 35 pound seated dumbbell shoulder press, 15 reps and 1 ascent of 15 foot rope in "L-sit" position up and back.

Log twenty cumulative minutes in a handstand.

Day 3:

For time:

21-18-15-12-9-6 and 3 rep rounds of pull-ups and ring dips.

Tabata hug a twinkies.

Our hypothetical case of a disabled right leg is somewhat arbitrary but represents considerable complication for any CrossFitter in that the legs are used in virtually every CrossFit workout. However, similar strategies and mindset can be applied successfully to nearly any orthopedic injury. And while our case is hypothetical, we are intimate personally and professionally with extremity injury and with successful application of the approach we describe.

In traditional rehabilitation the goal is to bring the afflicted body part, and eventually the athlete, back to preinjury capacity. This, though frequently a formidable challenge, is not by itself adequate to the aims of CrossFit rehab. For CrossFitters, rehabilitation is complete and successful when the athlete has acquired total physical capacity not just equal to but beyond the pre-injury state.

The overwhelming majority of recovery from injury is performed by nature. Surgery, hydrotherapy, ultrasound, exercise, and other treatment modalities, while being useful or even essential, are not going to take the athlete's fitness beyond his pre-injury state—our stated rehab goal.

The essence of our approach to working wounded is to divert the focus and purpose of the athlete's workout away from the injured limb. We want the athlete to work with intensity, variance, and functionality but just, in our hypothetical case, not with the right leg.

Restricted from load bearing for eight weeks, our hypothetical athlete (let's call him "Mac") will be unable to perform the WOD unmodified for nearly three months and without full gusto for as long as six months.

Mac's rehabilitation begins with the simple proclamation not that he is injured but that he is "about to begin a six-month-long intensive gymnastic program." For the next six months Mac is going to be building workouts from the upper body and left leg. His workout life will be built



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around rings, parallettes, dumbbells, a climbing rope, a glute-ham developer, a handbike, and the floor.

We will start with a checklist of some goals for upper body performance. Mac currently has 20 pull-ups; he's going to have 40 in six months. Similarly, his handstand push-ups will increase from 10 to 25, and consecutive muscle-ups from 3 to 15. We might set ten or so goals for Mac in this way. These goals should be past what Mac has thought he would ever be capable of. He will achieve these goals because fate has dealt him the specialist's hand and he will reap the specialist's rewards.

Additionally, we will make a list of some movements that have always been out of Mac's reach and start training for them. He has no front lever now; he will in six months. Mac has always wanted a planche; we will put it on the list and plan for specific drills to develop the planche.

Mac is going to be spending a lot of time upside down over the next six months. He will drill handstands and presses to handstands from the parallettes and floor constantly. Knees to elbows, crunches, situps, hollow rocks, hollow arches, hug-a-twinkies, pass-throughs, skin the cats, and every trunk and core exercise known to god, man, and CrossFit not involving the right leg will get the attention that only the bad luck of a leg injury could provide.

Mac's routines are pure CrossFit with a "skills and drills" component before and/or after the workout.

There's really nothing different in the programming. Mac is doing what we wanted him to do before he got hurt.. He's still doing varied, intense workouts that comprise full-body functional movements; the list of exercises he draws from is just more circumscribed.

There's focus or specialization where it may not have made sense before. Mac's injury is a mixed blessing.

Whatever potential development Mac missed by having to forego the full range of workouts following his injury is going to be replaced with skills that he was not likely to have developed otherwise. The exact nature of the tradeoff is necessarily blurred, as an unknown loss in potential is exchanged for a measurable, valuable, and potent adaptation attributable directly to the injury's effect on his training. Now that is rehab.

Before Mac's leg is 100% again he will have made gains in upper-body and trunk strength, flexibility (he's going to stretch regularly for perhaps the first time in his life), balance, agility, and coordination that will remain with him for the rest of his life.

The advantages to recovering CrossFit-style over watching TV and waiting for the leg to heal are threefold. First the injured leg will heal more quickly and atrophy less. Second, Mac will acquire skills and strengths that he wouldn't have developed otherwise. Third, the mental anguish that nearly always accompanies an athlete's down time is greatly reduced.



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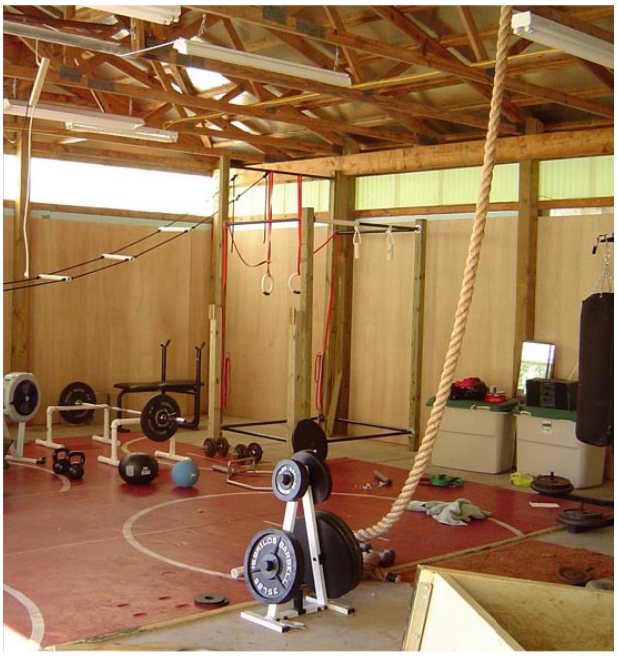
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Garage Gym II - The Revolution

Greg Glassman





Subject: Unofficial CrossFit Classes
To: info@crossfit.com
From: Eric Lester
Date: July 1st 2005

About 7 weeks ago I started doing the WOD with a friend at my college gym. We've since then gotten other people involved and have about 5 regulars doing the WOD including ourselves. I'm expecting that number to grow in the fall when more students arrive.

I'd like to create a website for our little group keeping track of best times for each individual, pictures, etc. I think it would be some fun extra motivation for them all. It's not like we have a coach or anything, but I tend to take the lead, instruct when necessary, and concentrate on encouraging.

I'm wondering what it would be proper to name our group and page. The guy that started with me suggested "CrossFit ISU" (Indiana State University being our college) and I like that because it raises CF awareness :). But I thought that sort of name was probably reserved for actual CF gyms with a certified instructor...

The *CrossFit Journal* was launched in 2002 with an issue titled "The Garage Gym." In that premier issue we decried the lack of efficacious programming in commercial gyms and proffered a solution with the promise that "you can build, rather inexpensively, a world-class strength and conditioning facility in your garage!"

Now we revisit the CrossFit garage-gym concept to report on the successes of what may be hundreds of CrossFit start-up gyms and the aspirations and motivations of the people behind them.

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CrossFitters are holding court in London, New York, New Brunswick, Puerto Rico, Baghdad, Afghanistan, and Qatar. CrossFit crews are convening in public parks, garages and carports, basements, barns, deposed tyrants' homes, commercial gyms, storage lockers, martial arts academies, and universities, under bleachers, and on military bases.

Three years ago we saw the CrossFit movement as an alternative to the prevailing commercial gym establishment and its signature "big-box," machine-based, bodybuilding approach to fitness. We promoted the garage-gym notion in large part to provide refuge for our more athletic programming, which couldn't find quarter in the commercial gyms.

Today we see ourselves as part of a wider war between the big-box franchises such as Gold's, Bally's, and 24-Hour Fitness and the small-box facilities of which the Curves chain is the best-known example.

Over the past decade small facilities of a couple thousand square feet and smaller have made great strides in fighting for market share in the gym industry. Small boxes featuring Pilates, yoga, short workouts, and women's and kid's fitness have sprung up in strip malls and shopping centers nationwide.

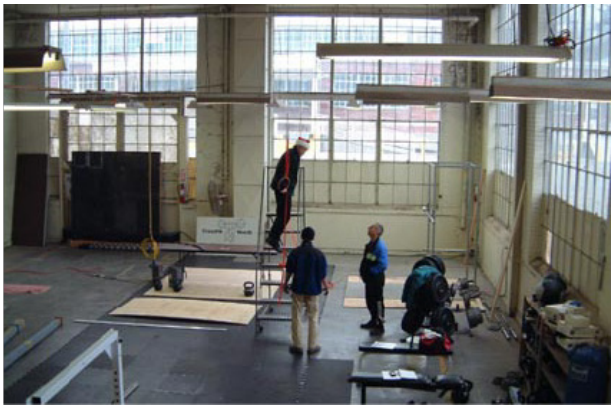
The market dominance of the big-box model is an interesting phenomenon in that its very size may be the product, ultimately, of a flawed physiological model. If we accept the need for distinct exercises and dedicated machinery for each body part, we create a need for acres of floor space and scores of machines.

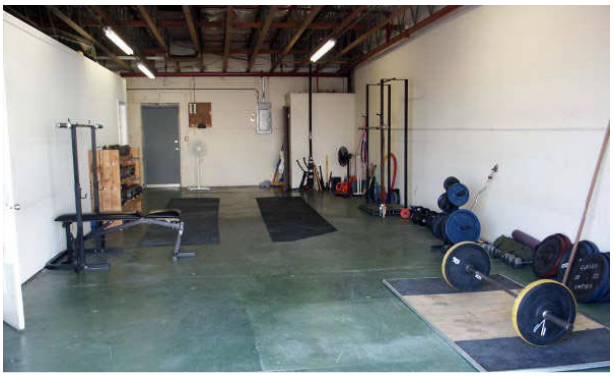
The large footprint required for machine-based bodybuilding programming and the extraordinary attendant costs in rent, equipment, and permitting (parking is often a legal issue) squares well with minimum-wage, low-skill, high-turnover employees. At Bally's you're renting the floor space, and the kids in polo shirts are decoration. The technology determines the business model.

Square footage, number of floors, and pieces of equipment are to the big-box model what "location, location, location" is to residential real estate. This mindset continues to this day. The large commercial gyms feature Pilates, yoga, or Jazzercise classes only to counter the threat of the smaller, specialized facilities and to remain trendy.

Where do the small-box competitors come from? Often, from the big boxes themselves. In every bodybuilding

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gym, amidst the machines, there are one or two folks who have discovered the free weights, have an eye for movement, care about the clientele, would like to earn a professional income, and know that they are what keeps people coming back. The members tell them as much.

Big-box bodybuilding gyms spawn their best trainers to start and run small boxes. These trainers figure out that bad programming doesn't need tons of space or equipment—it can be done in a closet.

Out on their own, in their small boxes, they accumulate jump ropes, Swiss balls, an Olympic bar or two, an exercise bike or Stairmaster, a handful of folding mats, and dumbbells in several denominations. The biggest expenses tend to be the cable crossover/lat pull-down apparatus and the mirrors. You've seen this facility in dozens of strip malls everywhere—they're all the same.

What the big-box trainer become micro-gym owner discovers immediately is that everything is better out on his own. The fear of clients not following was groundless (often they initiate or even finance the move), income shoots up even with rent, and life is generally wonderful. A busy trainer in a small box is a happy camper.

The micro gym is vastly more than just a scaled down big-box gym. The big box feeds off membership and is most profitable when thousands sign up and only a few hundred actually come around. The small-box operator is in the training business, and full-participation, high-retention clients are gold. The difference in business models pervades the atmosphere and culture of both models. The client is better cared for in the micro gym and knows it.

Not only does the trainer make more money in his own small facility but, ironically, the programming generally improves precisely because of the lack of resources— i.e., machinery. This is often startling, even exciting, to both the trainer and the client.

A big-box gym in a major metropolitan area in the U.S. sloughs off a top trainer or two every year to have them start their own small private training businesses. Not all go to strip malls or research parks—some start in private residences or garages—but most thrive regardless.

The popularity, successes, and low start-up and operating costs of the small-box gym have inspired a legion of companies offering small gym franchising opportunities. A quick search turns up "Slim and Tone," "Personal Training Institute," "Contours Express," "Elements Diet and Fitness," "J.W. Tumbles," "Slender Lady,"

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"ShapeXpress," "LA Boxing", "Anytime Fitness," "Intrivah Fitness," "FUNchise," "Strides Women's Fitness," "The Blitz," "Vert Peak Fitness Centers," "Fitwize4Kids," "It Figures," "Ladies Workout Express," "Scrimage," "21 Minute Convenience Fitness," "Nitro Fitness," "Club 50 Fitness," "Designing Women's Weight Loss," "IMX Pilates," "The Little Gym," "123 Fit," "Ultimate Woman Fitness," and "HIT Sports Training Centers"—all from one source alone.

The 800-pound gorilla on the couch, however, is the Curves franchise, with over 9,000 locations worldwide. Entrepreneur Magazine ranked Curves the #2 Overall Best Franchise, #1 Fastest Growing Franchise, #1 Low Investment Franchise, and #1 Fitness Franchise.

Curves runs variable-intensity circuit classes in small gyms with minimal staffing. The Curves workout elicits a cardiorespiratory response from mixed gross-motor recruitment patterns. Participants report that "it's fun, and it works."

That is exactly what we do at CrossFit. The similarities are striking. So are the differences. At CrossFit we teach people how to move their bodies, not machines. That's for starters.

Curves is a franchise. CrossFit is not and will never be. Curves franchisees are intent on making money. Flying the CrossFit flag suggests nothing about monetary intent. CrossFitters are united around constantly varied, functional movement executed at high intensity. CrossFitters affiliate as a confederation of legitimate fitness practitioners pooling reliable resources.

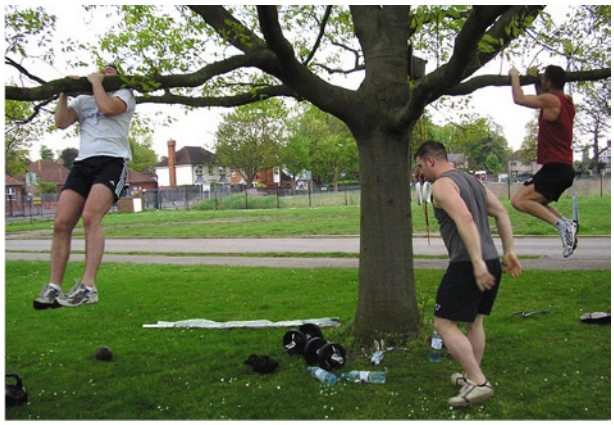
The best of what CrossFit offers, effective programming and constructive community, it does so for free. The family of trainers and trainees working under the CrossFit banner are motivated, to varying degrees, by duty to country, camaraderie, job description, athletic dream, self-improvement, and profit. The communities that CrossFit serves and supports are the best testimonial a fitness program could offer. The individuals who form our community are tribute enough for any enterprise.

CrossFit is an Internet-based grassroots movement giving call to all who really care about fitness to get the car out of the garage, pick up some dumbbells, a barbell, a few plates, a pull-up bar, and some rings, and try the Workout of the Day. Inviting a friend to participate will compound the experience. Keep it up and you'll need a bigger space.

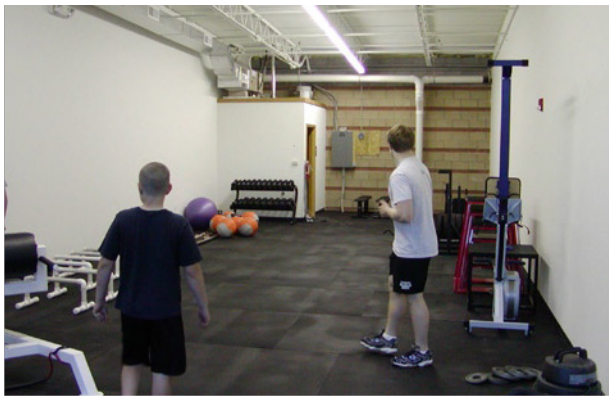
No space? Lack of a facility is irrelevant to the potential. CrossFit NYC started in Central Park. Check out CrossFit Baghdad.

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For those contemplating affiliation: making a six-figure income working only mornings is—while not easy—certainly possible and extremely gratifying. Though we offer no formal business model or plan for affiliates, we've found that a mixture of group classes and individual training can generate a professional income. Nature and markets will reveal more and less effective business models for affiliates over time.

The commercial success of Curves should give heart to anyone considering a training business powered by CrossFit. Better programming, some windows, and admission of men will not invalidate the potential of the small-box gym.

We want to fuel a revolution in fitness that advocates the pursuit of function, not form—that measures performance, not anatomy. We want rings and bumper plates in our gyms, not machines. We believe that where you train is less important than how you train and that who you train with matters more than what gear you have. We know this can be done in little boxes and we've proven that the garage is as good an environment as any for forging elite fitness.

Top Ten Tips for Successful CrossFit Affiliation

1. Have fun

If you don't enjoy working out and training, no one will want to work out or train with you.The strongest groups work and play together. Find extracurricular activities for your crew.

2. Start small and get kicked out

Start in the smallest cheapest space available and move when you outgrow the space. Start in your garage and work out there until the neighbors either all join you or band together to complain about the ruckus. Running out of room means you can afford more space.

3.Industrial space is better than retail space

Industrial space is cheaper, has higher ceilings, comes with roll-up doors and is generally superior to commercial retail space. Be a destination location.

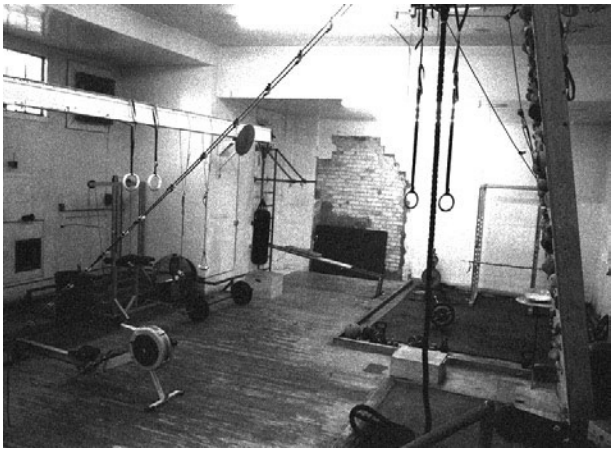
More information about CrossFit affiliates and the process and requirements for affiliation are available on the CrossFit affiliate page.

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4. Don't kill anyone

Rhabdomyolysis is a potentially lethal threat to newcomers; be very careful. This is a very real and present danger. Avoiding "rhabdo" should be the primary concern of first- and second-time workouts.Throwing a unknown newbie into an established group class is an invitation to rhabdo.

5. Master the basics

Only by insisting on good fundamentals will a group find success with CrossFit programming.The biggest training mistake we see is teaching advanced movements to folks who haven't mastered the prerequisites.

6. Harness the talents of your local crew

The plumbers, electricians, general contractors, fabricators, doctors, lawyers, and accountants among you will be proud to lend a hand.Thriving gyms depend on the resources of all their members.

7. Lean on www.crossfit.com

The collective talents of the CrossFit family cannot be matched elsewhere.This project is ultimately Internet driven and supported.

8. Take photos

Document your group's efforts and milestones with photos and plaster the walls and the web with these photos. Make stars of your best and hardest workers. Build your program's legacy from day one.

9. Start with ones and then advance to group classes

The best group instructors have honed their skills through individual instruction. Only very rarely will an instructor without one-on-one experience deliver a professional product to a group. (Your attrition rate will also correlate with the number of your crew who begin with one-on-one instruction.)

10. Instruct, present, demonstrate

CrossFit is a fitness think tank;lead by thinking.Build your program to be a powerful resource for your community. Handouts, guest lecturers and presenters, discussion, and video will accelerate the understanding and progress of your crew.

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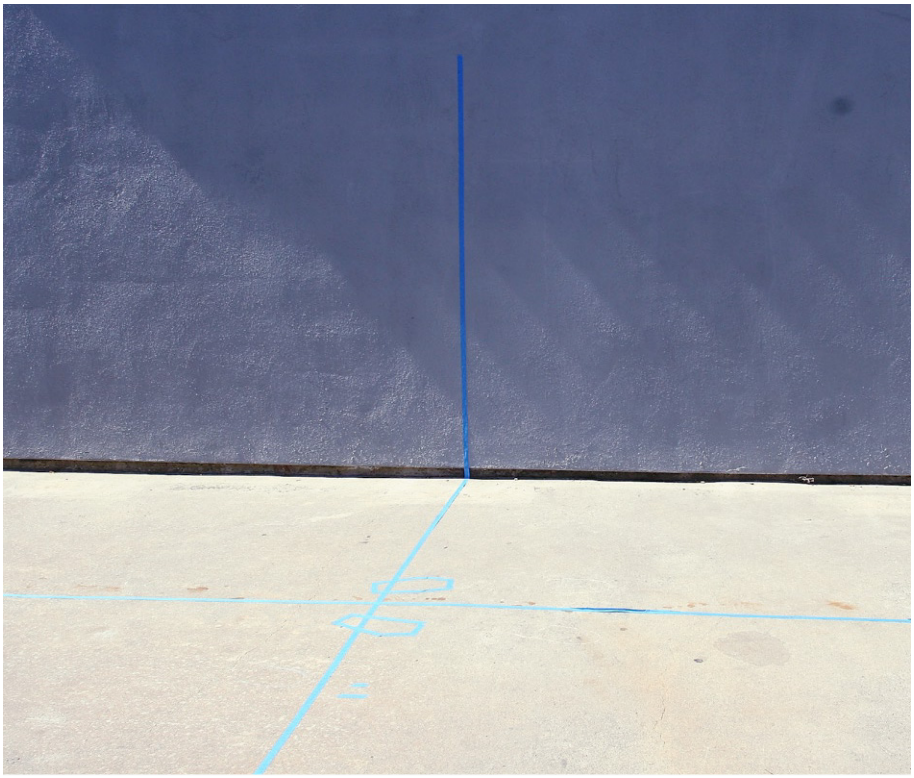
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Digital Coaching

Greg Glassman & Mike Burgener



The CrossFit community is thousands strong spread across a score of countries and populated with some of the most knowledgeable coaches and athletes in sport and strength and conditioning. Though strong, committed, and talented, the fact remains that our community is in large part connected by the Internet and diluted by geography. This, for many, means that opportunities for receiving inputs from our coaches are limited to text and getting to training events. Both have obvious limitations.

It struck us recently that though we deal in tens of billions of bits of data monthly at CrossFit.com, only very rarely does someone offer up photos or videotape of their training efforts for evaluation. This month we test and demonstrate coaching via digital inputs and offer an enticement to our friends to photograph or tape their efforts, post them to the CrossFit message board, and let the experts render feedback.

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Digital Coaching (continued...)

To test and demonstrate our digital coaching concept Tony Budding and Nicole Carroll each digitally photographed their Clean and Jerk and sent the photos to Coach Mike Burgener for evaluation. We're sharing the results of Mike's inputs here, and later this week we'll post these pictures to our message board in a section reserved for digital coaching. It'll be easy: get pictures of your effort, post them to the net, and stand by ready to receive the good, the bad, and the ugly.

Though not strictly necessary, we put a line of tape down a wall that ran to ground and out perpendicularly from the wall to define the frontal plane which divides the athlete front half from back half. Perpendicular to that tape line we ran another piece of tape to define the sagittal plane which divides the athlete right half from left half. Placing the athlete directly over the crosshairs formed by the intersection of these lines, we then outlined the starting foot position. These lines help give perspective to the photograph. The shots were taken from a position three paces forward of the frontal plane per Coach Burgener's request.

It looks like it worked, but only time will tell. You be the judge. Post your pictures and let us know if the inputs make a difference to your performance. Isn't that generally our standard for assessment at CrossFit?







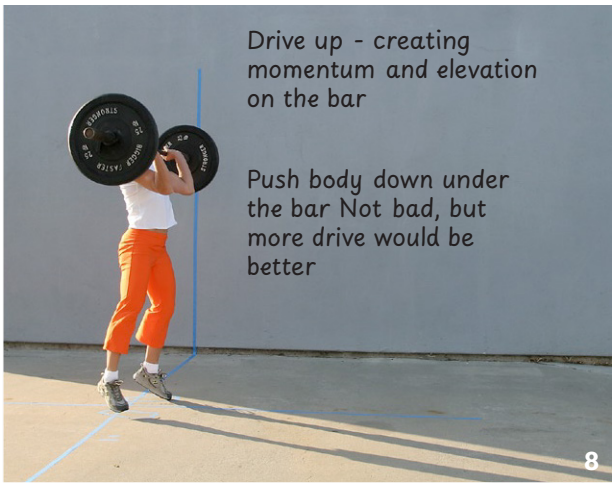


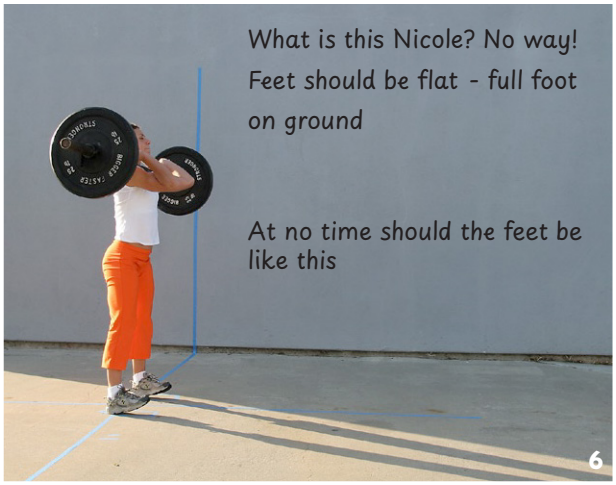
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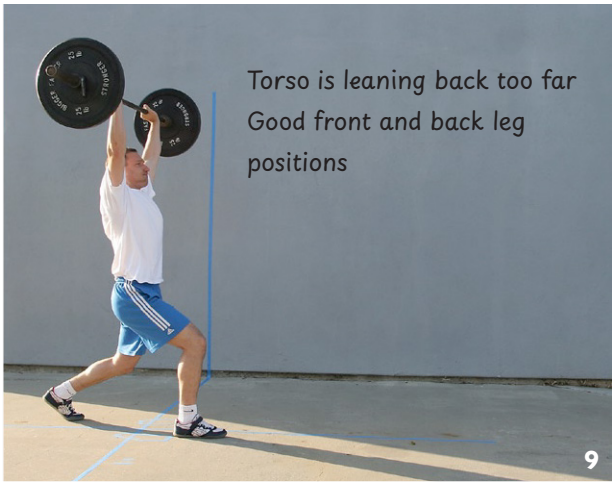
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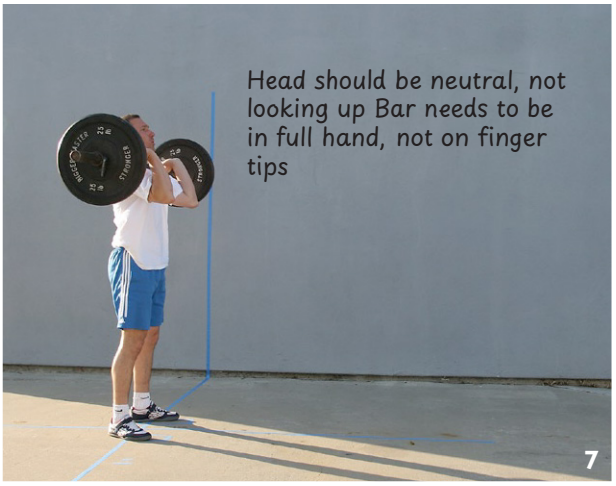
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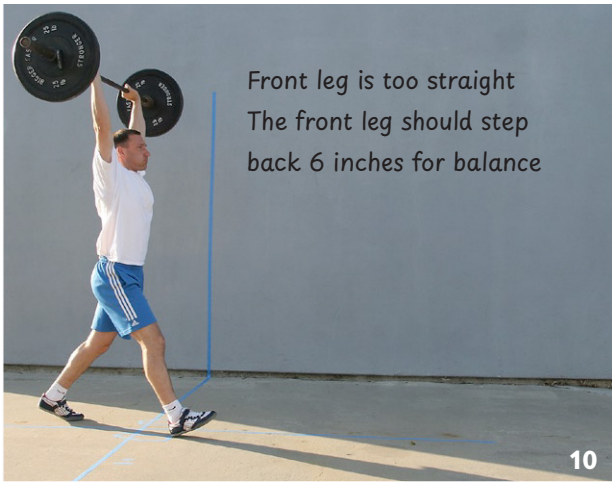










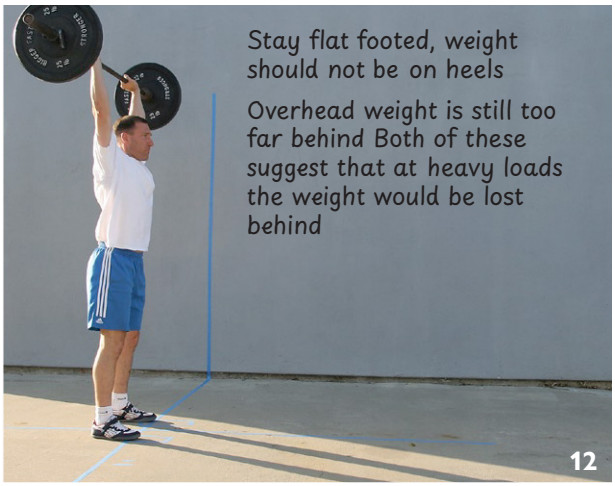


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Mike Burgener, a.k.a. "Coach B" or simply "Burg," is the owner of Mike's Gym (a CrossFit affiliate and USAW Regional Training Center), a USAW Senior International Coach, former junior World team (1996-2004) and senior World team (2005) coach, and the strength and conditioning coach at Rancho Buena Vista High School in Vista, California. He teaches CrossFit's two-day Olympic lifting certification seminars.

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Fundamentals, Virtuosity, and Mastery

An Open Letter to CrossFit Trainers

CrossFit Journal August 2005

Greg Glassman

In gymnastics, completing a routine without error will not get you a perfect score, the 10.0—only a 9.7. To get the last three tenths of a point, you must demonstrate "risk, originality, and virtuosity" as well as make no mistakes in execution of the routine.

Risk is simply executing a movement that is likely to be missed or botched; originality is a movement or combination of movements unique to the athlete—a move or sequence not seen before. Understandably, novice gymnasts love to demonstrate risk and originality, for both are dramatic, fun, and awe inspiring— especially among the athletes themselves, although audiences are less likely to be aware when either is demonstrated.

Virtuosity, though, is a different beast altogether. Virtuosity is defined in gymnastics as "performing the common uncommonly well." Unlike risk and originality, virtuosity is elusive, supremely elusive. It is, however, readily recognized by audience as well as coach and athlete. But more importantly, more to my point, virtuosity is more than the requirement for that last tenth of a point; it is always the mark of true mastery (and of genius and beauty).

There is a compelling tendency among novices developing any skill or art, whether learning to play the violin, write poetry, or compete in gymnastics, to quickly move past the fundamentals and on to more elaborate, more sophisticated movements, skills, or techniques. This compulsion is the novice's curse—the rush to originality and risk.

The novice's curse is manifested as excessive adornment, silly creativity, weak fundamentals and, ultimately, a marked lack of virtuosity and delayed mastery. If you've ever had the opportunity to be taught by the very best in any field you've likely been surprised at how simple, how fundamental, how basic the instruction was. The novice's curse afflicts learner and teacher alike. Physical training is no different.

What will inevitably doom a physical training program and dilute a coach's efficacy is a lack of commitment to fundamentals. We see this increasingly in both programming and supervising execution. Rarely now do we see prescribed the short, intense couplets or triplets that epitomize CrossFit programming. Rarely do trainers really nitpick the mechanics of fundamental movements.

I understand how this occurs. It is natural to want to teach people advanced and fancy movements. The urge to quickly move away from the basics and toward advanced movements arises out of the natural desire to entertain your client and impress him with your skills and knowledge. But make no mistake: it is a sucker's move. Teaching a snatch where there is not yet an overhead squat, teaching an overhead squat where there is not yet an air squat, is a colossal mistake. This rush to advancement increases the chance of injury, delays advancement and progress, and blunts the client's rate of return on his efforts. In short, it retards his fitness.

If you insist on basics, really insist on them, your clients will immediately recognize that you are a master trainer. They will not be bored; they will be awed. I promise this. They will quickly come to recognize the potency of fundamentals. They will also advance in every measurable way past those not blessed to have a teacher so grounded and committed to basics.

Training will improve, clients will advance faster, and you will appear more experienced and professional and garner more respect, if you simply recommit to the basics.

There is plenty of time within an hour session to warm up, practice a basic movement or skill or pursue a new PR or max lift, discuss and critique the athletes' efforts, and then pound out a tight little couplet or triplet utilizing these skills or just play. Play is important. Tire flipping, basketball, relay races, tag, Hooverball, and the like are essential to good programming, but they are seasoning—like salt, pepper, and oregano. They are not main courses.

CrossFit trainers have the tools to be the best trainers on earth. I really believe that. But good enough never is, and we want that last tenth of a point, the whole 10.0. We want virtuosity!!

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The Overhead Squat

Greg Glassman



The overhead squat is the ultimate core exercise, the heart of the snatch, and peerless in developing effective athletic movement.

This functional gem trains for efficient transfer of energy from large to small body parts – the essence of sport movement. For this reason it is an indispensable tool for developing speed and power.

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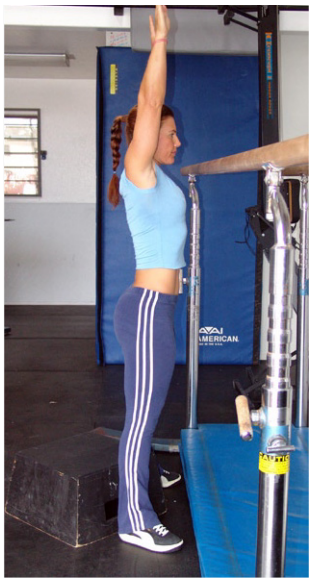
The overhead squat also demands and develops functional flexibility, and similarly develops the squat by amplifying and cruelly punishing faults in squat posture, movement, and stability.

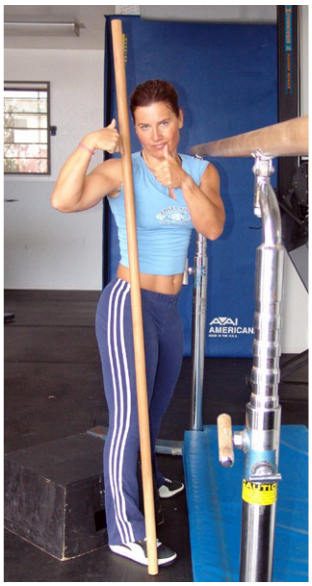
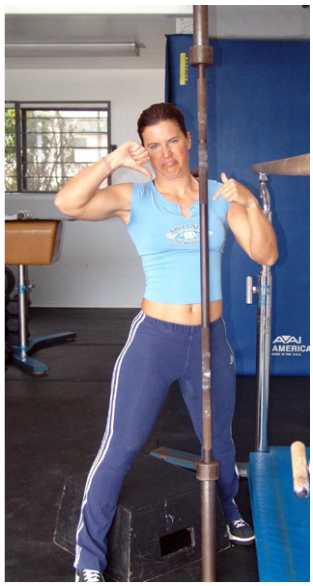
The overhead squat is to midline control, stability, and balance what the clean and snatch are to power – unsurpassed.

Ironically, the overhead squat is exceedingly simple yet universally nettlesome for beginners. There are three common obstacles to learning the overhead squat. The first is the scarcity of skilled instruction - outside of the Olympic lifting community most instruction on the overhead squat is laughably horribly, wrong – dead wrong. The second is a weak squat - you need to have a rock-solid squat to learn the overhead squat. We strongly recommend you review the December 2002 issue of the CrossFit Journal on squatting before attempting the overhead squat; you could save yourself a lot of time in the long run. The third obstacle is starting with too much weight - you haven't a snowball's chance in hell of learning the overhead squat with a bar. You'll need to use a length of dowel or plastic PVC pipe; use anything over five pounds to learn this move and your overhead squat will be stillborn.

Here is our seven step process for learning the overhead squat:

1. Start only when you have a strong squat and use a dowel or PVC pipe, not a weight. You should be able to maintain a rock-bottom squat with your back arched, head and eyes forward, and body weight predominantly on your heels for several minutes as a prerequisite to the overhead squat. Even a 15-pound training bar is way too heavy to learn the overhead squat.



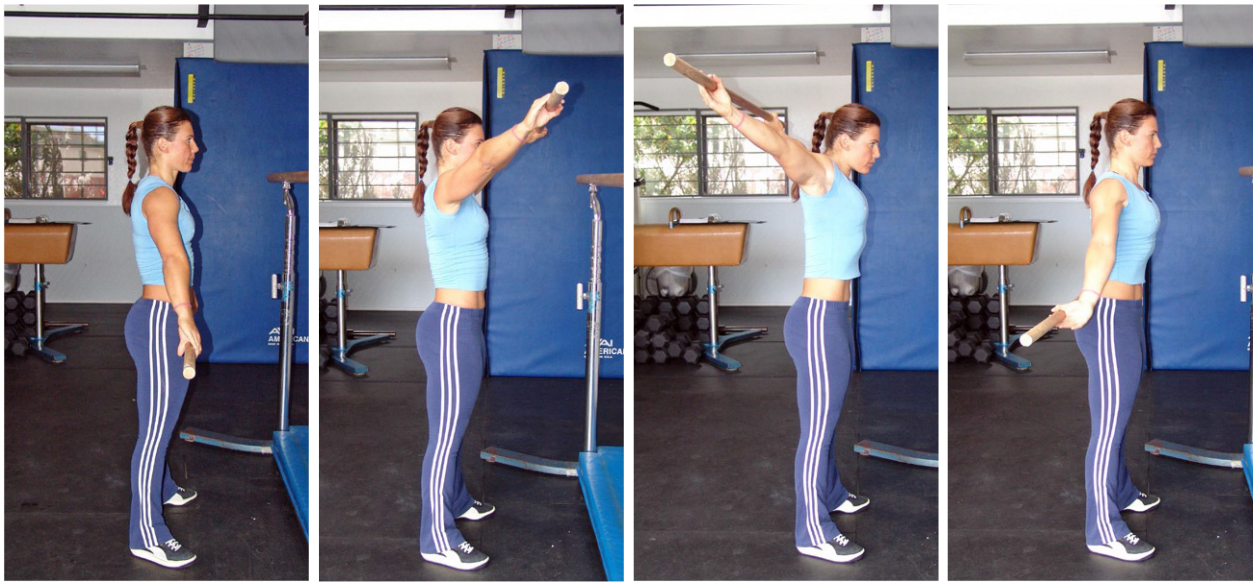



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2. Learn locked-arm "dislocates" or "pass-throughs" with the dowel. You want to be able to move the dowel nearly three-hundred and sixty degrees starting with the dowel down and at arms length in front of your body and then move it in a wide arc until it comes to rest down and behind you without so much as slightly bending your arms at any point in its travel. Start with a grip wide enough to easily pass through, and then repeatedly bring the hands in closer until passing through presents a moderate stretch of the shoulders. This is your training grip.



3. Be able to perform the pass-through at the top, the bottom, and everywhere in between while descending into the squat. Practice by stopping at several points on the path to the bottom, hold, and gently, slowly, swing the dowel from front to back, again, with locked arms. At the bottom of each squat slowly bring the dowel back and forth moving from front to back.



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4. Learn to find the frontal plane with the dowel from every position in the squat. Practice this with your eyes closed. You want to develop a keen sense of where the frontal plane is located. This is the same drill as step 3 but this time you are bringing the dowel to a stop in the frontal plane and holding briefly with each pass-through. Have a training partner check to see if at each stop the dowel is in the frontal plane.



5. Start the overhead squat by standing straight and tall with the dowel held as high as possible in the frontal plane. You want to start with the dowel directly overhead, not behind you, or, worse yet, even a little bit in front.



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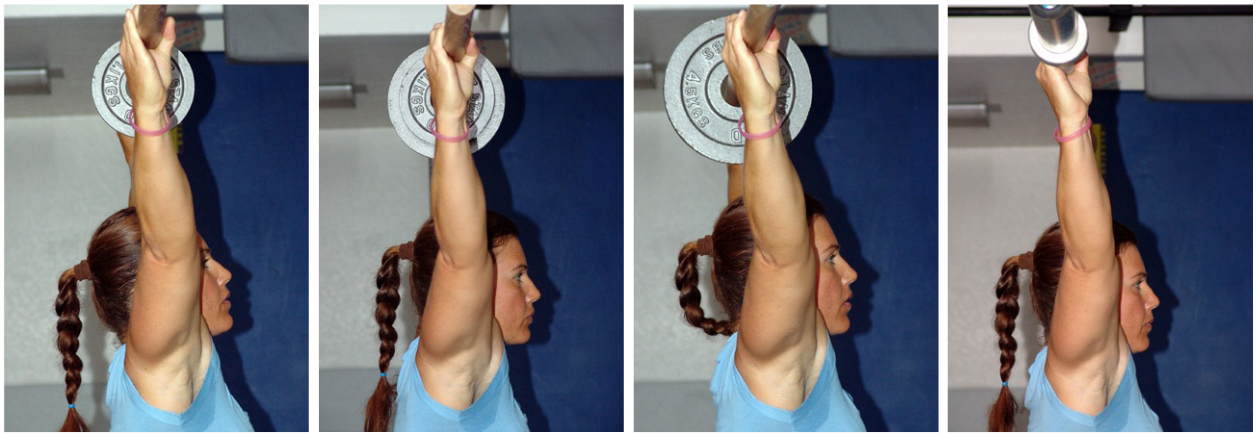
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6. Very slowly lower to the bottom of the squat, keeping the dowel in the frontal plane the entire time. Have a training partner watch from your side to make sure that the dowel does not move forward or backward as you squat to bottom. Moving slightly behind the frontal plane is O.K., but forward is dead wrong. If you cannot keep the dowel from coming forward your grip may be too narrow. The dowel will not stay in the frontal plane automatically; you'll have to pull it back very deliberately as you descend.

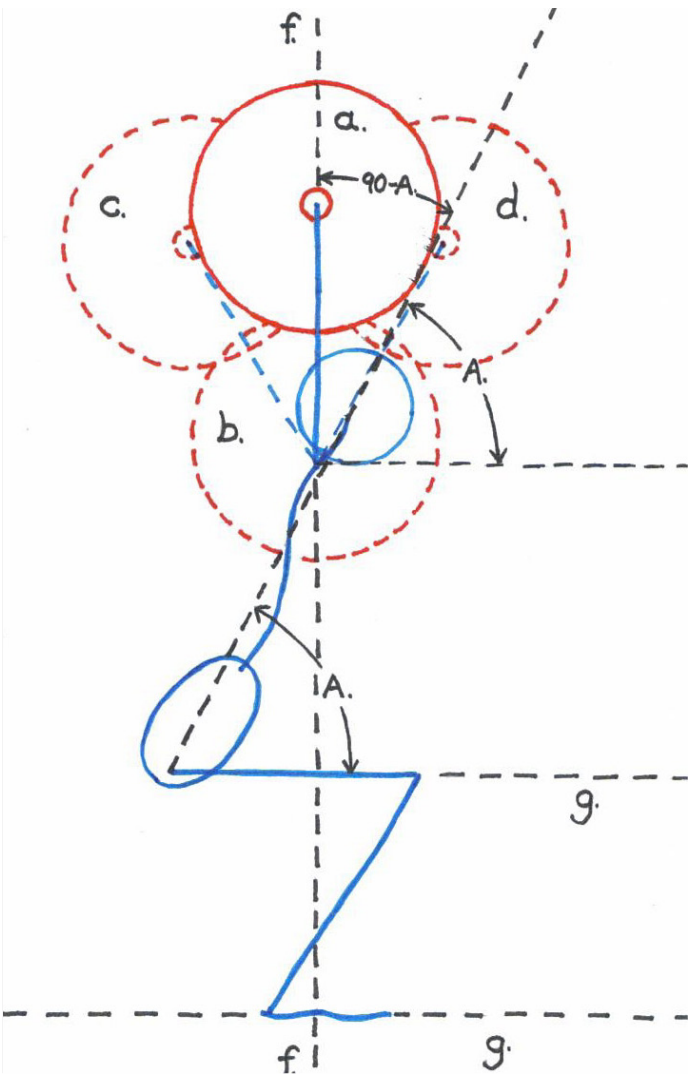


7. Practice the overhead squat regularly and increase load in tiny increments. We can put a 2.5-pound plate on the dowel, then a 5, then a 5 and a 2.5, and then a 10. Next use a 15-pound training bar, but only while maintaining perfect form. There's no benefit to adding weight if the dowel, and later the bar, cannot be kept in the frontal plane.



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A: The torso's angle of inclination above horizontal. As a squat matures this angle increases. The squat becomes more upright as the athlete's strength and neural "connectedness" to the posterior chain increase. Lower angles of inclination are created in an attempt to cantilever away from a weak posterior chain and onto the quadriceps. While technically correct, the lower angle is mechanically disadvantaged.

90-A: This is the angle of rotation of the arms, at the shoulders, past overhead. The lower A is, the greater the rotation, 90-A, required of the shoulders to keep the bar in the frontal plane. The larger 90-A is, the wider the grip required to allow the shoulders to rotate to keep the bar in the frontal plane. Ultimately the connectedness/strength of the posterior chain will determine the width of the grip, elevation of the squat, and degree of rotation of the shoulders. Maturity and quality of the squat is a determinant of all of the mechanics of the overhead squat.

g: These lines mark horizontal

f: This line defines the frontal plane. It divides the athlete front half from back half. In the squat (as with most weightlifting movements) the athlete endeavors to keep the load in this plane. If a load deviates substantially from this plane the athlete has to bring the load back, which in turn pulls the athlete off balance.

b: This is roughly the position for a back or front squat.

a: This is the position for the overhead squat. With perfect stability, movement, and alignment this position does not increase the moment about the hip or back. The difference in an athlete's strength when squatting here, overhead, as opposed to position b, the back or front squat, is a perfect measure of instability in the torso, legs, or shoulders, and improper line of action in the shoulders, hips, or legs, and weak or flawed posture in the squat.

c: This position has the load behind the frontal plane. It can actually decrease the moment on the hip and back. As long as balance is maintained the position is strong.

d: This is a fatal flaw in the overhead squat. Even slight movement in this direction greatly increases the moment in the hip and back. Moving in this direction with even a small load can collapse the squat like a house of cards.

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With practice, you will be able to bring your hands closer together and still keep the bar in the frontal plane. Ultimately you can develop enough control and flexibility to descend to a rock bottom squat with your feet together and hands together without the dowel coming forward. Practicing for this is a superb warm-up and cool-down drill and stretch.

The overhead squat develops core control by punishing any forward wobble of the load with an enormous and instant increase in the moment about the hip and back. When the bar is held perfectly overhead and still, which is nearly impossible, the overhead squat does not present greater load on the hip or back, but moving too fast, along the wrong line of action, or wiggling can bring even the lightest loads down like a house of cards. You've two, and only two, safe options for bailing out – dumping the load forward and stepping or falling backward or dumping backward and stepping or falling forward. Both are safe and easy. Lateral escapes are not an option.

The difference between your overhead squat and your back or front squat is a solid measure of your midline stability and control and the precision of your squatting posture and line of action. Improving and developing your overhead squat will fix faults not visible in the back and front squat.

As your max overhead, back, and front squat each rise, their relative measure reveals much about your developing potential for athletic movement.

An average of your max back and front squat is an excellent measure of your core, hip, and leg strength. Your max overhead squat is an excellent measure of your core stability and control and ultimately your ability to generate effective and efficient athletic power.

Your max overhead squat will always be a fraction of the average of your max back and front squat but, ideally, with time, they should converge rather than diverge.

Should they diverge, you are developing hip and core strength, but your capacity to efficiently apply power distally is reduced. In athletic pursuits you may be prone to injury. Should they converge, you are developing useful strength and power that can be successfully applied to athletic movements.

The functional application or utility of the overhead squat may not be readily apparent, but there are many real-world occurrences where objects high enough to get under are too heavy or not free enough to be jerked or pressed overhead yet can be elevated by first lowering your hips until your arms can be locked and then squatting upwards.

Once developed, the overhead squat is a thing of beauty – a masterpiece of expression in control, stability, balance, efficient power, and utility. Get on it.



Greg Glassman is the Founder of CrossFit, Inc. and Crossfit Santa Cruz and is the publisher of the CrossFit Journal. He is a former competitive gymnast and has been a fitness trainer and conditioning coach since the early 1980s.

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The Lifting Shoulder

Greg Glassman

What should the shoulder's contribution to overhead lifting be? Should the shoulder remain fixed or should it elevate, moving toward the ear, during an overhead lift? These questions were recently raised on the CrossFit message board and found their way over to other pop fitness sites where our answers and practices are contrary to local orthodoxy.

As interesting as the questions are— and they are potentially vital in terms of both safety and efficacy— they also offer a ripe opportunity to delineate how we at CrossFit typically evaluate all training methods and resolve issues and concerns of technique. That is very much the purpose of this article—to reveal our thinking on what guides and substantiates our beliefs and practices.

To answer the question regarding the shoulder's role in overhead lifting, we want to look to the methods and techniques of athletes who lift or support substantial loads overhead in the normal course of their sport; evaluate those methods against any observed, trusted, and acknowledged principles of human performance; and conduct local experimentation, where it is ethical and sensible to do so. We evaluate methods experientially, theoretically, and clinically, but each step has an empirical nature. Even our theories have utility only insofar as they are consistent with observation.

When looking for athletes whose sport regularly entails significant overhead loads, we hit pay dirt with the gymnasts and weightlifters (Olympic lifters).

The shoulder's loads, velocity, angles, range of motion, and wicked dynamics during gymnastics have no equal





in other sport. We often say that gymnasts are the graduate students of shoulder-works and other athletes are in elementary school. The overhead loads that gymnasts experience are enormous and often involve landing in a handstand from significant heights or moving powerfully through a handstand.

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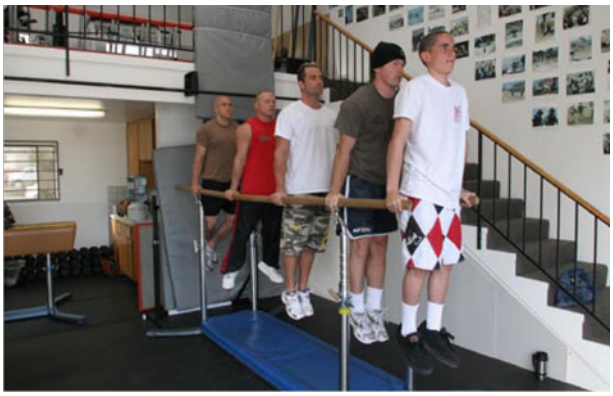
For examples, you need look only as far as the "back toss handstand" performed on the parallel bars and the "back handspring" performed in free exercise, both from Coach Roger Harrell's Drills and Skills site.

On the subject of the shoulder's role in supporting loads overhead, the gymnasts' perspective is abundantly clear. The shoulder needs to be tucked up next to the ear. This is referred to as an "active shoulder." In any activity, an active shoulder is one that is working against a load. In a handstand, this means it is held tightly near the ear by the trapezius muscle; in a support on the parallel bars, however, the "active shoulder" is held down and away from the ears by the latissimus dorsi muscle. In both cases the active shoulder is working against the load. We use the term "inactive" or "passive" to refer to a shoulder yielding to a load. Gymnasts are taught early to "put your shoulders in your ears" for overhead strength, control, and stability.

The weightlifters are also experts at overhead lifting; that's all they do. The dynamics and the loads incurred in the snatch are enormous. Check out Dan John's message board avatar of Pyrros Dimas. It doesn't take much imagination to appreciate the difficulty and demands of throwing up nearly twice your bodyweight and catching it in an overhead squat—the most challenging and demanding of overhead postures. (See this message board post for a photo of active shoulders in a 200-kg snatch catch.)

For the weightlifters the importance of an active shoulder in lifting and supporting weight overhead is also unambiguous. Consider the snatch again. It is a powerful contraction of the trapezius that drives the load upward before the athlete dives under to catch the bar in an overhead squat. The traps' powerful contraction continues the acceleration of the bar begun by the hips and legs and carried through full hip extension, when the hip instantly reverses itself. That same shrug of the shoulders then propels the athlete under the bar where he catches it, arms fully extended, supported by the full recruitment of the traps—an active shoulder. The same shrug, the dynamic "active shoulder," propels the load, launches the athlete, and supports the load.









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What, if any, principles of human performance support the specifics of the weightlifters' and the gymnasts' approach to managing loads overhead?

First, full range of motion and longer lines of action have greater athletic application than do their stunted counterparts. They offer more natural motor recruitment patterns and greater power by virtue of longer travel. At CrossFit we don't do partial squats, partial presses, or partial deadlifts. We're looking for the longest line of action with a full range of motion. An active shoulder extends the overhead reach by inches.

Second, body parts that are more proximal (closer to the body) are stronger than parts more distal (away from the body). Better and more powerful work can be accomplished by proximal than distal body parts. By recruiting the traps in overhead lifts we recruit muscle much stronger than those in the arms. (We can all shrug more weight than we can press.)

Third, athletic movements are generally expressed in a wave of muscular recruitment from core to extremity (proximal to distal) where larger, stronger body parts accelerate loads and hand them off to smaller, weaker body parts for continued acceleration. Taking the active shoulder out of the overhead lifts leaves a break in the kinetic chain in the case of the jerk or push-press and shortens the chain in the shoulder press.

It would be appropriate to ask weightlifters and gymnasts about the prevalence and propensity for shoulder injuries in their respective sports. We have done so and have been given no reason to suspect that they are more or less shoulder-injured than the general population. Coaches are generally very reliable sources for evaluating a sport's proclivity to injuries. Ask a football coach if he sees torn knee ligaments and the answer is a laugh of recognition and acknowledgment. Ask about broken backs and you'll get a quick "no." Our weightlifting and gymnastics coaches recognize a fair number of regular, even common, injuries, but not to the shoulder.

How have CrossFitters fared lifting overhead with an active shoulder? Like the weightlifters and gymnasts, we have no reason to suspect any significant causal relationship between our overhead lifting and shoulder injury. In fitness communities where overhead lifting is









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reportedly injurious, there is typically clear evidence of inactive, or passive, shoulder involvement while lifting overhead.

Several CrossFitters, Tyler Hass and I, to name two, have experimented with simple gymnastics movements and passive shoulders, much to our chagrin (as chronicled at here). Tyler found swinging to a handstand without squeezing the shoulders up by the ears to be disastrous, and I found pulling the shoulders smartly away from the ears in the handstand to be breathtakingly painful.





Our take is that the active shoulder is a strong anchor, support, and motivator for high-force, highimpact, or high-power movements. The inactive shoulder is not. The dynamics of the shoulder's contributions to weightlifting and gymnastics movements suggests potential value in exercises that simply move the shoulder from passive to active from different postures. This can be done from a hang on a bar, in a support on rings or bars, and while hanging a bar at arm's length down and in front of the legs. Interestingly only the third of these movements, the "shrug," is a regular gym exercise, and it is recognized as powerful and important.

The lessons we've extrapolated from this look at overhead lifting and supporting can be applied to pull-ups, dips, cleans, snatches, presses, jerks, push-ups, and even rowing and have redoubled our commitment to powerful shoulder involvement for each of these exercises.

In shooting photographs for this article we found some postural limitations in a few of our better athletes. One in particular had great trouble holding a bar overhead with the shoulders elevated toward the ears. The same athlete has repeatedly demonstrated great difficulties with handstands and other overhead work. We've long known about postural limitations that reveal functional deficiencies. We now have another to look out for.

◇

Greg Glassman is the Founder of CrossFit, Inc. and Crossfit Santa Cruz and is the publisher of the CrossFit Journal. He is a former competitive gymnast and has been a fitness trainer and conditioning coach since the early 1980s.

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CrossFit Induced Rhabdo

Greg Glassman



We warned of rhabdomyolysis in a previous issue (CrossFit Journal 33, May 2005) and return to the topic this month not only to repeat our warning but to share the lessons we've since learned about "exertional rhabdo."

Before the first rhabdo case was brought to our attention, we regularly warned of CrossFit's potency wherever we had the opportunity. In the January 2005 issue of the journal, we offered the following caution for newcomers tackling the WOD (workout of the day): "Countless bad-asses from sporting and special operations communities, long regarded as bulletproof, have been burned at the stake of ego and intensity." As it turns out, the burning is rhabdo, and we now find ourselves obligated not just to explain CrossFit's potency but to warn of its potential lethality.

We can dispense with much medical detail with a quick and easy description of rhabdomyolysis as a potentially lethal systemic meltdown initiated by the kidneys in response to the presence of shed muscle-fiber debris and exhaust in the bloodstream. There are several

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causes and types of rhabdo, classified by the underlying cause of muscle breakdown. With CrossFit we are dealing with what is known as exertional rhabdomyolysis. It can disable, maim, and even kill.

To date we have seen five cases of exertional rhabdo associated with CrossFit workouts. Each case resulted in the hospitalization of the afflicted. The longest hospital stay was six days, the shortest two days. All have made full recoveries. The hardest hit was extremely sick, the least afflicted had no complaints other than soreness. All were extremely sore. Soreness doesn't adequately explain the discomfort of rhabdo, however. The worst hit, a SWAT guy, recounts that six days of intravenous morphine drip barely touched the pain.

Victims include:

1) Female college student, surfer, mountain-biker, early twenties. Her second-ever CrossFit class in three days was a fast-moving, hard-hitting group workout that included high-rep assisted team pull-ups. She got sore, then sorer. Went to the E.R. Got admitted. Spent three days in the hospital. Didn't "feel sick."

2) Dermatologist in his late forties. Avid tennis player. Recreationally active and competitive. His first CrossFit workout was on Monday, the second on Wednesday. Played several hours of tennis on Friday, Saturday, and Sunday. Hospitalized on Monday. Chief complaint was soreness.

3) Middle-aged fit SWAT guy famous for his exploits in a busy sheriff's office. A CrossFitting friend took him through a "Helen"-like first exposure. Almost killed him —literally. Our first and worst bout of Rhabdo (and the one described in detail in issue 33 of the journal). Now an avid CrossFitter.

4) Female collegiate softball pitcher. Challenged the manhood of her runningback boyfriend when he complained about CrossFit's "Tabata This" workout. The running back gave the girlfriend the Pepsi challenge. She didn't finish the workout and was hospitalized three days later for four days. Very sick girl.

5) Special operations personnel. Ignored warnings to learn something about CrossFit before attending a three-day CF seminar. He put his bodybuilding and running regimen to the CrossFit test and suffered third and fourth quartile outputs on the first two of three days, was reduced to watching on day 3 (this probably saved his life), and in the hospital for days 4 through 8. Way too much CrossFit way too soon.

All five have made complete recoveries. The worst hit, the SWAT guy, is now a committed CrossFitter and can easily blast through workouts that once nearly killed him.

We've seen rhabdo in men and women, and in the young and middle-aged. They've each been and remain tough competitors and were, by popular and common standards, very fit. All were athletes. We have neither seen nor heard of a case of exertional rhabdo involving previously sedentary or inactive individuals.

The settings, circumstances, age, gender, background, and trainers involved varies widely in our five cases but each victim was brand new to CrossFit. Each was wounded by a first or second workout. The victims of the one-two punch had their second workouts two days after their first.

We've not found a training regimen short of constantly varied functional movement executed at high intensity (CrossFit) that reduces the odds of crashing and burning —of potentially getting rhabdo—when first exposed to CrossFit. No experienced CrossFitter has had any rhabdo problems.

Our victims had typically previously experienced only low-power-output, low-intensity workouts. Regimens that separate strength training from cardio are almost always low-intensity regimens. Bodybuilding workouts coupled with long distance runs are not adequate preparation for sport, combat, emergency, or CrossFit.

Since our first reporting on rhabdo five months ago, the National Strength and Conditioning Association (NSCA) has run articles in its magazine and presented experts on rhabdo at its events. The rhabdo described is generally correlated with exhaustion, dehydration, high humidity, high temperatures, and long practices. Mental confusion and salt deposits are offered as signposts. This is not the rhabdo that we have witnessed.

The rhabdo we've seen has come from sessions of twenty minutes or less, with mild or low temperature and humidity. The victims were not excessively panting, straining, grunting, or otherwise expressing abnormal discomfort from the workouts. The athletes who came down with rhabdo turned in marginal CrossFit

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performances and showed no signs of discomfort that were out of the ordinary. They left their workouts seemingly no worse off than anyone else. The environment and circumstances attributed to rhabdo in the sport and medical literature is so different from what we've experienced that we've termed the rhabdo we've seen as "cold rhabdo."

From our perspective, it seems abundantly clear that these folks were exposed to too much work in too short a time. Their previous training—the kinds of programs offered in commercial gyms, fitness magazines, popular Internet sites, the U.S. military (including special operations training), and police training agencies—all proved woefully inadequate at preparing them for sustained power output.

Elite CrossFitters are performing 18,000 foot-pounds of work per minute for three or four minutes (that's nearly half of one horsepower!). This is what our top tier athletes are doing in workouts like "Fran." Without deliberately training for maximum expression of effective work against a wide-ranging time domain, it is virtually impossible to deliver power output as high as our athletes do. The training stimulus for developing power endurance that comes anywhere near that of our athletes is simply not there. CrossFit employs exercises, lines of action, and programming templates that allow for expression of maximum work volume over a wide-ranging time domain. We don't think anyone else is doing this anywhere.

Athletes from conventional training programs have found that, relative to CrossFit-trained athletes, a) they cannot maintain similarly high workloads, b) they are likely to suffer orthopedic trauma trying, and c) they develop rhabdo at power output levels that are easily maintained by CrossFit regulars, including women, older athletes, and children.

What the rhabdo outbreak teaches us is that CrossFitters are trained to perform more work, more effective work, and more work more safely over a given time period than any other athletes. I think we can, have, and will continue to prove this to all who would care to look, listen, and think.

The "more work, more effective work, and safer work" model of CrossFit explains the weak performances and occasional rhabdo among seemingly fit athletes exposed to CrossFit, our dominance over traditional training protocols in clinical trials, and the utter and complete absence of challengers to CrossFit workout performances from non-CrossFitters in a nearly five-year-long, oft-repeated, and very public call-out for fitter, tougher folks anywhere to show their stuff.

Nature, combat, and emergency can demand high volumes of work performed quickly for success or for survival. Until others join CrossFit in preparing athletes for this reality, the exertional rhabdo problem will be ours to shoulder alone.

We have identified three key areas where we can minimize the exposure of unsuspecting souls to the realities of real-world physical challenge. Our rhabdo abatement program includes offering "elements" classes for newcomers, where the pace, and hence power output, is kept low while the athletes have time to learn new movements and gradually develop and adapt to higher power output. The mental model we've given our trainers is that of a longer on-ramp to the highway of full intensity for newcomers.

For our seminars we are issuing preseminar cautionary orders to participants recommending exposure to the functional movements before the seminar date. We are producing a pre-seminar video/DVD that will both warn of rhabdo and help participants prepare for the seminar. We're also going to identify attendees uninitiated to CrossFit and personally counsel them to moderate their efforts and participation.

Finally, we are talking with our website designer about more visible warnings to catch any unsuspecting folks who may imprudently decide, despite our warnings, to tackle a workout full throttle and fully unprepared.



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The Glute-Ham Developer Sit-Up

Greg Glassman

We have four glute-ham developers (GHDs) (http://store.sorinex.com/product_p/ghb-1.htm) at CrossFit Santa Cruz. We use them for back extensions and sit-ups. This month we explore the glute-ham developer sit-up, once more commonly referred to as a "roman chair sit-up."

The GHD sit-up was once a gym staple. In the gym today only rarely will someone be found doing other than back extensions on the GHD. In no small measure the decline of the GHD or roman chair sit-up coincided with the advent of the crunch. The crunch came to fashion on warnings and claims in popular media of the traditional sit-up's destructive impact on the back.

It was argued that the GHD style sit-up's primary movers were the hip flexors and not the abs and consequently this sit-up, and sit-ups like it, were actually not good abdominal exercises. It was further argued that recruiting the hip flexors to lift the torso was destructive to the lumbar spine.

Once every couple of years we get lucky and find an exercise physiologist to repeat this message of poor ab recruitment and lower back destruction standing in front of the GHD apparatus. What we do is ask them to mount the GHD and perform a set of thirty sit-ups for us while rehashing the poor recruitment claim.

The fun comes the following day when the report comes back from the exercise scientist that they are almost too sore to sit upright. Laughing, walking, standing, and moving are all excruciating. Where are they hit? The abs.

Our favorite story along these same lines comes from Matt Weaver (www.speed101.com), arguably the world's fastest human being. On top of being known for hitting 85 mph on a bike, Matt was crowned "King Sit-Up" in high school for completing 100 perfect-form bodyslapping sit-ups in one minute. In one of his earlier visits to CrossFit Santa Cruz he found himself in a multi-station circuit with a group of CrossFit veterans that included twenty-one reps of GHD sit-ups with a full range of motion, hands reaching back to the floor.

The workout left Matt sick in the immediate aftermath. This was a surprise for sure but nothing prepared Matt for what came the following morning: "I awoke later without the slightest ability to sit up. It was as if the six pack was totally gone, though all ribs remained. The curse had left me merely able to roll over and slither like a snake off the edge of the bed. From there I had to use my arms in humiliating ways to move about. I avoided being seen. A week passed, and I began to revitalize."

The worst was yet to come! In the wake of Matt's being dethroned as King Sit-Up, his abs had swollen and distended markedly. This kid looked fat and sunburned where the week before he'd been ripped and lily white. As the swelling subsided, his scrotum grew and grew

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and grew. Matt's father, John, is an ER doc, so he was consulted. He laughed himself to near seizure. (Our kind of doc.)

Before the swelling stopped Matt's scrotum had become the size of a small and very ugly cantaloupe. Why we have no pictures we'll never understand.

Apparently the fluids that had swollen Matt's abs had drained into the inguinal canal and filled the scrotum. Oh, and apparently GHD sit-ups recruit the abs. Matt is convinced.

The lesson we've drawn from the GHD sit-up is that in spite of the primacy of hip flexors over trunk flexors, or the abs, in this sit-up it recruits the abs powerfully in two ways. First, the movement takes the trunk from hyperextension to full flexion, albeit with negligible load. (No crunch can match this range of motion.) Second, the role of the abs in this sit-up is powerful and largely isometric—i.e., they stabilize the torso from undue extension.

This second point is consistent with our belief that the most powerful, functional, and developmental contractions of the trunk are isometric, not isokinetic. Our favorite ab exercises are predominantly stabilization or isometric exercises. The GHD sit-up, the L sit, and the overhead squat share this stabilization role. The lack of trunk flexion in these moves hides their potency from the uninitiated.

Our experience with athletes and static hip flexion work like the L sit and more dynamic exercises like the GHD sit-up have led us to several conclusions:

1. The hip flexors' purchase and strength suggest their importance to functional movement. One expert calculated that they are capable of generating many times the force that the abs can. To think that muscles with that much mechanical advantage should not be used to that advantage is ridiculous.
2. Most modern athletes are hip flexion weak and it affects most performance.
3. Weak hip flexors assure weak abs—especially weak lower abs—and no amount of crunches can compensate. (It seems that every gym has an abs class instructor who has a prominent lower abdominal pooch. Ask her to hold one knee up while standing on the other leg and to resist your pushing the knee downward with a couple of fingers. It's easy to push the knee down, and it shouldn't be).
4. Without static contraction/stabilization exercises, the abs never learn to perform their most critical, functional, role—midline stabilization.

What about the danger to the lower back purported to be induced by strong hip flexor work? We have neither induced nor seen this damage. We do however have some hunches as to how this might have occurred in communities where roman chair sit-ups and traditional military PT sit-ups were in wide acceptance.

First, in military and law enforcement PT where the sit-up was king, it was and is essentially a biphasic movement. With feet anchored and knees bent, this situp comes up with a slight pause in the middle of the action. Look at video of someone doing these sit-ups and you'll see the pause.

What is happening is that the upper back makes solid contact with the ground under the upper abs and so they can flex the trunk and fulcrum off the contact point. As the sit-up continues, the middle abs flex the torso but the lumbar curve surrenders without finding resistance and at full middle rectus contraction the spine is neutral and not flexed. The contraction occurred with no real load; the belly and back just sank closer to the ground. This stalls the sit-up but the pelvis and low back have solid contact with the ground so the hip flexors complete the movement. The natural, biphasic, one-two count of the military sit-up is a repeat of upper abs throwing the movement to the hip flexors where they complete the movement. Upper abs, hip flexors. Upper abs, hip flexors. No effective middle ab work.

This deficiency of middle ab work, and consequently strength in the middle rectus, and the violence of the toss from upper to lower abs may have presented unhealthy wear and tear on the lumbar spine. This understanding came, in part, from some brilliant work by Koch, Blom, and Jacob in producing the "Ab Mat" (http://www.backbuilder.com/abmat_situps.htm).

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Second, in watching people perform situps on the GHD we note that very few employ the full complement of hip flexors in sitting up. The hip flexors include the iliopsoas and rectus femoris. The iliopsoas originates at the lumbar spine and attaches to the femur. In the sit-up it pulls the athlete to seated by the lumbar spine, potentially creating nettlesome shear forces on the spine. Rectus femoris is the top piece of the quadriceps and it both extends the leg and flexes the hip. Rectus femoris originates at the pelvis and attaches to the patella via the patellar tendon. In the sit-up rectus femoris pulls the athlete to seated from both the pelvis and the iliac spine. The activation of rectus femoris during the GHD sit-up does two important things. First, it adds significant force to the movement. The acceleration of the torso to upright is so forceful when rectus femoris is engaged that our trainers can detect its use or lack of participation from their peripheral vision. What it adds to the movement is obvious in speed and acceleration of the torso. Second, rectus femoris reduces the shear force on the lumbar vertebrae by pulling from the pelvis and iliac spine instead of the lumbar spine.

When coaching the GHD sit-up, we cue for the athlete to sharply extend the legs while coming up. The difference is obvious to everyone watching when rectus femoris kicks in. Those who have identified the GHD sit-up and other feet-anchored sit-ups as a source of low-back pain seem to always pull with the iliopsoas alone and never use rectus femoris. Those who've had problems with low back pain from GHD or roman chair sit-ups will find considerable relief by training to use the full complement of hip flexors in performing sit-ups.

http://media.crossfit.com/cf-video/cfj-oct-2005/glute-ham-demo.wmv

Third, all too often communities that have held the sit-up in high regard have typically neglected hip extension work. Military and police physical training has historically been enamored of the sit-up. It is one of the yard sticks by which police and military fitness is traditionally measured. In most of these programs there are no squats, no deadlifts, no good mornings, no stiff legged deadlifts, and no back or hip extension exercises. The posterior chain in these communities typically sees no work other than running or perhaps burpees. What this imbalance of regular hip flexion exercises with little hip extension and no full-range hip extension portends for injury we don't know. The imbalance can't be a good thing, however. Regardless, we see our back and hip extension drills on the GHD to be indispensable to lower back health.





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We start newcomers out on the GHD sit-up by spotting to make sure that they can come down to parallel without collapsing. (Last year, and very briefly, we trained a Stanford University coach who made a huge point of sharing his focus on core training on the Swiss ball. When we got him on the GHD, he fell back off of the horizon and couldn't get up. He had to be deadlifted back to horizontal.) If our athlete is afflicted with a core as weak as the Stanford coach's, we start him on the AbMat and reintroduce the GHD sit-up at a later date—when more rudimentary strength has been developed.

We also caution against unbridled bouts on the GHD for newcomers to avoid the Matt Weaver cantaloupe syndrome described above. This is a potent exercise and it has sidelined dozens of strong, strong, athletes for a few days to a week.

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Skill Transfer Exercises for the Snatch

Greg Glassman



In our August issue we explored the overhead squat, which we billed as "the ultimate core exercise, the heart of the snatch, and peerless in developing effective athletic movement." This month we introduce three skill-transfer exercises based on the overhead squat and commonly used by weightlifters to develop the snatch.

To learn to perform and coach these exercises correctly, we ventured to Mike's Gym, a CrossFit Affiliate, in Bonsall, California, to learn firsthand from Coach Mike Burgener and his 15-year-old daughter, Sage, how to

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perform these exercises correctly. Mike is the current U.S. Pan American Games coach, and Sage is a nationally competing junior champion.

The three exercises are known as the pressing snatch balance, the heaving snatch balance, and the snatch balance. Each essentially demands successively greater dynamics and athleticism to reach, hold, and control the catch position of the snatch—which is, in fact, the bottom of the overhead squat.

Each of the three snatch balance exercises begins with the bar in a racked position on the upper back, as for the back squat. Starting with bar on the back, rather than in the front rack position, gives the athlete greater control and easier access to a line of action that is truly upward and not derivative.

Each exercise begins from standing, bar on the back, with a snatch grip. In the pressing snatch balance the athlete slowly lowers the hips into a squat while simultaneously extending the arms to press the bar overhead. In the heaving snatch balance the athlete executes a very short and powerful "dip and drive" to initiate the movement (bending briefly at the knees and hip and then powerfully extending to drive the bar upward) and then comes to rest at the bottom of the overhead squat.

Both the pressing snatch balance and the heaving snatch balance begin and end with the feet slightly wider than shoulder width, the same as in the catching stance of the clean and the snatch, which is also the squatting stance of the rock-bottom overhead squat.

The snatch balance, in contrast, begins in a narrower stance, with feet directly under the hips—the pulling stance that is the starting position for the clean and the snatch (what Coach Burgener often calls the "jumping stance"). The snatch balance requires the athlete to initiate the movement with a strong dip and drive, then dive under the bar and move the feet to land in the slightly wider catching stance with the bar overhead—all explosively and in an instant.







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The pressing snatch balance and the heaving snatch balance are more commonly used for beginning and intermediate lifters, whereas the snatch balance and overhead squat are typically used with experienced weightlifters.

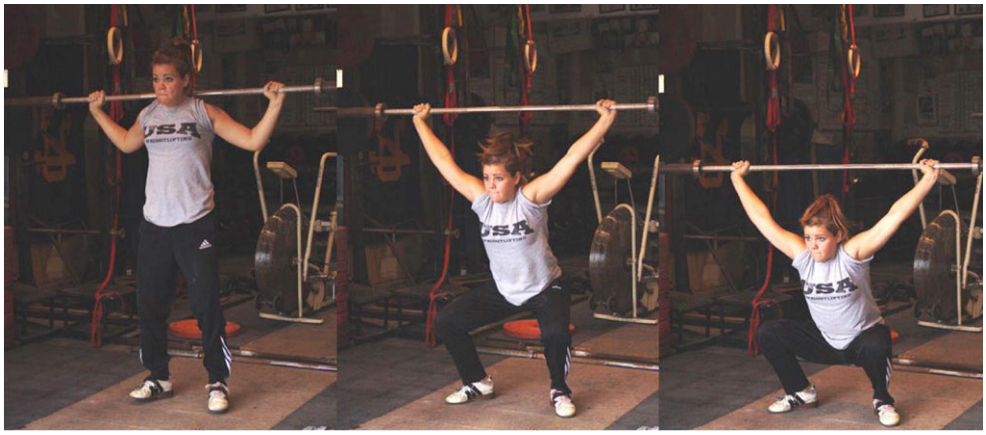
Each of these exercises, not unlike the overhead squat, must be learned, practiced, refined, and perfected with a dowel or PVC pipe before any appreciable weight is introduced. Practicing in this manner—with negligible load—constitutes an excellent warm-up tool that not only readies the athlete for more rigorous work but also reinforces fundamental mechanical skills vital to more athletic and complex movement.

Generally, weightlifters will be able to handle more weight in the snatch balance than in the snatch. The boost this gives to confidence and control with maximum snatch loads is one of the primary benefits to training the snatch balance family. At any given weight, the dynamics of the snatch are wickedly greater than those of the overhead squat. *Pressing Snatch Balance* The snatch balance can *Video* help bridge that gap.

Pressing Snatch Balance Video



Heaving Snatch Balance Video



Snatch Balance Video

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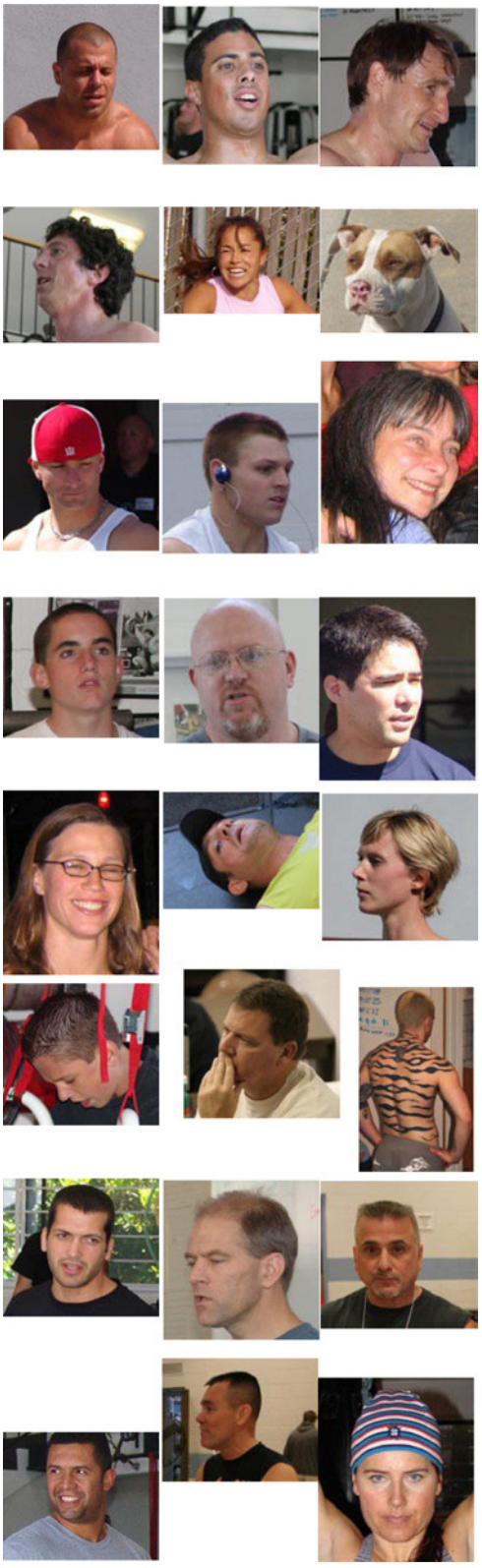
Greg Glassman



On November 15th, 1999, astronomers sent a powerful radio transmission toward a star cluster 25,000 light-years away in hopes of someday communicating with extraterrestrial intelligence. If lucky, a response could come back in 50,000 years.

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On February 10th, 2001, Lauren and I first published our simple, distinctive workouts on the Internet in hopes of someday communicating with intelligent life in the fitness world. The experiment has proven to be a stunning success, with a comparatively rapid return, and it gave birth to a community that is revolutionizing fitness and training.



This month we want to share our thoughts on the growth and development of CrossFit and share our dreams and commitments as stewards and servants of the CrossFit community.

History

The CrossFit.com website was not our idea. In fact, the domain name was registered and held in trust by a friend and client, Mike Bender, ten-time winner of the Toughest Cop Alive competition, who waited patiently for us to come to understand the potential of the Internet and the need for a website.

It was Ben Elizer, another CrossFit client and Silicon Valley software developer, who in the later part of 1999 first proposed a CrossFit website. Ben's software firm KnowWare, now defunct, had done technical work for many of the better-known dot-com startups and had the connections, contacts, and experience needed to secure venture capital and take a startup public.

KnowWare put together a series of meetings with artists, programmers, developers, and investors to plan the launch of CrossFit.com. The proposed business model was to produce a high-tech feature-packed website with venture capital, go public, and then figure out how to make money from it. The line was "Get eyes, then monetize."

The developers knew how to build a site, draw people to a site, and get investors, and we knew how to make monsters of men. None of us could quite figure out how we'd make money, and that was OK with all of us, but our perceptions of how to best draw people to a fitness concept ultimately diverged. The dot-com experts, the developers, believed that an expensive website and investor-funded giveaways would carry us to an IPO. They'd done it before. We thought that uniquely effective programming delivered daily via a "Workout of the Day" or "WOD" would do the trick.

When we explained that we thought our workouts were so effective that if we were to post one every day, someone would eventually find them, try them, have great results, and come back and tell friends, the dot-comers laughed heartily and condescendingly chortled, "Ahhhh, the old grassroots approach!" (They also loved the "ring" of "Workout of the Day.")

We worked and planned, discussed and argued with our development/management team for months about the visions for CrossFit.com while working toward the first phase of funding.

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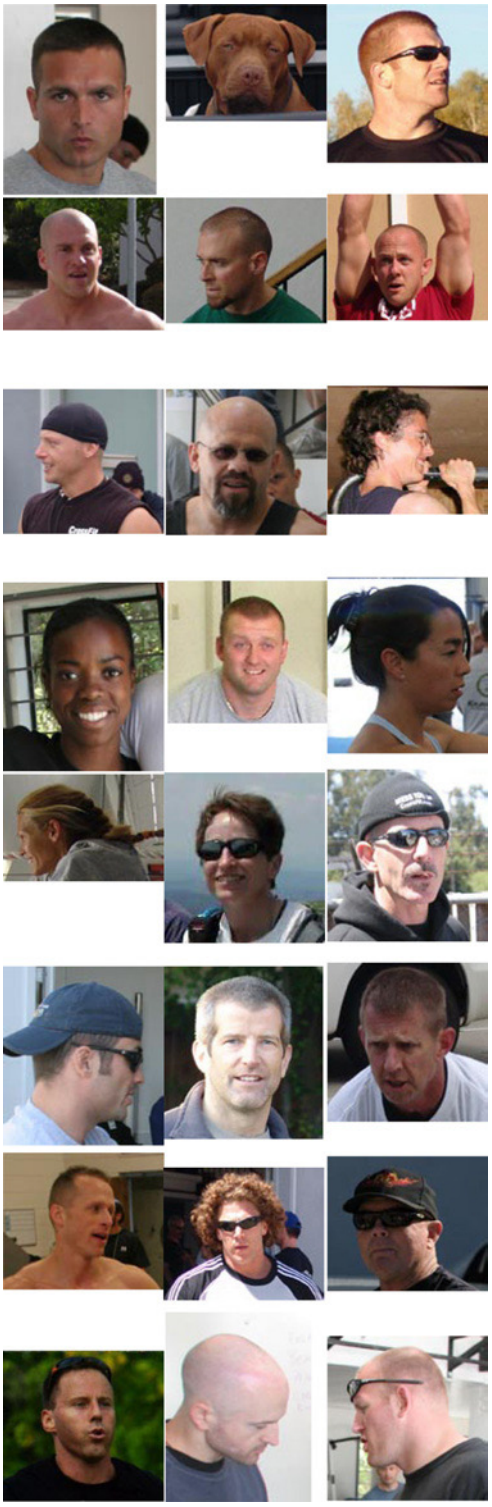
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Then, in the second week of March, 2000, the NASDAQ began a freefall heralding one of the greatest market collapses in U.S. history. The plans for CrossFit.com evaporated as quickly as the fortunes and dreams of so many investors.

Frankly, while sorry for our newfound friends' financial ruin, we were quite relieved. For the rest of the year we got back on task with trying to get kicked out of one more commercial gym.

Relieved but still intrigued, we couldn't put to rest the idea of sharing our fitness programming with the world. We were haunted by the notion that if our programming were indeed as effective as we thought it, the Internet might provide the opportunity to prove as much by allowing us to inexpensively and powerfully give the kernel or our work—our workouts—a global test and distribution.



Today

On February 10th, 2001, CrossFit.com went live with a single ugly page featuring our first workout on a blue background and white font that we only months later learned printed as a blank page.

Five years later, without a penny spent on advertising, marketing, or promotion, CrossFit.com has over 75,000 regular unique visitors from around the world, over 1 million visits so far this year, and over a terabyte of data delivered monthly.

In the last year alone CrossFit has appeared in the magazines Law and Order, Outside, Grappling, and Skiing. Last month Men's Journal listed CrossFit at number 4 among the "50 Greatest Health and Fitness Websites" and is wrapping up a feature story about CrossFit for its February 2006 issue.

There are currently 49 CrossFit affiliates; last year at this time there were seven. Our "cyber community," whatever that is, spawns sub-communities that sweat, laugh, and cry together—in the flesh. Formal and informal, temporary and enduring, planned and impromptu, these participant-driven gatherings of CrossFitters have the potential to revolutionize the fitness industry.

Our claim to being a peerless developer of fitness has gone unchallenged in 5 years of "put-up, challenge the standard, or shut-up" WOD postings, and has been tested thoroughly and impartially in police and military clinical trials in the U.S. and Canada.

CrossFit is growing like a weed. It's that old grassroots approach.

Listening to you

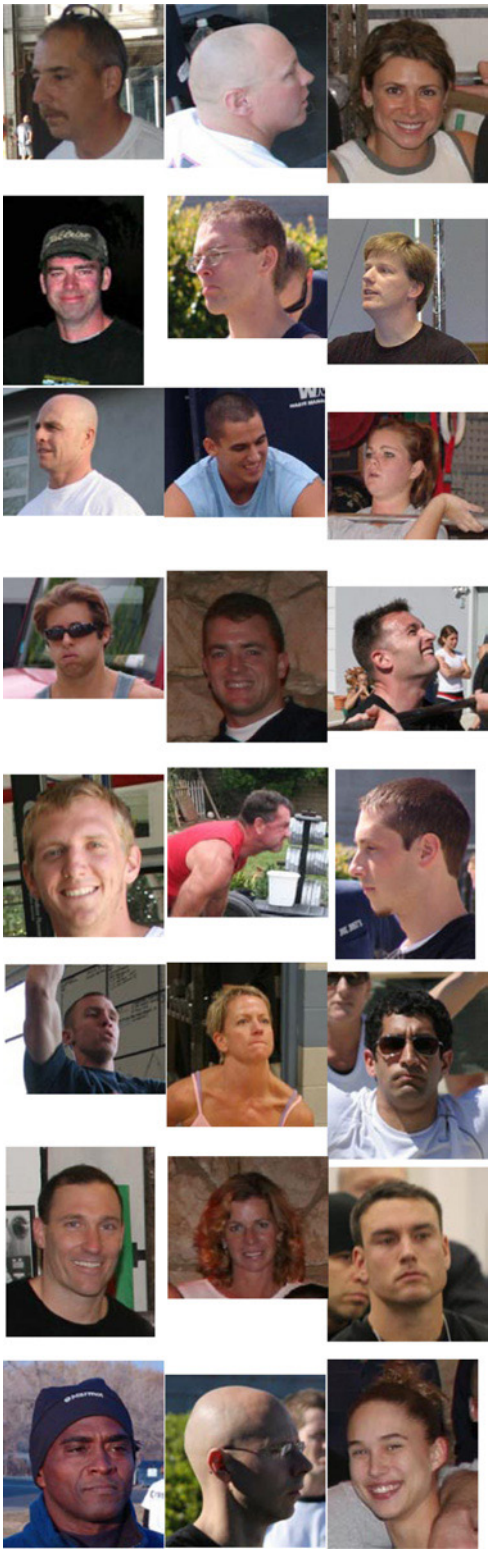
The idea of fitness programming based on constant variance of functional exercises executed at high intensity came from us. All the following innovations came directly from our clients:

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- Getting our own facility
- CrossFit Journal
- Seminars and certifications
- Website
- Registering the CrossFit.com domain name
- Videos and DVDs
- CrossFit store
- T-shirts
- Blog format for the website
- Affiliate program
- Message board
- Moderation of the message board
- CrossFit FAQ
- CrossFit Live



Everything that has followed the initial spark of the programming concept has been a direct response to the repeated demands, requests, and pleadings of people who do CrossFit. It is also CrossFitters who will continuously develop and refine the CrossFit model as we continue our commitment to making co-developers of the best coaches, trainers, athletes, and thinkers in fitness. We are an open-source fitness program.

As stewards of this community we are committed to providing improved infrastructure, tools, and services to support CrossFitters everywhere.

Infrastructure

Keeping the site up is paramount. Our cumulative downtime in five years of operation is less than several hours. CrossFit.com has survived floods, roof leaks, and power outages when hosted in our garage and company and equipment failures when hosted professionally. With unusual luck and the dedication of tireless friends, and while hop-scotching from one server to another (six moves so far), we've not missed a workout in five years. The other constant has been increased traffic on the site.

In April of 2003 we unveiled a redesign of CrossFit.com. The remodel featured a professional design, new message board, and weblog architecture powered by Moveable Type. Brian Mulvaney had been goading us toward the blog format for over a year. It was Brian's persistence on the subject of blogging that led us to the view that websites with dynamic front-page content that formed community would thrive while others would be relegated to billboard status.

It was the blogging structure and spirit of the new site that excited the need for more and better media. Larger photos and more and better videos, have proven themselves to be powerful community building and fitness driving tools.

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This summer we put CrossFit.com in the hands of professional IT care. Jim Roe, our new IT guy, is a veteran of high-traffic mission-critical site management. We are, for the first time, not just maintaining a website but also planning and building infrastructure for future growth and traffic.

As well as accommodating more traffic, building bigger machines with bigger, faster pipes gives us sufficient economy of scale to reduce costs for affiliates to produce high-bit-rate media.

Moveable Type upgrades and plug-ins are going to enable us to e-mail the WOD and allow everyone to post their comments to the WOD blog via e-mail. We have a long list of fixes and modifications slated in 2006 for the Moveable Type interface.

Two other additions to the site are scheduled for early 2006. First is the new CrossFit message board. Lynne Pitts will be moving us from our current slow and overloaded Discus message board to vBulletin in a move that will support a more robust and feature-packed platform. The move from Discus to vBulletin is as big a step as moving from the first board to Discus was. Lynne continues to be a CrossFit pillar.

Also slated for early 2006 is the CrossFit Fitness Wiki. The CrossFit community includes scores of subject matter experts whose authority is nearly matched by the color and power of their expression. In our Wiki, authority, authenticity, and color will be valued over comprehensiveness and breadth. Expect articles like "Defense from the Front Seat of a Car," "Fitness Advantages of Single-Speed Bikes," "The .308 Rifle," "The Overhead Squat for Core Strength", and "Freezing to Death." The CrossFit wiki will be a prominent place to showcase and develop articles worthy of permanent and very public display.

Complicated network

CrossFit.com is at the center of a fitness revolution. The CrossFit website, the CrossFit affiliates, our friends, and our seminars form a complex and efficient network of support, expertise, experience, education, camaraderie, and fun. This network presents a viable challenge to the traditional fitness and training culture and industry.

Thousands have come to CrossFit.com and found a much better way to work out. Most of these same people have found their fellow CrossFitters to be intelligent, engaging, fun, and multidimensional. Through seminars, workouts, e-mails, and phone calls, many, many of us have made new and strong friendships. The hundred or so people involved with the affiliate program are discovering the unmatched satisfaction and excitement found through teaching and sharing fitness with others.

This is indeed a revolution.

◇

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Professional Training

Greg Glassman

I am a fitness trainer. My practice is more than just a job; it is my passion. My clients are my top priority and their successes are my life's work-I am a professional.

On the surface, my job is to shepherd my athletes (I view all my clients as athletes regardless of their age or ability) toward physical prowess, but I recognize a purpose to my efforts and an impact on my athletes that transcends the physical. I view training as a physical metaphor for habits and attitudes that foster success in all arenas. I stress that point to all who train with me and I know I've been successful only after they bring back concrete examples.



The lessons learned through physical training are unavoidable. The character traits required and developed through physical training are universally applicable to all endeavors. Perseverance, industry, sacrifice, self-control, integrity, honesty, and commitment are best and easiest learned in the gym. Even clients who have found spectacular success in business, sport, war, or love find their most important values buttressed, refined, and nourished in rigorous training. Being a professional, I believe that my competency is solely determined by my efficacy. My methods must be second to none. Accordingly, fitness trends and fashions are distractions, not attractions. To the extent that my methods are often unconventional, unaccepted, or unique, they reflect the margins by which I dominate my industry, and I take those margins to the bank. A trainer who lusts for popular approval is chasing mediocrity or worse.

Committed to unrivaled efficacy, I've often had to develop new tools and methods. This cannot be done without study and experimentation; consequently, a lot of my work is done not in the gym but in books and scientific literature and in communication with other trainers and coaches.

My competency is determined by my efficacy, which is ultimately determined by my athletes' performanceperformance that must be measured. Competition,

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testing, and recordkeeping let me know the difference between merely looking or feeling good and actually being good at what I do.

My commitment to my athletes is clearly expressed and perceived in our first meeting. I am all theirs. They are the object of my focus and the focus of my conversation. They come back not because of my physical capacity but because they believe in my capacity to develop theirs. World-class athletes rarely make world-class trainers.

I understand that the modern and near-universal trend of skill-less and low-skill programming delivers inferior results and makes cheerleaders of trainers. I'll have none of it. I have to understand the mechanics, cues, and techniques of complex movements and to be able to teach them to others. I bring a skill set to my training that scares off most trainers.

Keeping up with my athlete's progress demands that I continue to refine and advance my understanding of advanced skills. If a trainer's clients aren't testing the limits of his knowledge, he's not doing a good enough job with them. The master trainer is eager and proud to have a student exceed his abilities but seeks to delay it by staying ahead of the athlete's needs rather than by retarding the athlete's growth.

Because I want my clients' training experience to transcend the physical realm, I am obligated to understand their jobs, hobbies, families, and goals. Motivating clients to transcend fitness requires that I be involved in their lives. This isn't going to happen without my being both interested in them and interesting to them.

Being a voracious reader of books, newspapers, and magazines, I have no shortage of conversation, ideas, and knowledge to share, and so you'll find me at my clients' parties, weddings, and family gatherings. Indeed, I am a personal friend to nearly every one of my clients. This is extremely gratifying work and often emotionally charged, but that's all right because I am an integral part of my athlete's lives, and life is full of laughter, tears, and hope.

Our friendship, the fun we have, and the frequency of our contact, coupled with the scope of fitness's impact and the technical merits of my training, contribute to a professional relationship with my clients that they value uniquely.

In appreciation, they do all my marketing. I don't advertise, promote, or market. I train very, very well. The more clients I get, the more clients they bring. I don't have time for promotion; I'm too busy training.

If a trainer's clients aren't testing the limits of his knowledge, he's not doing a good enough job with them.

Greg Glassman is the founder of CrossFit, Inc. and CrossFit Santa Cruz and is the publisher of the CrossFit Journal. He is a former competitive gymnast and has been a fitness trainer and conditioning coach since the early 1980s.

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Scaling Professional Training

Greg Glassman

The standards expressed in "Professional Training" in this issue—unyielding commitment to client and efficacy—have guided everything that Lauren and I have done. More than just the backbone of CrossFit's strength and successes, it has been, we believe, the primary reason for our success.

Using this template we built a practice that kept us both busy from roughly 5:00 to 10:00 a.m., Monday through Saturday. That schedule produced a low-six-figure income, which is really amazing given that we got to work together, with our friends, having a positive impact on people's lives, and keep afternoons free for family, recreation, and study.

Training with the attention and commitment that we bring to our practice, though fun and immensely rewarding, is also draining, and five appointments per day is about all we could handle without an unacceptable drop in energy, focus, and consequently, professional standards.

Eventually, the demand for our training exceeded the time we were professionally able or willing to allot. In an effort to accommodate more athletes, we began to hold group classes.

We had used group classes to train some of our athletic teams and everyone loved them, trainers and athletes alike. The social dynamic of group classes is extremely powerful. Run correctly, they motivate an athletic output that is only rarely matched in one-on-one training. The competition and camaraderie of the group classes motivated our line "Men will die for points" and the recognition that CrossFit is "the sport of fitness."

Group classes also dramatically increase training revenues!

There are, however, two drawbacks to group classes. The first is space—more athletes require more space to train, but, fortunately, the space required to train ten people is not ten times that required for one, and space adequate for one athlete can serve three or four athletes well.

The second drawback is that the reduced trainer to trainee ratio can dilute the professional training standards that we've embraced.This natural dilution can, however, be compensated for by the trainer's development of a skill set that is only very rarely found.

To run group classes without compromising our hallmark laser focus and commitment to the athlete, the trainer has to learn to give each member of the group the impression that he is getting all the attention that he could get in one-on-one training, and that requires tremendous training skill.

We've seen this skill fully and adequately developed by only one path—gradually migrating from one-on-one to group sessions. The trainers who are running group classes without growing into them are typically not working to the professional training standards that we've described. They also seem to have an inordinate difficulty filling their classes.

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This is exactly how Lauren and I built our group classes. After working for years at the limit of our one-on-one capacity, we started accepting new clients by doubling them up with other one-on-one clients to form one-on-two appointments.

We introduced the shift to group classes by telling the existing one-on-one clients that we had good news for them: "Your training rate is going to go down and we're going to introduce you to a new friend." Where there was resistance to sharing the time we asked for a trial period. It went swimmingly well.

We structured payment so that a client who was paying, say, $75 per session would now be paying only $50. This drives the trainer's hourly revenue up and reduces the clients' costs per session. This prompted many to come more often. When our schedules filled and it became necessary to bring a third person to each group we brought the individual rate to $40 per session and again the trainer's hourly rose and the client's costs fell. With the addition of each new athlete to the session, the rates fall for the athlete and rise for the trainer, and it all works perfectly unless there's a perceived reduction in attention.

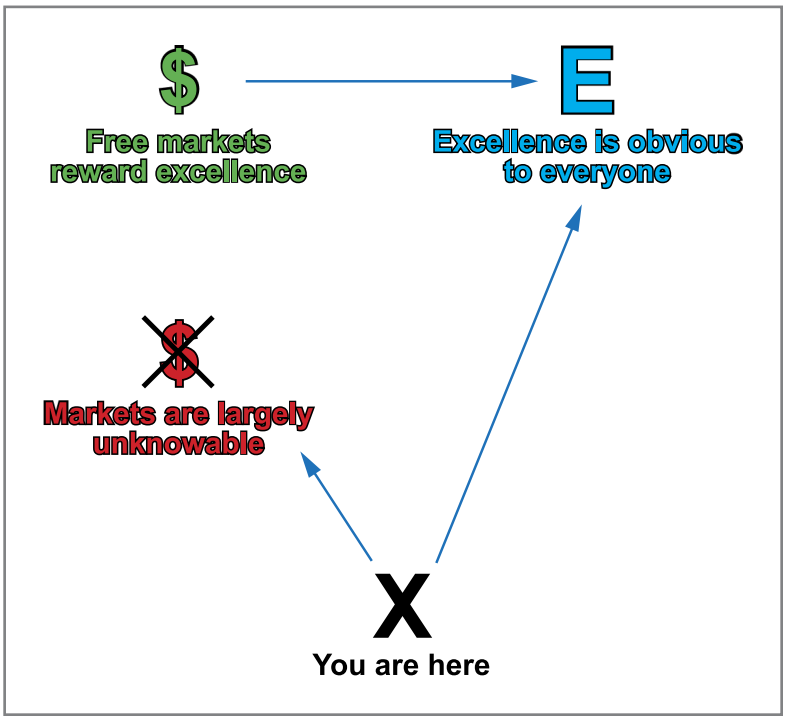
All the demands on the trainer skyrocket in this situation however. Attention, enthusiasm, voice projection, and engagement all have to escalate. It is an acquired skill—an art, really. Our goal is too give so much attention and "in your face" presence to each participant that each is actually grateful that he didn't get more attention. The essential shift is that the level of scrutiny and criticism is ratcheted up along with the rate of praise and input for each client. The trainer becomes extremely busy. There's no way a new trainer can walk into this environment and do well. (Imagine the decline in standards for those trainers who are participating in their classes while trying to lead them. We see this too often, and the training is always substandard.)

Within two years Lauren and I had morphed our one-on-one practice to all group classes without increasing the number of hours we worked each week, although we both kept a couple of choice one-on-one clients. We charged $15 per class and averaged ten to fifteen athletes per session.

This substantially raised our income. It also gave a much-noticed boost to the stability of our practice. Seasonal fluctuations due to summer and Christmas vacations largely disappeared. With a one-on-one practice, when three clients you see two or three times per week are, by coincidence, on vacation simultaneously, income takes a hit. Not so with group classes.

At the same time we started converting our practice from one-on-one to group classes we launched CrossFit.com. The launch of the website was motivated by the same commitment to client and efficacy that motivated our training. We were looking not to increase our revenues but to favorably impact more people with our training. The difference may seem inconsequential, but the public clearly knows the difference.

The group classes, the website, this journal, our seminars, and our affiliate program were all introduced to bring more quality training to more people. Each of these



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additions also increased CrossFit's value for everyone involved. It was our original one-on-one clients who initially came to and benefited from the group classes, subscribed to the journal, visited the website, and attended the seminars. Every CrossFit expansion has served the entire community.

Lauren and I, and CrossFit, are in pursuit not of money but of excellence. The difference, we believe, is the difference between success and failure. The pursuit of excellence is the heart of our business plan.

Money is, for many, elusive because markets are unknowable. But while markets are unknowable, excellence is obvious to most everyone, especially free, and large, markets.

If you can accept the three premises that:

1. markets are largely unknowable *3 of 3*
2. excellence is obvious to everyone, and
3. free markets reward excellence

it becomes obvious that the most effective business plan comes from achieving excellence and letting the market bring the money to you. The efficiency and effectiveness of this paradigm is breathtaking.

We've used the pursuit of excellence to guide our every move. For instance, when we were considering the last expansion of CrossFit Santa Cruz we couldn't determine whether it would be financially feasible or not. The variables were too numerous and the assumptions too uncertain to convince any accountant of the wisdom of expansion, but when we asked the simple question, "Will it improve the quality of the programming and the training experience?" the answer was a resounding "Yes!" On expansion, the CrossFit Santa Cruz numbers tripled within six months and the extra space allowed for some refinements and additions to our programming that wouldn't have been possible otherwise.

As our seminars, journal, website, and affiliate program grew, we handed off the group classes to a new generation of CrossFit trainers who now cover most of the overhead costs of CrossFit Santa Cruz. This has afforded Lauren and me time and opportunity to commit more energy and resources to new projects that support and develop the CrossFit community.

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The Scoop and the Second Pull

Greg Glassman



Olympic weightlifters have been found to have higher vertical leaps and quicker 25-meter sprint times than any other athletes, including Olympic high-jumpers and sprinters.

The technical explanation for this is that the weightlifters have better "speed strength" than any other athletes. Speed-strength is defined as a combination of starting strength (ability to fire many muscle units instantaneously) and explosive strength (ability to keep these motor units firing once turned on).

The more useful explanation as to why they can out sprint and out leap all others is, quite simply, because they weightlift. (Weightlifting, remember, is the sport of Olympic lifting: the clean and jerk, and the snatch.)

So, weightlifting is unsurpassed in developing lightning-quick athletic movement and has enormous carryover to all explosive sport.

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The Scoop and Second Pull (continued...)

The Olympic lifts are complex compound movements, but we can drill down to one little piece of the lifts that is generating most of the speed strength – the second pull.

The "first pull" of the clean is essentially a deadlift with the shoulders forward of the bar in the setup. As the bar comes off the ground and travels along the shin, the torso's angle of inclination remains constant.

As the bar passes the knees, the athlete rotates his torso until it is perpendicular to the ground without elevating the bar; this re-bends the knees some and is called the "scoop" or "double knee bend."

At the instant the torso is perfectly erect, the hips and legs are violently extended. This is the "second pull." The second pull puts the trajectory of the athlete and bar directly upward.

When the torso is perpendicular, the forces on the spine are entirely compressive and there are essentially no shear forces acting. Only from this posture can we effect maximum hip-leg extension power.

If the second pull were initiated with the torso forward-inclined, the spine may not withstand the shear force of the violent hip and leg extension. It is that powerful.

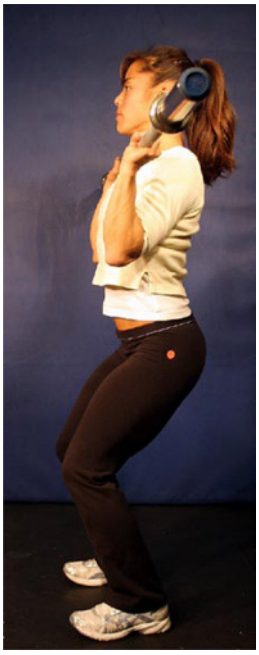
The second pull is so powerful that without a hook grip, where the thumb is held tightly against the bar by the fingers, the grip cannot be maintained.

The setup of the hip, legs, and torso for the second pull, readied by the scoop, is identical to the bottom position of the dip in the "dip-drive-press" cycle of the push-press or jerk.

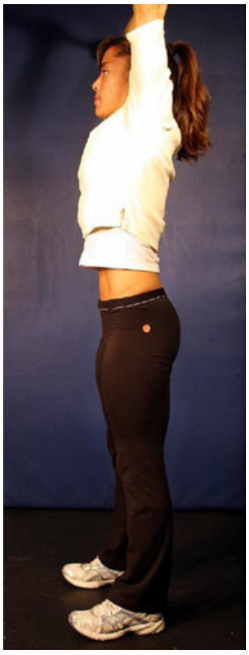
We teach the feel and posture for the launch point of the second pull by having the athlete find the bottom of the dip in the push-press and then, without moving anything except the arms, bring the bar down from the shoulders to the hang and back several times to demonstrate the identical hip, leg, and torso position used for both the second pull and the drive of the push-press.

The depth of the dip is determined by finding where the athlete can maximally accelerate the bar on the drive without dropping the chest at all going up or down. This is generally about six to eight inches.

Explosiveness is a learned phenomenon. Speed-strength, being a compilation of speed and power, is developed through both training and practice.



In the bottom of the "dip" of the push-press, the torso is upright.



Completion of the push-press.



At the beginning of the second pull, the torso is upright. Notice, this is the same posture of the dip of the push-press.



Completion of the second pull.

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By contrast, coordination, accuracy, agility, and balance are developed through practice alone while cardiorespiratory endurance, stamina, flexibility, and limit strength are developed largely through training.

This has two direct implications. First, when the technique of the scoop and second pull "click" for the athlete, the return in performance can be immediate. Second, absent the precise neurological stimulus required of speed-strength, it will not fully express.

The violent hip-leg extension of the second pull has great application to explosive sport movement, but those sporting movements are not going to develop maximal hip-leg explosiveness.

Only weightlifting can develop this explosiveness due to the unique posture and dynamics of the second pull, though fans of the Swiss Ball, Pilates, and kettlebell training claim otherwise.

The kettlebell exercises (snatch, swing, and clean), while excellent for developing aerobic and anaerobic strength endurance, are inadequate to the task of developing speed strength.

We cannot explosively extend the hip and leg unless the torso is upright. With the kettlebell exercises the torso is upright only after the hips and legs are fully extended. This line of action precludes the explosiveness of the second pull.

The kettlebell movements are really first pulls to full extension – no scoop, no second pull, and limited power.

We must lift heavy (dead, squat, bench) to optimally develop limit strength, and we can use kettlebell training (snatch, swing, clean) to develop aerobic and anaerobic strength endurance, but we must train and practice the Olympic lifts if we want to develop explosiveness.



Scoop and second pull

a. Annie rises with a fixed angle of inclination and as she passes the knees…
b. her torso rotates to perpendicular after which she…
c. can violently extend her hips and legs…
d. to triple extension.

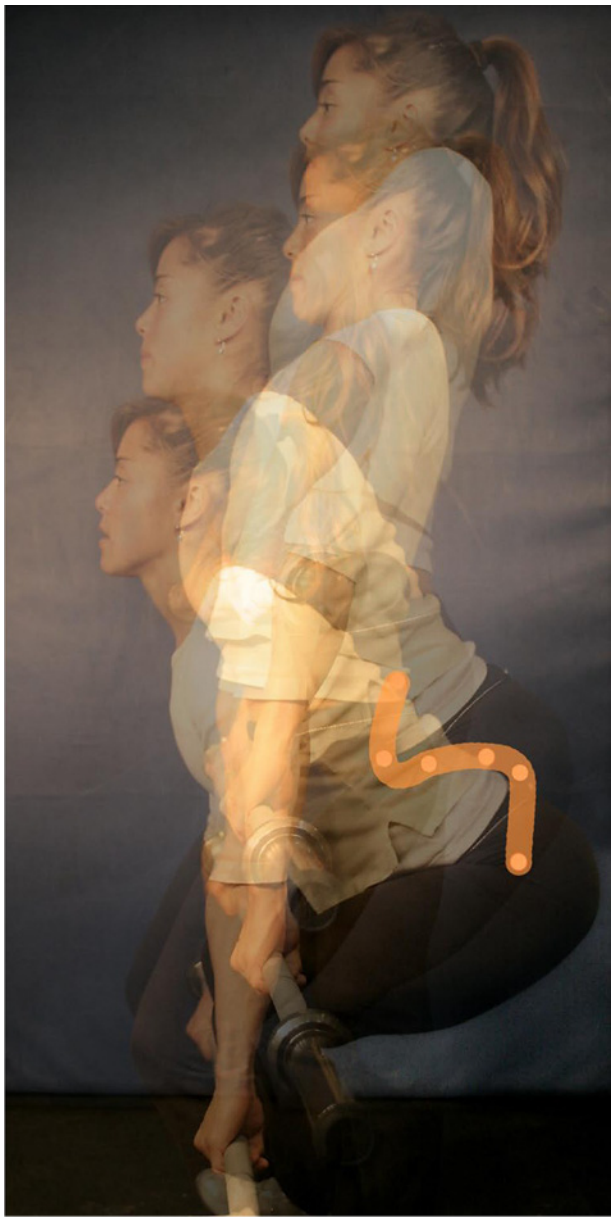
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The trace follows Annie's hip through a dumbbell swing. Never is the hip's trajectory directly upward and so the hip-leg extension will be, relative to the second pull, low-powered, no matter how hard the hip is thrust.



The trace follows Annie's hip from the end of the first pull, to the scoop, and through the second pull. The horizontal sweep of the trace is the scoop, whereas the vertical components are the 1st and 2nd pull. You can see where the term "scoop" comes from.

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Validity of CrossFit Tested

Greg Glassman

Last year the Royal Canadian Infantry School, CFB Gagetown, New Brunswick, Canada, tested the validity of the CrossFit concept against the extant Canadian Army fitness program (AFM).

U.S. and Coalition Forces personnel can contact Coach GregGlassman(greg@crossfit.com)formoreinformation about the trial or CrossFit implementation, or to contact the Canadian Infantry School CrossFit Cell.

We want to thank the officers of the Canadian Infantry School and Instructors from PSP (Personnel Support Programs) for their incredible professionalism, warm hospitality, and commitment to state-of-the-art military physical training.

The summary and tables that follow were excerpted from the final report of the trial.

Royal Canadian Infantry School Army Fitness Manual/ CrossFit Trial Results

- In March 2005 the Canadian Infantry School was authorized to conduct a physical fitness trial that would test the validity of the CrossFit concept using the AFM as the baseline model.
- CrossFit develops the same aspects of fitness as the AFM - aerobic conditioning, muscular strength/ endurance, flexibility, and power.
- Utilized a different modus operandi than traditional military fitness program.

Testing Protocols

The effectiveness of the two programs was gauged using the following measures:

- Physical testing - PT test and obstacle course
- Student perceptions of the program
- Injury rate during the trial
- Testing was conducted at the beginning and end of PT phase
- One group, DP 1.2,final crse for infantry officer prior to posting to a regiment and assuming command of Platoon, seven weeks of training
- Other group, CAP, 1st Army course for land component officers, eight weeks of training
- Quantifiable success measure was the improvement score between the first and second test.
- Student perceptions were gauged by questionnaire
- Injuries were recorded through CF medical system and course records

PT Test Events

- Sit-ups - max in two minutes
- Vertical Jump - two minutes for two attempts
- Push-ups - max in two minutes
- Deadlift - max reps in two minutes, 2 X 40 lbs dumbbells
- Pull-ups - max reps in one minute
- 2.4 km run - outdoor course

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Obstacle Course Test

- Individual performance for fastest time
- Three attempts per obstacle without one minute penalty
- Dress CADPAT, Kevlar, and gloves *2 of 4*
- CAP: 19 obstacles
- DP1.2: 23 obstacles
- Designed to gauge the physical capacities of the students across a wide range of general physical skills.
- Developed by PSP and Inf School
- Used AFM "fitness checks"
- Each test stand supervised by PSP
- Staff evaluated only one test stand to ensure standardization
- Students identified by numbers only

Student Perceptions

- DP 1.2 crse provided input
- Questionnaire conducted after completion of all physical testing
- Purpose was to provide the candidates with an anonymous forum to obtain their feedback, without influence, on the PT program they were utilizing
- General rating scale and open-ended questions were used

Questions

- Program Safety
- Group Cohesion
- Field Applicability
- Field Physical Preparation
- Program Challenge
- Program Enjoyment
- Exercise Difficulty
- Group Applicability
- Ease of Logistics
- Fitness Improvements
- Fitness Program Comparison

Injury Rate

- Important measure of program utility
- Data obtained for Return to Unit (RTU) students
- Must have completed initial PT test
- Injury during PT, or a physical activity in garrison or in the field
- Chronic injuries were assessed as "non-attributable and attributable"
- Any injury not attributed to physical training was not recorded, ie ear injury

Physical Test Data -- Means

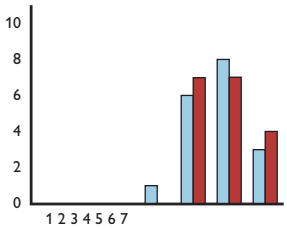
	SIT-UPS		VERTICAL JUMP (cm)		PUSH-UPS		SQUATS		PULL-UPS		2.4 KM RUN (min:sec)		OBSTACLE COURSE (min:sec)	
	AFM	CF	AFM	CF	AFM	CF	AFM	CF	AFM	CF	AFM	CF	AFM	CF
CAP														
Start	61.9	57.6	46.4	42.6	31.9	29.4	43.8	40.3	5.6	4.5	12:32	14:10	7:21	8:33
End	60.9	61.2	45.2	42.2	36	35.1	51.3	55.2	6.2	4.5	11:54	12:33	6:03	7:10
Difference	-1	3.6	-1.2	-0.4	4.1	5.7	7.5	14.9	0.6	0	-0:38	-1:37	-1:18	-1:23
DP1.2														
Start	72.6	71.9	46.5	45.5	41.8	36.1	48.5	48.1	7.4	5	12:24	12:12	11:30	12:37
End	74.9	78.1	47.1	44.8	45.4	43.1	54.2	61.2	8.7	6.9	11:24	11:10	10:37	11:22
Difference	2.3	6.2	0.6	-0.7	3.6	7	5.7	13.1	1.3	1.9	-1:00	-1:02	-0:53	-1:15

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Validity of CrossFit Tested (continued...)

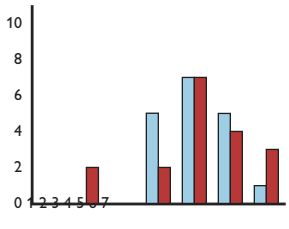
Program Safety:

I feel the training I participated in was safe.



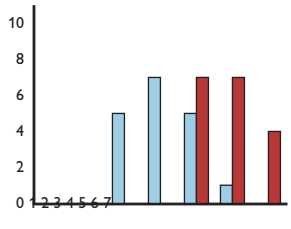
Group Cohesion:

I feel the cohesion of my platoon was increased during the physical training sessions



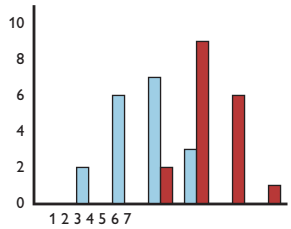
Field Applicability:

I feel the activities performed during the physical training sessions were related to the types of tasks performed in a field environment



Field Physical Preparation:

I feel the physical training sessions prepared me for the field

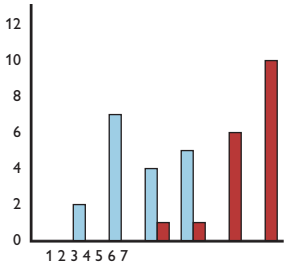


1 = very strongly disagree 4 = neutral 7 = very strongly agree vertical scale = number of people

AFM CrossFit

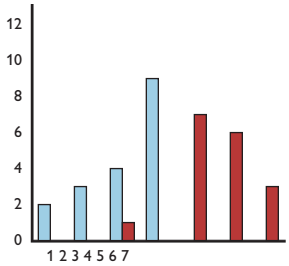
Program Challenge:

The physical training sessions were challenging



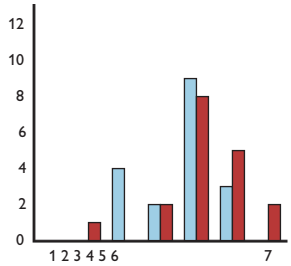
Program Enjoyment:

I enjoyed performing the physical training sessions



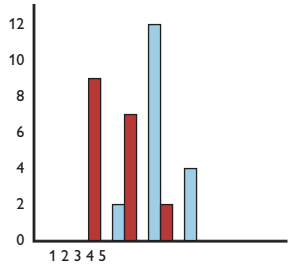
Group Applicability:

This training is useful as a group oriented physical training program



Exercise Difficulty:

The movements in this program were difficult/easy to learn

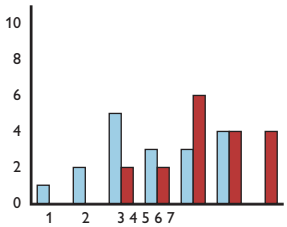


1 = very strongly disagree 4 = neutral 7 = very strongly agree vertical scale = number of people

1 = very difficult 3 = neutral 5 = very easy

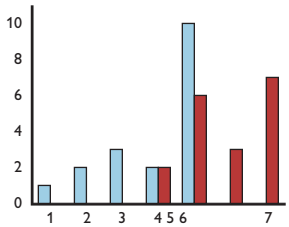
Ease of Logistics:

Logistically, this program is realistic for army group physical training sessions



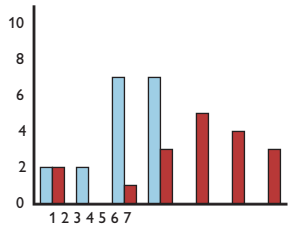
Fitness Improvement:

I am in better physical condition now than at the start of the physical training program



Fitness Program Comparison:

I have achieved greater physical fitness gains using this program than with other programs I have used in the past



1 = very strongly disagree 4 = neutral 7 = very strongly agree vertical scale = number of people

AFM CrossFit

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AFM Program

- Conducted IAW the "12 week Army Fitness Program"
- Workouts included warm up, exercise (40-50 min), and cool down
- Supervised by course instructor *4 of 4*
- Workouts consisted of:
- Aerobic intervals
- Continuous aerobic training
- Strength and power training
- Optional day (weight-load marching, sports, or make up day)

CrossFit Program

- Based on *CrossFit Journal* and CrossFit site
- Workouts included warm up, exercises (15-25 min), and cool down
- Remainder of workout either used for skill instruction, external object movement, or body control
- Supervised by course instructor
- Workouts consisted of:
- Skill training (weightlifting or bodycontrol)
- Single skill training (MAT, O-lifting, weight load marching)
- Multiple skill training (run, weight, body control)

Summary of Statistical Analysis

- Data suggests that CrossFit induced greater leg and core strength
- CrossFit induced equal or greater cardiovascular improvements while performing less than half the running
- In no exercise did the CrossFit groups show less significant improvement than the AFM groups

Explanation of Results

Results suggest CrossFit groups either matched or out performed the AFM groups

Injury Results and Analysis

- AFM 6 Attributable injuries
- CrossFit 2 Attributable injuries

Possible Bias

- Requirement to have CrossFit certified instructor conduct training as well as serving as Trial Officer

To mitigate the possible bias:

- PT testing was jointly developed by CFB Gagetown PSP Staff
- PT testing was supervised by PSP staff
- Events for the PT test were the AFM fitness checks (bias in favor of the AFM)
- Obstacle course was not an advantage to either group
- Neither group was tested on a CrossFit workout
- Data was collected, entered, processed by a third party

Conclusion

- The CrossFit group made equal or greater strength gains than the AFM with shorter workouts
- The CrossFit group obtained equal the aerobic gains while performing less than half the running
- The increased education level of the CrossFit instructors assisted in the performance of the CrossFit group

Greg Glassman is the Founder of CrossFit, Inc. and Crossfit Santa Cruz and is the publisher of the CrossFit Journal. He is a former competitive gymnast and has been a fitness trainer and conditioning coach since the early 1980s.

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Single Speeds

Mike Evans, with Introduction by Greg Glassman



There are few subjects that match bicycles and bicycling for inspiring a broad range of interest, controversy, and passion. Physics, physiology, law, culture, sport, history, and engineering all come to play for the tribe of cyclists.

Invented in 1817 by Karl Drais Saverbronn, 46 years after the first car, the bicycle is a miracle of muscular and thermodynamic efficiency.

No means of locomotion, mechanical or animal, can match the thermodynamic efficiency of the bicycle.

Thermodynamic and muscular efficiency combine to make the bicycle peerless in producing long-term, high-powered human output.

With the invention of the derailleur in 1889 the cyclist was then able to quickly change gearing on the fly and hold much of this efficiency over varied terrain, speed, and wind conditions.

The human body has a narrow band of power output, and bike gear ratios are chosen to maximize speed or

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distance for the minimum effort. This is the advantage of multi-speed bikes – maintaining a constant cadence (pedal rpm) and load to maximize performance.

Performance is optimized with multispeed bikes by selecting gearing that allows for both maximum stamina (localized muscular endurance) and maximum cardiorespiratory endurance for any given power output. This optimization, at both high and low power outputs, occurs at relatively high cadences.

Even high, unsustainable, power outputs like those common to sprint cycling are found at high cadences.

The CrossFit charter of "functional movement, high intensity, and constant variance" encourages combinations of cadence and load not found or commonly accepted in either sprint or endurance cycling. High load, low cadence cycling is almost heretical in cycling communities.

For CrossFitters, the value in bicycle training is only peripherally or remotely tied to improved cycling efficiency and performance. More important is the training opportunity to vary the load and velocity matrix at all power outputs. (Interestingly a little noticed study commissioned by StairMaster Corporation in the mid 90's concluded that regularly varying the load-velocity matrix during the course of workouts was a uniquely potent stimulus to GPP.)

We could pull this off with a multispeed bike by regularly and deliberately selecting inefficient gearing, or shifting randomly, and CrossFitters living in flatlands may find this to be their best option, but the same effect can be found with less mental energy by riding a single-speed bike on undulating terrain.

There is absolutely NO advantage to either enjoyment or fitness in multispeed bikes. Accepting this, the single speed enthusiast has:

1. Traded efficiency for greater fitness
2. Fully embraced the sting of the hill climb
3. Found a more physical, whole body, technical, or "athletic" ride
4. Uniquely increased his strength through bicycling
5. Discovered the thrill of a simpler, freer, more elegant riding variant

At CrossFit Santa Cruz we recently converted our fleet of mountain bikes to single-speeds. Our mountain bikes were originally seen as a vastly more economical, versatile, and enjoyable alternative to stationary bikes, but we quickly learned that too many athletes had no idea how or when to shift, few admitted as much, and mandatory review and instruction on shifting didn't help. Nearly every use seemed to involve breakdowns, repairs, and too many walked bikes.

The first time I ever saw a singlespeed mountain bike was over 15 years ago. We were on a group ride and my friend Brent showed up riding one. I really thought he had lost his marbles as we rode the flat pavement out to the trails. He looked like a sewing machine at full RPM! As we hit the first dirt incline, Brent simply rode away from us and we didn't see him again until the top of the hill. Soon another friend acquired a single speed and started tearing our legs off on every ride. I quickly decided I had to have one.

Originally, to get a single speed, you had to take an old steel frame and weld on rear horizontal dropouts (figure 1) or buy a custom frame. Old aluminum frames can't be rewelded due to the heat treating process used to make them. The problem is that most bikes now come with vertical dropouts (figure 2) and it's impossible to get enough tension on the chain to make it operate as a single speed. Besides changing gears, the rear derailleur on geared bikes also acts as a chain tensioner. Luckily for me, I was able to purchase a used steel frame that I then took to a local frame builder and had modified for single-speed use.



Figure Horizontal drop-out

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Top to bottom:
Figure 2 - Vertical drop-out. Figure - The "Pain Pony" disguised as a spare cyclocross bike. Figure 4 - Fixed-gear bike. Look Ma, no brakes!

This bike became affectionately known as the Pain Pony (figure 3). I learned more about riding mountain bikes from this one bike than from all my other bikes combined. Single-speed riding is an effective teacher of technique. It will:

- Smooth out your pedal stroke. For years, European road pros have trained on single-speed (fixedgear) bikes in the off season to help redefine their pedal stroke (figure 4).
- Teach you where to place your pedals in technical situations.
- Make you acutely aware of the terrain or road in front of you.
- Teach you how to accelerate over the crown of hills.
- Tell you everything you ever wanted to know about momentum.
- Show you that you really can ride that technical section or hill without shifting into the granny gear or small chain ring.
- Force you to vary your rpm (crank speed) from the ridiculously low level of 30 rpm to the very high level of 130 rpm. (Sometimes while I'm climbing I feel like I'm on a Roman slave ship with some big bloke in the back pounding tempo on his drum.)

Single speeds are also great if you live or ride in a place with inclement weather; there are fewer parts to clog up and to wear out. Beside all of this, single speeds are just a blast to ride.

Nowadays you can purchase a complete single speed, as many manufacturers have smelled money and jumped into the fray. And there are a plethora of aftermarket manufacturers in the game now as well. You can now purchase components such as single-speed-specific hubs, wheel sets, crank sets, single-cog adapters for multigeared freewheels, and chain tensioning devices. The beauty of all this manufacturer involvement is that almost any bike in your garage can now be converted to a single speed.

The two most important things in building a single speed out of almost any geared bike are chain line and chain tension. Chain line refers to the angle of the chain between the front chain ring and the rear cog (figure 5). You want the chain as straight as possible, or, if you can imagine, exactly parallel to the rear wheel. The reasons for this are several. If the chain is angled between the front chain ring and rear cog, it will experience undue side load (figure 6), which will make the chain wear out sooner—or, worse yet, cause it to break. If the chain

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breaks under extreme load while standing, you could injure some very sensitive soft tissue! There are a lot of variables to setting a straight chain line depending on what system you use, but it basically involves using spacers to adjust the rear cog between the cassette lock ring and the end of the free hub (figures 7 and 7.5). On the front chain ring, you are basically limited to which side of the crank arm you want to run the chain ring. You most likely will have to buy chain ring bolts that are made for a single chain ring (figure 8).

Getting enough chain tension on a bike with horizontal dropouts is easy: just pull the rear wheel aft (back) and tighten the axle bolts or quick release. On a bike with vertical dropouts you will need some type of tensioning device. This could be an old derailleur, single-speed-specific tensioners (figures 15 and 15.5), rear singlespeed wheel hubs with an eccentric axle, or a custom singlespeed frame (with horizontal dropouts or with an eccentric bottom bracket - figure 9). Whichever tensioning device you use, make sure you get as much chain as possible to wrap around the rear cog (figure 10). When using a derailleur as a tensioner, I have had the best luck using a short-cage road one, but any derailleur will work. Using the proper chain length with a derailleur will pull the derailleur cage forward and at the same time achieve enough chain wrap.

You can also make a full suspension mountain bike into a single speed (figure 11). Full-suspension bikes, however, do strange things to chains. On my bike, when the suspension is fully compressed, tension on the chain is increased, which pulls the derailleur forward (figures 12 and 13). If you do decide to convert a full-suspension bike, cycle the suspension a few times and see what the chain and the derailleur are doing. On my bike if I were to make the chain too short and I fully compressed the suspension, I would run the risk of ripping the derailleur right out of the frame, causing catastrophic (read: very expensive) failure.

Gearing for a single speed is largely about where you live and ride. I won't go too far into it other than to say most single-speed mountain bikes run a gear ratio of 2 to 1. To determine the ratio, divide the number of teeth on the front chain ring by 2 to get the number of teeth on the rear cog. For example, a 34-tooth chain ring and 17-tooth rear cog is a ratio of 2 to 1. (A good ratio for a road bike is 2.94 to 1 [e.g., 48 teeth front, 16 teeth rear]). Your gearing may vary according to the terrain that you ride and personal preference.







Top to bottom:
Figure 5 - Straight chain line. Figure 6 - Bad chain line demonstrated on a geared bike. Figure 7 - Rear hub with spacers

Converting a bike doesn't require a huge number of tools but, unfortunately, several of the them are bike-specific. Not only that, but even bike-specific tools, such as crank arm removers, may be different from one generation to the next generation of the

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Left column top to bottom:
Figure 7.5 - Cog and loose spacers and spare cogs. Figure 8 - Chain ring bolt comparison. Figure 9 - Eccentric bottom bracket

Right column top to bottom:
Figure 0 - Proper chain wrap. Figure - Full suspension single speed. Figure 2 - Derailleur acting as chain tensioner being pulled forward as the suspension compresses. Figure - Derailleur acting as chain tensioner in normal position

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same component manufacturer. Also, tools can vary according to component manufacturer—e.g., Shimano vs. Campagnolo. My toolbox has grown immensely in the last few years because of this. If you are inclined to tackle a single-speed conversion project but don't have the proper tools, I suggest contacting any cyclist you know or the nearest cycling club or cycling co-op to see if you can use their tools. Working on a bike is not rocket science, but the parts are small and it is easy to overtorque and break them. Use common sense! If you are not mechanically inclined or can't find any tools, your local bike shop would likely be happy to help.

Tools needed (figure 14):

- Chain tool
- Chain whip
- Cassette lock ring tool
- Crank arm remover
- Metric Allen wrenches
- Pliers
- A nice degreaser would also be good. I suggest Dawn dish soap or Simple Green or some type of citrus cleaner for the tough stuff. You might as well clean everything while it's apart. (Do not soak the chain in Simple Green or citrus cleaner for very long, as this has been proven to weaken the side plates on the chain.)

As you may have noticed, I didn't mention any of the physiological aspects of riding a single speed. I will leave that to the professionals. I can tell you that riding a single speed is a blast because the bikes are lighter, much quieter (no missed shifts, no chain slap, and fewer cables and housing beating the frame), and insanely simple: just pedal! Maybe it's because most of us started on single-speed bikes when we were kids (BMX, Stingray, etc.) and it's a reminder of the freedom they signified.

Figure 4. Tools











Top to bottom: Figure 5 - Chain Tensioner. Figure 5.5 - The very nice Surly chain tensioner. It has a reversible spring inside the tensioner that will allow the tensioner to push up or down. Figure 6 - Remounting a cyclocross single speed during a race. Figure 7 - Cyclocross singlespeed.

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Links

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http://www.papimi.gr/zeromuscleefficiency1.htm

http://www.people.cornell.edu/pages/aed29/Bad_Mechanics.htm

http://www.scorcher.org/cmhistory/moralismvsutopianism.html

http://www.bicyclelaw.com/

http://www.cogsci.ed.ac.uk/~ira/illich/texts/energy_and_equity/node8.html

http://www.sheldonbrown.com/singlespeed.html

http://www.singlespeedoutlaw.com/issue5/links.shtml

For a nice inexpensive conversion kit, go to: www.nashbar.com or http://www.nashbar.com/profile.cfm?category=&subcategory=&brand=&sku=14063&storetype=&estoreid=&pagename=

For some of the finest bicycle parts made including a rear singlespeed hub with adjustable chain line and interchangeable gears, go to: www.chrisking.com or http://www.chrisking.com/hubs/hbs_sspeed.html and http://www.chrisking.com/hubs/hbs_sspeed_disc. html

For the unique rear singlespeed hub with articulating, eccentric hub, go to: http://www.whiteind.com/ Look for Eric's ENO and Eccentric ENO disk.

For a very fine chain tensioner that is reversible, go to: www.surlybikes.com or http://www.surlybikes.com/parts.html Look for 1X1 singleator.

For very fine custom singlespeed frames go to: www.huntercycles.com or rick@huntercycles.com and www.rocklobstercycles.com or paul@rocklobstercycles.com

If you want a complete bike go to: www.bianchiusa.com or http://www.bianchiusa.com/06_wuss.html

If you want a good deal on a fixed gear track bike (be very, very careful if you have never ridden one before!), go to: http://www.bikesdirect.com/products/windsor/thehour.htm

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The Grinder

CrossFit Operations Order #1, "CHAD"

Writer's Name

The Grinder: CrossFit Operations Order #1, "CHAD"

Introduction

The organization and format of this article may be confusing for some; it may appear to be written in a foreign language. However, to others—namely, military officers and senior noncommissioned officers—it will be instantly familiar and comprehended. "The Grinder" is produced following the NATO operations order format. An operations order (OPORD or Op O) is a directive issued by a commander to his subordinates in order to effect the coordinated execution of a specific operation (Ranger Handbook, SH 21-76). For this article, the operation or task is a group workout.

The five-paragraph NATO OPORD format, and annexes, are used to organize the commander's direction, to ensure a common operating picture, and to assist subordinate leaders in fully understanding the commander's intent and what results he wants the operation to produce—the end state. It is a logical, clear, and concise method of conveying a plan. The five standard paragraphs that make up the OPORD are: SITUATION, MISSION, EXECUTION, SERVICE SUPPORT, and COMMAND AND SIGNAL.

Because the CrossFit Journal is read by a wide range of military units in the United States and around the world, terms from the NATO glossary of abbreviations, AAP-15(2006), are used whenever possible to clarify directions. The primary audience for "The Grinder" is the military and law enforcement community. However, any agency conducting group physical training will find the content useful, once they get used to the format.

For an OPORD to be effective, it must 1) be constructed so that personnel understand the intent, their own tasks, and the context of those tasks; 2) inform personnel what effect they are to achieve and why it needs to be achieved (for the "Grinder", it is to achieve unit cohesion and combat fitness under fatigue conditions); 3) identify the resources required to execute the task; and 4) impose a minimum of control measures to ensure freedom of action and flexibility.

"The Grinder" is a direct result of the requests generated by last month's CFJ article "Large-Group CrossFit Training" for additional articles addressing platoon and squad combat fitness training.

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CFHQ
Santa Cruz, CA
USA

01 Jul 06

OPS 01

Operation Order 01 — OP GRINDER

Task Organization: Annex A

1. SITUATION

a. General.

(1) The contemporary operating environment facing coalition forces today is complex, diverse, diffuse, and lethal. It is an asymmetrical battle space that is extremely dangerous and constantly evolving. Coalition forces are required to conduct a wide range of tasks simultaneously within an area of operations. There has been an operational shift from the traditional "third-generation warfare" to the current "fourth-generation warfare" model. This evolution has produced an operational environment that focuses mainly on complex terrain such as mountains, built-up areas, and jungles. Due to the evolving threat facing coalition forces, military organizations have had to develop new doctrine, tactics, techniques, and procedures to be effective.

(2) Combat fitness and survivability is one of the critical areas currently being examined by coalition armies. Recent missions in Afghanistan and Iraq have shown that soldiers require real combat fitness to be effective on today's battlefield. Just as doctrine and tactics must be amended and enhanced to allow for success against these new threats, so must military fitness training.

(3) Last month's CrossFit Journal article "Large-Group CrossFit Training" has generated many requests from readers for future articles addressing platoon or squad combat fitness training.

b. Grinder's Intent.

(1) Purpose. The purpose of OP GRINDER is to produce group workouts that utilize the equipment commonly found within a military unit. The workouts will address both garrison and austere training protocols for platoons, squads, and fire teams. They will be scalable and flexible to allow for a wide range of utilization—to include troops conducting basic training through to elite combat operators. The format and language will be based on military organizations; however, this is just for ease of direction. The workouts are amendable to suit any agencies or organizations that conduct group physical training.

(2) Method. Initially, "The Grinder" will be produced periodically. However, based on demand from the military/LEO community, the column could

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become a monthly addition to the CFJ. It will provide a workout, to include direction, description, and graphic representation. Each "Grinder" will be produced in an Operations Order (Op O) format that all NATO personnel are familiar with. This will allow for a common operating picture, regardless of unit. To ensure a successful transition to future training, there will be "Be Prepared to" (BPT) or "Follow-on" tasks in the EXECUTION paragraph. This will allow leaders to use concurrent activity to prepare for the next workout. These preparations could include instructing and rehearsing skill moves such as the clean or overhead squat; conducting reconnaissance of required or potential future training areas, or obtaining specific logistics for the execution of the next phase of the workout. An example would be "BPT: conduct a workout requiring 1 x sandbag and 1 x .50 cal ammo can filled with sand per four man fire team, and a 400-meter running route. Troops will have to be competent with the front squat and deadlift to execute the next WOD (workout of the day)." The BPT tasks will set the conditions for success during the next month's workout. An annex will accompany the Op O to provide a graphic representation of the workout set-up and the locations of key personnel or equipment. The Op O will provide direction on the effects desired from the workout; however, it will be the leader's responsibility to determine how best to accomplish these effects based on his organization's skill level, available equipment, and location.

(3) End State. Units will be equipped, organized, and prepared to conduct individual and group combat fitness at the company, platoon, or squad level in garrison and/or austere environments.

2. MISSION

"CHAD": run 400m /25 deadlifts/ run 400m /25 thrusters / run 400m/25 front squats / run 400m /25 push-presses / run 400m

3. EXECUTION

a. Concept of Operations.

(1) Intent. Complete each of the prescribed exercises as quickly as possible in a safe manner. This is a "task-specific" team workout. The purpose of this workout is to develop cohesion and fitness under fatigue conditions while executing a simulated combat casualty evacuation.

(2) Scheme of maneuver. Each squad will be divided into two teams of four. Each team will have a stretcher, a water jerry can filled with water (45 lbs.), two .50-cal ammo cans filled with sand (50 lbs. each), a sandbag (50 lbs.), and a rock (45 lbs.). All the teams will start at the same time from the same location. They will load the sandbag, water jerry, rock, and one .50-cal ammo can onto the stretcher (total weight 190 lbs.) and run/walk 400m carrying the stretcher. When they return to the start point, each member of the team will secure a piece of equipment and do a

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specific exercise for 25 reps. The exercises are: deadlift, the two .50-cal ammo cans (one in each hand) for 25 reps, perform thrusters with the rock for 25 reps, front squat with the sandbag for 25 reps, and push press the water jerry for 25 reps. Once each member of the team has completed the 25 reps, they load the equipment back on the stretcher and complete another 400m run/walk. When they return to the start position again, each member will conduct 25 reps of another exercise with a different piece of equipment. This rotation will carry on until each member of the team has done all four exercises. Upon completion, each soldier will have done 25 reps of deadlifts, thrusters, push-presses, and front-squats and run a total of 2km (5 •'5f 400m).

(3) Main Effort. The safety of all personnel, and the development of unit cohesion through shared challenge and hardship.

(4) End State. The successful completion of all exercises by each individual in the squad, and the unit prepared to carry on with further training.

b. Coordinating Instructions.

(1) Team Organization. Squad leaders can organize the four-man team however they want. It is a leadership decision on how best to deploy each team to accomplish the mission. If the squads cannot be grouped into fire teams of four, add a fifth soldier to the team. The fifth exercise to be completed will be 25 burpees. For the 400m-casualty carry, the fifth team member can rotate into carrying the stretcher during the run.

(2) Scaling. The workout can be conducted in PT gear or full battle gear to include vests with plates, depending on the fitness levels of your soldiers. The four pieces of equipment selected—sandbag, water jerry, ammo cans, and rock—are for austere conditions. If you have the resources, you can use dumbbells or barbells. The weight of the equipment or number of reps can be increased or decreased based on the skill level of your troops. The weight of 190 lbs. to be placed on the stretcher will simulate the weight of a casualty.

(3) Scoring. The finish time is based on the combined time for the complete squad. Therefore, if Team A and B make up the first squad, and their times are 26:30 and 30:02, the squad's workout time is 56:32. The squad that has the lowest combined time wins.

(4) Follow-on Tasks. The next workout will require a 400m running route, pull-up bars, and M2 Bradley 25mm ammo cans filled with sand. The preferred ratio is one 25mm ammo can for each soldier; however, if this is not possible, one 25mm ammo can per three soldiers is acceptable. If you cannot obtain 25mm ammo cans, find something that weighs about 70 lbs. and can be lifted overhead: a rock, a barbell, a dumbbell, etc.

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4. SERVICE SUPPORT

a. Equipment Weights

Ammo Can Nomenclature	Quantity/Size	Type	Weight	Contents
Cart 25mm APFSDS-T	30 rds	PA125	70 lbs	Sand
Cart cal .50 4B/1T	100 rds	M2A1	50 lbs	Sand
Cart 5.56mm ball clip	910 rds	M2A1	30 lbs	Sand
Cart 7.62mm belt 4B/1T	220 rds	M19A1	20 lbs	Sand
Jerry can	20 liters	7240-21-852-5150	45 lbs	Water
Sand bag	14 in •'5f 26 in	8105-00-142-9345	50 lbs	Sand
Stryker tire and rim	1	2610-20-000-7697	aprx 350 lbs	NA

b. Equipment Requirements. Each 4- or 5-man fire team will require one rock (45 lbs.), one jerry can (45 lbs.), two .50-Cal ammo cans (50 lbs. each), one sand bag (50 lbs), and one stretcher.

c. Time Recording. One stopwatch and writing material to record each fire team's and squad's workout times.

5. COMMAND AND SIGNAL

a. Timer/Score Recorder. Only one timekeeper is required for all squads. This soldier will record the times of all the fire teams when they finish the workout. He is positioned at the start line/exercise area for command and control purposes. All fire teams begin the workout on his command. Once a fire team has completed all the exercises, they inform the timekeeper, who records all times.
b. Instructor/Coach/Safety. To ensure proper conduct of the workout, use of correct exercise form, and safety of execution, a designated member of the platoon can fill this billet. An injured soldier who cannot participate in the PT or another member of the company can also perform this duty. Although not preferred, the platoon leader or platoon sergeant can also serve in this key position, especially if the target training audience is the individual squads.

Annexes:

Annex A Workout diagram
Annex B Equipment
Annex C Exercises

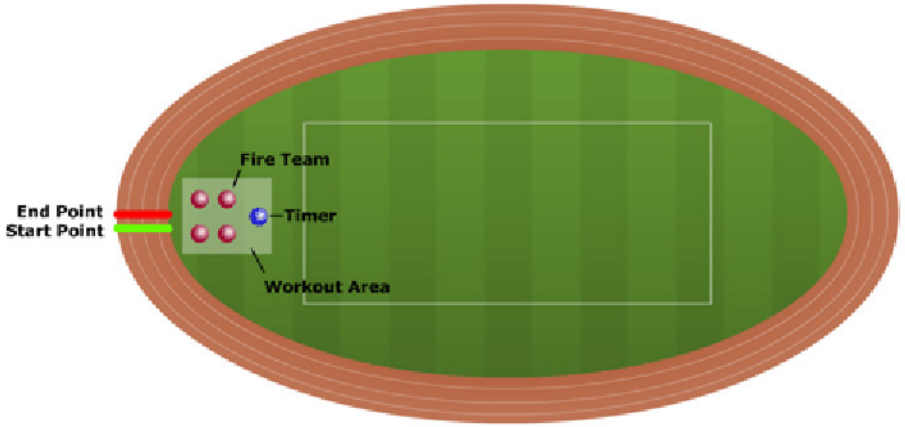
This workout is dedicated to LTC. Chad Buehring, US Army (SF) who selflessly gave his life to liberate the oppressed. Fair winds, Chad.

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Annex A Workout Diagram



"CHAD"
- 400m
- Deadlift x 25
- 400m
- Thruster x 25
- 400m
- Front Squat x 25
- 400m
- Push-Press x 25
- 400m

Annex B Equipment



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Annex B Equipment (cont'd)





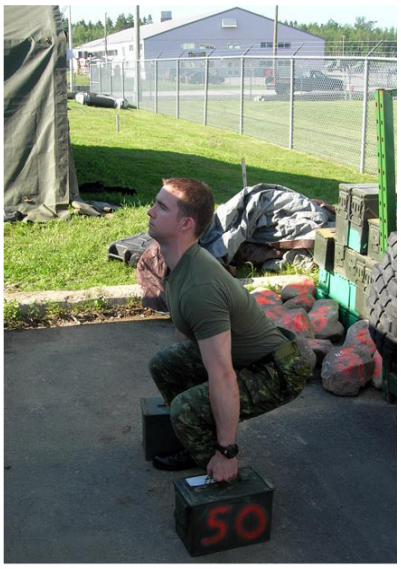






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Annex C Exercises





Deadlift





Front Squat

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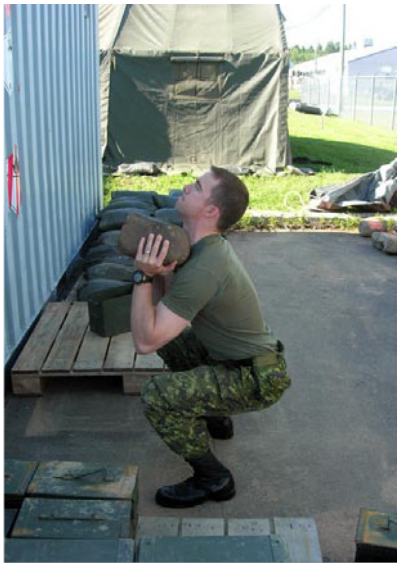
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Annex C Exercises (cont'd)





Push Press


Thruster

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The Grinder

CrossFit FRAGO #2, "CARLA"

CFHQ
Santa Cruz, CA
USA

01 Sep 06

OPS 03

FRAGO 02 to OPOrd 01 — OP GRINDER

Ref: A. OPORD 01 01 Jul 06

Task Organization: Annex A

1. SITUATION. No Change.

2. MISSION

"CARLA": 5 Rounds for time: Run 400m / 30 deadlifts / 30 sit-ups

3. EXECUTION

a. Concept of Operations.

(1) Intent. Complete five rounds of the exercises as quickly as possible in a safe manner. This is a four-person team "task-specific" workout. The team's time ends when the last member of the team completes the workout. The purpose of this workout is to develop cohesion and combat fitness under fatigue conditions through shared hardship, challenges, and competition.

(2) Scheme of maneuver. Each squad will be divided into two teams of four or five. Each team will have two .50-cal ammo cans (50 pounds each) per soldier. This is the preferred equipment ratio. However, the minimum requirement would be four .50-cal ammo cans per four-person team. All the teams will start at the same time from the same location. Individuals of 5

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will run 400m, returning to the start point. Upon completion of the run, they will conduct 30 deadlifts with the .50-cal ammo cans; once the 30 deadlifts are complete, they will execute 30 full-range sit-ups. The first round will end after the 30 sit-ups are completed. Rounds 2, 3, 4, and 5 are executed in the exact same order. Each exercise must be completed before moving on the next one—i.e., you must finish all 30 deadlifts before starting the 30 sit-ups. However, each exercise may be broken up into sets as desired. Spotting will be permitted only during the sit-ups. However, only a team member who is also in the sit-up phase of the workout may provide assistance. As soon as the spotter completes his 30th sit-up and transitions to the run, or when he is returning from the run and starting the deadlifts, he is not permitted to provide assistance.

(3) Main Effort. The safety of all personnel, and the development of unit cohesion and combat fitness through shared challenge and hardship.

(4) End State. The safe and successful completion of all exercises by each individual in the squad.

b. Coordinating Instructions.

(1) Team Organization. Squad leaders can organize each team however they want. It is a leadership decision on how best to deploy each team to accomplish the mission. If the squads cannot be grouped into fire teams of four, add a fifth soldier to the team. The finish times of each of the squad's four-person teams are added together to obtain the squad's total time. The squad that has the lowest combined total time comes in first.

(2) Scaling. The workout can be conducted in PT gear or in full battle gear, to include vests with plates, depending on the fitness levels of your soldiers. The one type of equipment required—.50-cal ammo cans (or any other 50-pound objects that can be gripped in one hand)—is for austere conditions. If you have the resources, you can use two 50-pound dumbbells or a 105-pound barbell and weights. The weight of the equipment or number of reps can be increased or decreased based on the skill level of your troops.

(3) Scoring. The finish times of each of the squad's four-person teams are added together to obtain the squad's total time. For example, if Team A of the first squad finishes in 20:30 and Team B of the first squad finishes in 20:00, the total time for the squad is 40:30. The squad that has the lowest combined total time comes in first.

(4) Safety. Ensure that all equipment is checked and serviceable before conducting the workout and that all soldiers are proficient on deadlifts. Safety is every member's responsibility. All participants must be competent in the exercises before doing the workout.

(5) Follow-on Tasks. The next workout will require one 40- or 50-pound rock per three soldiers; however, if this is not possible, two 25- or 30-pound dumbbells for every three soldiers can be substituted.

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3. SERVICE SUPPORT

a. Equipment Weights

Ammo Can Nomenclature	Quantity/Size	Type	Weight	Contents
Cart Cal .50 4B/1T	100 rds	M2A1	50 lbs	Sand

b. Equipment Requirements. Each four-person fire team will require eight .50-cal ammo cans.

c. Time Recording. One stopwatch and writing material to record each team's time.

4. COMMAND AND SIGNAL

a. Timer/Score Recorder. Only one timekeeper is required for all squads and fire teams. This soldier will record the finish times of each team. He is positioned where the deadlifts and situps will be done (the start/stop line for the run) for command and control purposes. All fire teams begin the workout on his command. When teams complete all the exercises, they inform the timekeeper, who records all times. It is recommended that at least one person per fire team start his stopwatch to act as a backup in case the primary timekeeper's stopwatch fails.

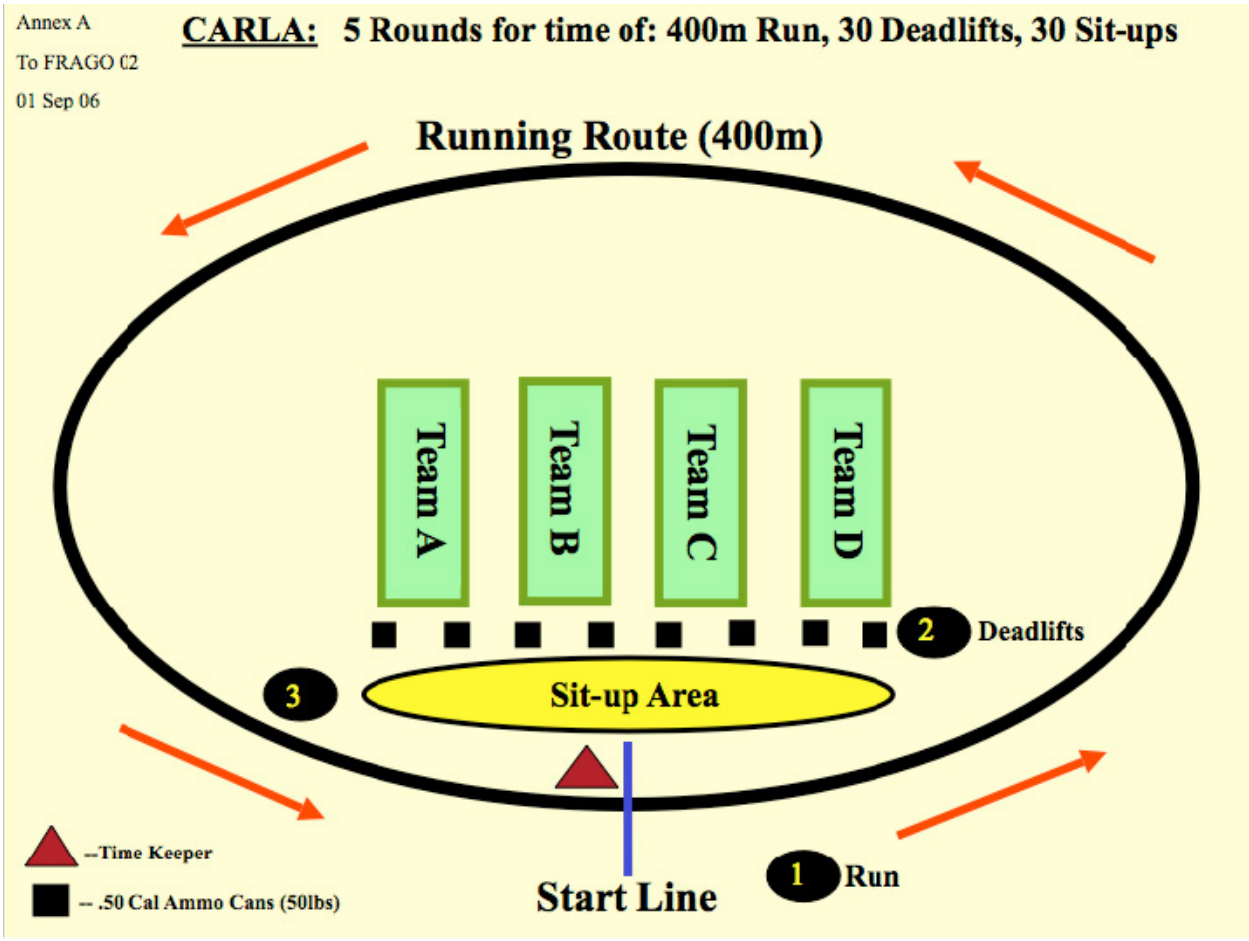
b. Instructor/Coach. To ensure proper conduct of the workout, use of correct exercise form, and safety of execution, a designated member of the platoon can fill this billet. An injured soldier who cannot participate in the PT or another member of the company can also perform this duty. Although not preferred, the platoon leader or platoon sergeant can also serve in this key position, especially if the target training audience is the individual squads. The command team can conduct the workout before platoon PT or at another time throughout the day. Once they have completed it, they can post their times against the rest of the platoon.

Annexes:

Annex A Workout diagram
Annex B Equipment
Annex C Exercises

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Annex A Workout Diagram



Annex B Equipment



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Annex C Exercises













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The Grinder

CrossFit FRAGO #3, "VICTORIA"

CFHQ
Santa Cruz, CA
USA

01 Oct 06

OPS 04

FRAGO 03 to OPOrd 01 — OP GRINDER

Ref: A. OPORD 01 01 Jul 06

Task Organization: Annex A

1. SITUATION. No Change.

2. MISSION

"VICTORIA": 5 rounds for time: 10 squat cleans, 20 pushups, rest

3. EXECUTION

a. Concept of Operations.

(1) Intent. Complete five rounds of the exercises as quickly as possible in a safe manner. This is a three-person, team, "task-specific" workout. The team's time ends when the last member of the team completes the workout. The purpose of this workout is to develop cohesion and combat fitness under fatigue conditions through shared hardship, challenges, and competition.

(2) Scheme of Maneuver. The platoon will be divided into as many teams of three as possible. Each team will require a 50, 55, or 60-pound rock or sand bag. All the teams will start at the same time. Each team member has a specific exercise to perform. A soldier will be doing either squat cleans or pushups, or resting. Once all three team members have completed their of 5

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required reps of the exercise, the team will rotate together: the soldier who was doing squat cleans will move to push-ups; the one who was doing push-ups will move to the rest station; and the one who was resting will move to squat cleans (Ann A). This rotation will continue until each soldier has successfully competed five rounds of each exercise, for an individual total of 50 squat cleans and 100 push-ups. The first round will end when each soldier returns to the station he began at. Rounds 2, 3, 4, and 5 are executed in the exact same order. Each exercise must be completed before the team can rotate—i.e., once Soldier "A" finishes his squat-cleans, he cannot start doing push-ups until Soldier "B" has finished and the team is ready to rotate together. Spotting is not permitted at any time.

(3) Main Effort. The safety of all personnel and the development of unit cohesion and combat fitness through shared challenge and hardship.

(4) End State. The safe and successful completion of all exercises by each individual in the platoon.

b. Coordinating Instructions.

(1) Team Organization. Platoon leaders can organize each team however they want. It is a leadership decision on how best to deploy each team to accomplish the mission.

(2) Scaling. The workout can be conducted in PT gear or full battle gear to include vests with plates, depending on the fitness levels of your soldiers. The equipment listed—sand bags or rocks—is for austere conditions. If you have the resources, you can use two 30- or 35-pound dumbbells or a 65-pound Olympic bar and weights. The weight of the equipment or number of reps can be increased or decreased based on the skill level of your troops.

(3) Scoring. The finish time for each three-person team is recorded. If possible, the combined times of each squad's three-person teams can be added together to obtain the squad's total time. The team or squad that has the lowest total time comes in first. For example, if Team A of the first squad finishes in 09:18 and Team B of the first squad finishes in 12:00, the total time for the squad is 21:18.

(4) Safety. Ensure that all equipment is checked and serviceable before conducting the workout and that all soldiers are proficient on squatcleans. Safety is every member's responsibility. All participants must be competent in the exercises before doing the workout.

(5) Follow-on Tasks. The next workout will require a skipping rope, a 25mm ammo can, rings, a 40-pound rock, and two .50-cal ammo cans per fiveperson team; however, if this is not possible, substitute two 35-pound dumbbells for the 25mm ammo can, two 20-pound dumbbells for the 40-pound rock, and two 50-pound dumbbells for the .50-cal ammo cans per five-person team.

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3. SERVICE SUPPORT

a. Equipment Weights

Item	Weight	Contents
Sand bag (or rock)	50, 55, or 60 lbs	Sand

b. Equipment Requirements. Each three-person team will require either a sand bag or a rock.

c. Time Recording. One stopwatch and writing material to record each team's time.

4. COMMAND AND SIGNAL

a. Timer/Score Recorder. Only one timekeeper is required for all squads and fire teams. This soldier will record the finish times of each team. He is positioned in a central location for command and control purposes. All three-person teams begin the workout on his command. When a team completes all the exercises, they inform the timekeeper, who records all times. It is recommended that at least one person per team keep a stopwatch to act as a backup in case the primary timekeeper's stopwatch fails.

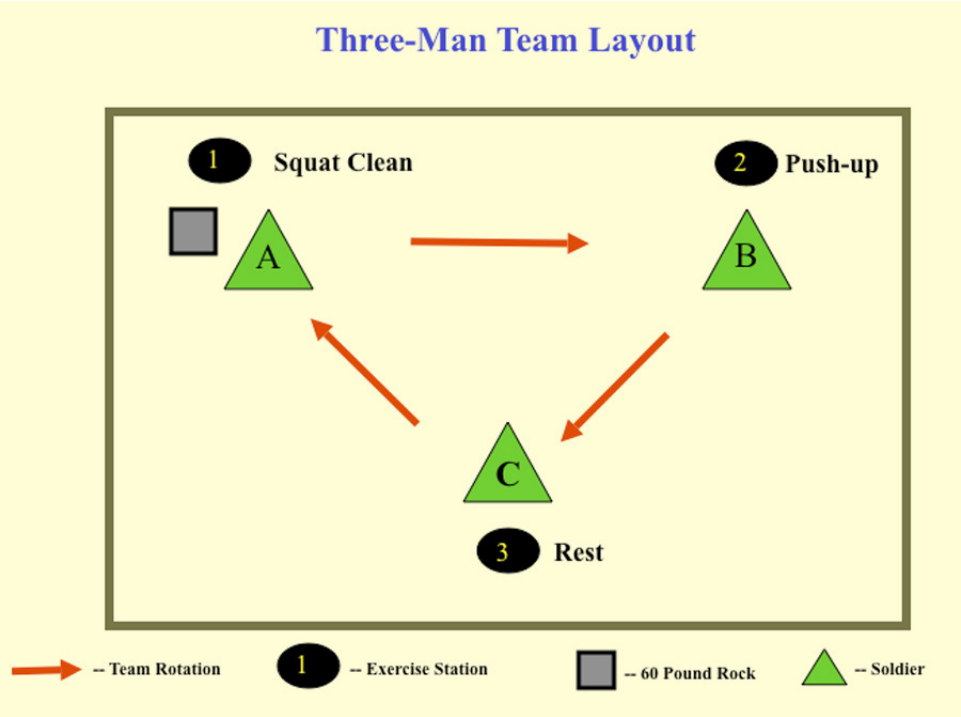
b. Instructor/Coach. To ensure proper conduct of the workout, use of correct exercise form, and safety of execution, a designated member of the platoon can fill this billet. An injured soldier who cannot participate in the PT can perform this duty. Although not preferred, the platoon leader or platoon sergeant can also serve in this key position, especially if the target training audience is the individual squads. The command team can conduct the workout themselves before platoon PT or at another time throughout the day. Once they have completed it, they can post their times against the rest of the platoon.

Annexes:

Annex A Workout diagram (AOO)
Annex B Equipment
Annex C Exercises

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Annex A Workout Diagram



Annex B Equipment





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Annex C Exercises







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The Grinder

CrossFit FRAGO #4, "YBF"

CFHQ
Santa Cruz, CA
USA

01 Nov 06

OPS 05

FRAGO 04 to OPOrd 01 — OP GRINDER

Ref: A. OPORD 01 01 Jul 06

Task Organization: Annex A

1. SITUATION. No Change.

2. MISSION

"YBF": 3 rounds for time: 21, 15, and 9 reps of double-unders, thrusters, ring dips, squat cleans, and deadlifts

3. EXECUTION

a. Concept of Operations.

(1) Intent. Complete three rounds of the exercises as quickly as possible in a safe manner. This is a five-man-team, "task-specific" workout. The team's time ends when the last member of the team completes the workout. The purpose of this workout is to develop cohesion and combat fitness under fatigue conditions through shared hardship, challenges, and competition.

(2) Scheme of maneuver. The platoon will be divided into as many teams of five as possible. Each team will require a skipping rope, a sand bag, rings, a 45-pound rock, and two .50-cal. ammo cans. All the teams will start at the same time. Each team member has a specific exercise to perform. Each

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soldier will be doing double-unders, thrusters, ring dips, squat cleans, or deadlifts. Once each soldier has completed his required reps of the exercise, the team will rotate together (Ann A). This rotation will continue until each soldier has successfully competed three rounds of each exercise. The first round will end when each soldier returns to the station he began at. Rounds 2 and 3 are executed in the exact same order. Spotting is not permitted at any time.

(3) Main Effort. The safety of all personnel and the development of unit cohesion and combat fitness through shared challenge and hardship.

(4) End State. The safe and successful completion of all three rounds by each individual on the team.

b. Coordinating Instructions.

(1) Team Organization. Platoon leaders can organize each team however they want. It is a leadership decision on how best to deploy each team to accomplish the mission.

(2) Scaling. The workout can be conducted in PT gear or full battle gear to include vests with plates, depending on the fitness levels of your soldiers. The five pieces of equipment required—skipping rope, sand bag, rings, rock, and ammo cans—are for austere conditions. If you have the resources, you can use an Olympic bar or dumbbells, of equivalent weight, for the thrusters, squat cleans, and deadlifts. The weight of the equipment or number of reps can be increased or decreased based on the skill level of your troops.

(3) Scoring. The finish times for each five-person team are recorded. The team or squad that has the quickest time comes in first.

(4) Safety. Ensure that all equipment is checked and serviceable before conducting the workout and that all soldiers are proficient in the required exercises. Safety is every member's responsibility.

(5) Follow-on Tasks. The next workout will require a 1.5-km running route, one climbing rope, one set of rings (austere or regular), and two pull-up bars, as a minimum, per eight man team.

3. SERVICE SUPPORT

a. Equipment Weights

Item	Qty/Size	Type	Weight	Content
Sand bag (or rock)	14in-26in	8105-00-142-93	50 lbs	Sand
Cart. Cal .50	100 Rds	50 lbs	50 lbs	Sand
Nylon Webbing, weave, tubulate plain weave, tubua	NA	8305-21-111-5411	NA	NA

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c. Time Recording. One stopwatch and writing material to record each team's time.

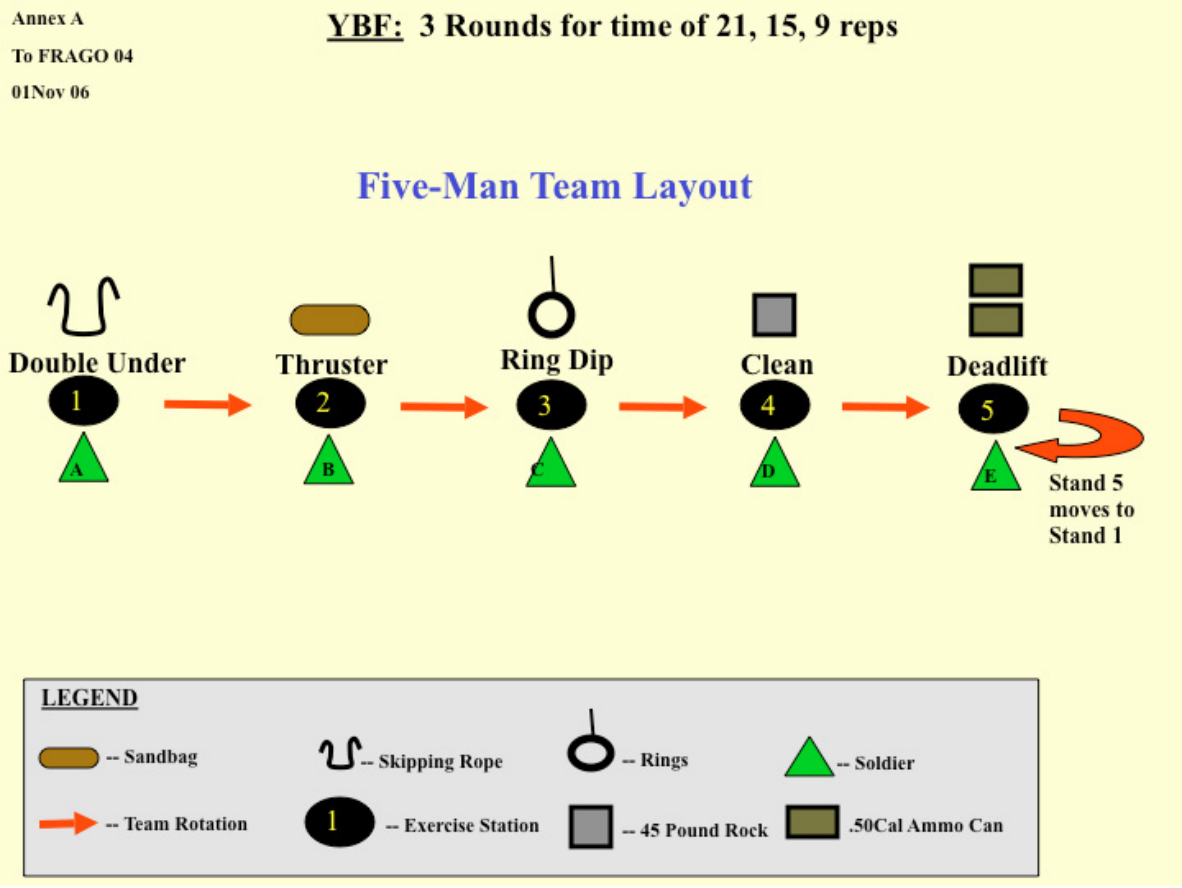
4. COMMAND AND SIGNAL

a. Timer/Score Recorder. Only one timekeeper is required for all squads. All five-man teams begin the workout at the same time. When teams complete all the exercises, they inform the timekeeper, who records all times. It is recommended that at least one person per team start his stopwatch to act as a backup in case the primary timekeeper's stopwatch fails.

b. Instructor/Coach. To ensure proper conduct of the workout, use of correct exercise form, and safety of execution, a designated member of the platoon can fill this billet.

Annexes:
Annex A Workout diagram (AOO)
Annex B Equipment
Annex C Exercises

Annex A Workout Diagram



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Annex B Equipment





Annex C Exercises







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The Grinder

CrossFit FRAGO #5, "PATRICIA"

CFHQ
Santa Cruz, CA
USA

01 Dec 06

OPS 06
FRAGO 05 to OPORD 01 — OP GRINDER
Ref: A. OPORD 01 01 Jul 06
Task Organization: Annex A

1. SITUATION. No Change.

2. MISSION

"PATRICIA": Total per 8-person squad— 1.5 km run (per soldier), 200 burpee pull-ups, 400 jumping ring dips, 40 rope climbs, and 1 min L-sit (per soldier).

3. EXECUTION

a. Concept of Operations.

(1) Intent. Complete all the exercises as quickly as possible in a safe manner. This is an eight-person-squad "task-specific" workout. The squad's time ends when the last member of the squad completes the workout. The purpose of this workout is to develop cohesion and combat fitness under fatigue conditions through shared hardship, challenges, and competition.

(2) Scheme of Maneuver. The platoon will be divided into as many teams of eight as possible. Each squad will require pull-up bars, a 15-foot climbing rope, rings (austere or regular), and P-bars (parallel bars, dip station, or parallettes). All squads will start at the same time. Each squad has to complete the total number of reps per exercise. The only exercises that each soldier in the squad must complete as an individual are the 1.5-km run of 6

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and the one-minute L-sit. The other exercises can be divided up among the squad as they desire. There is no order that the exercises must be completed in and there is no requirement to conduct the exercises all together, as a formed squad. For example, each soldier in the squad can do 25 burpee pull-ups to obtain 200 reps, or one soldier can do all 200. Two soldiers can do 20 rope ascents each, or every member of the squad can do 5 ascents. The requirement is for the squad to complete the total number of reps designated per exercise. The one-minute L-sit is a cumulative time. Each soldier can utilize as many L-sits as required to obtain his one minute of total time. For example, each soldier could do two 30-second sets or six 10-second sets, however he wants. The L-sits can be conducted on P-bars, rings, or as an L-hang from pull-up bars. Spotting is not permitted at any time.

(3) Main Effort. The safety of all personnel and the development of unit cohesion and combat fitness through shared challenge and hardship.

(4) End State. The safe and successful completion of all exercises.

b. Coordinating Instructions.

(1) Team Organization. Squad leaders can organize their soldiers however they wish. It is a leadership decision on how best to deploy each soldier to accomplish the mission.

(2) Scaling. The workout can be conducted in PT gear or full battle gear to include vests with plates, depending on the fitness levels of your soldiers. The austere rings and p-bars described in this document are for austere conditions. Conventional rings and P-bars may be used if available. The number of reps can be increased or decreased based on the skill level of your troops.

(3) Scoring. The finish time for each squad is recorded. The squad that has the fastest time comes in first.

(4) Burpee Pull-Up. The soldier starts the exercise standing under the pull-up bar, executes a burpee, and finishes by jumping up to the bar and completing a jumping pull-up. One repetition of the exercise is complete when the soldier has descended from the pull-up bar and is ready to commence the next burpee (Annex C).

(5) Jumping Ring Dip. The rings should be set between chest and shoulder height. The soldier jumps from the ground to a support position above the rings, with straight elbows. One repetition is competed when the soldier is back on the ground from the support position (Annex C

(6) Rope Climb. Soldiers can utilize any method they wish to climb the rope.

(7) L-sit. The L-sit can be executed on the rings, P-bars, or pull-up bars. For scaling purposes, a tuck sit can be substituted for the L-sit for soldiers who cannot do an L-sit (Annex C).

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(8) Safety. Ensure that all equipment is checked and serviceable before conducting the workout and that all soldiers are proficient in the required exercises. To avoid rope burn, it is recommended that all soldiers wear boots and BDU pants, as a minimum. Safety is every member's responsibility.

(9) Follow-on Tasks. The next workout will require a 150-meter running route, two 25-mm ammo cans and two pull-up bars per four-person team.

3. SERVICE SUPPORT

a. Equipment and Weights

Nomenclature	Qty/Size	Type/NSN	Weight	Contents
Nylon webbing, plain weave, tubular (for austere rings)	NA	8305-21-111-5411	NA	NA
Snap Link, Mountain Piton (for austere rings)	12mm	8465-21-896-8280	NA	Claw snap and screwgate
PVC pipe, 10 inch (for austere rings)	8 inch x 2 per rings	Standard	NA	NA

b. Equipment Requirements. Each eight-person squad will require as a minimum: one pull-up bar, one set of rings, one climbing rope, and one set of P-bars (rings or a pull-up bar can be substituted for P-bars for the L-sits). The preferred equipment issue is two pull-up bars, two sets of rings, one climbing rope, and one set of P-bars per squad.

c. Time and Repetition Recording. One stopwatch to record each team's time and a method of recording completed reps at the dip, pull-up, and rope climb stations.

4. COMMAND AND SIGNAL

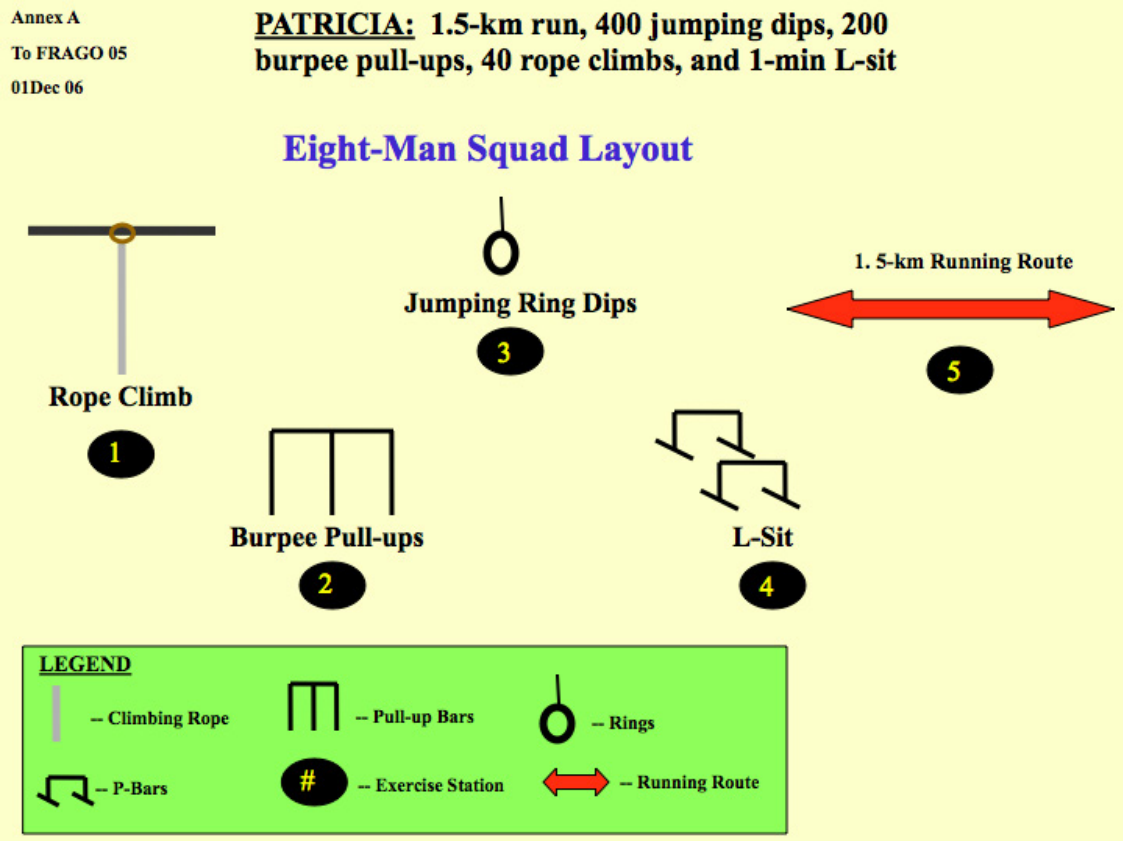
a. Timer/Score Recorder. Only one timekeeper is required for all squads. All eight-person teams begin the workout at the same time. When a squad completes all the exercises, they inform the timekeeper, who records all times. It is recommended that at least one person per team start his stopwatch to act as a back-up in case the primary timekeeper's stopwatch fails.

b. Instructor/Coach. To ensure proper conduct of the workout, use of correct exercise form, and safety of execution, a designated member of the platoon can fill this billet.

Annexes:
Annex A Workout diagram (AOO)
Annex B Equipment
Annex C Exercises

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Annex A Workout Diagram



Annex B Equipment





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Annex C Exercises









Above: The Jumping Dip

Left and Below: L-Sit Variations

Right: Rope Climb

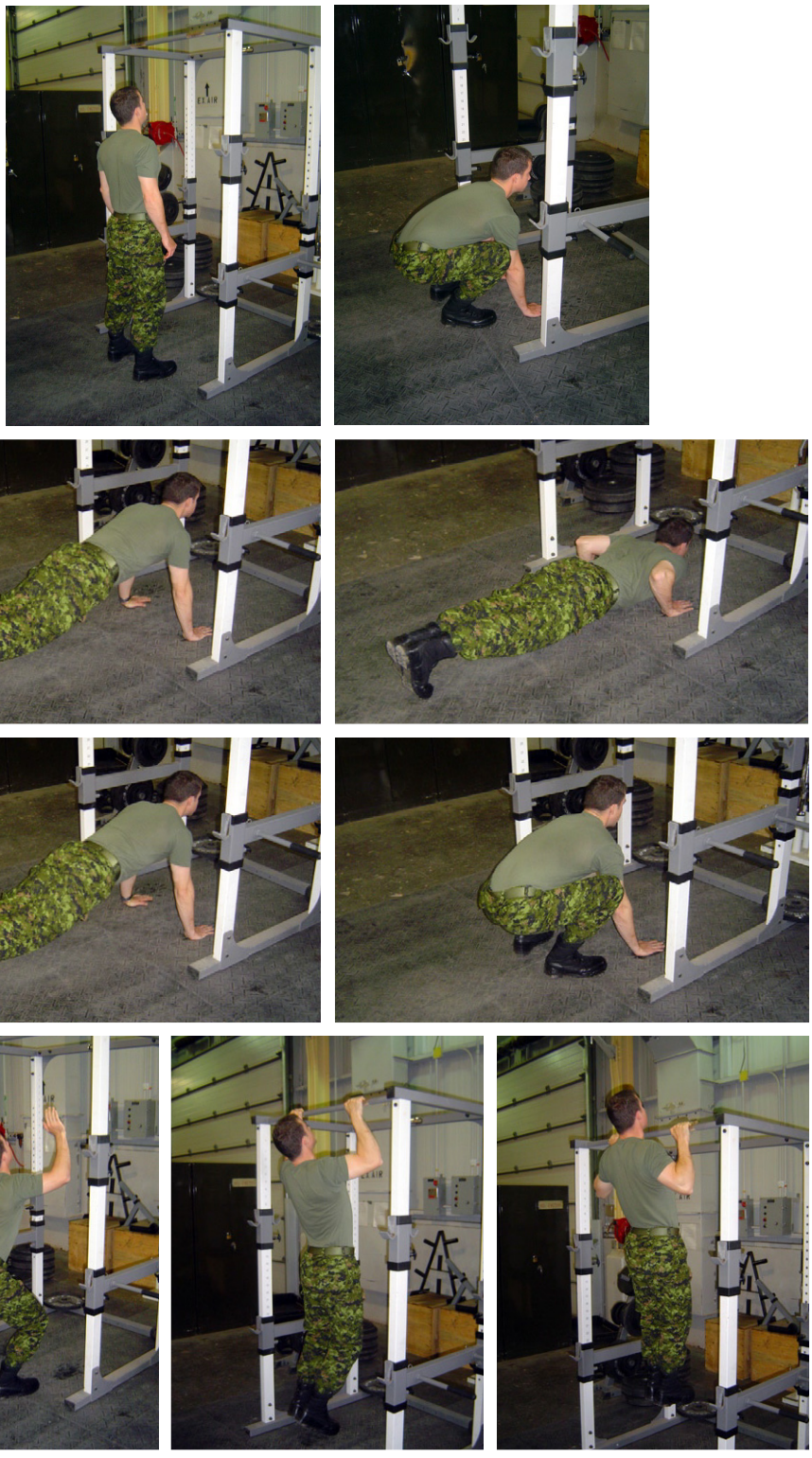


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Evidence-Based Fitness

Rest Day Discussion

Greg Glassman, et al.

CrossFit.com runs on a three-on/one-off rotation: perform the posted Workout of the Day (WOD) for three days; debate and discuss on the fourth ("Rest Day"). The topic of discussion for Rest Day on December 10, 2006 was a charge leveled by Mike Boyle ("Body By Boyle") at a Special Operations Medical Association Conference that CrossFit's use of "high-rep Olympic weightlifting" renders it "dangerous."

The ensuing discussion among Greg Glassman ("Coach"), "René," "BOA," and Michael Boyle, excerpted below, goes to the heart of the debate over safety, efficacy, and efficiency in fitness programming and the need for an objective basis for evaluating competing fitness claims.

Post by "René"

Having read several articles by Mike Boyle, it is clear his number one priority is to not have the athletes he trains get injured during training. "High rep Olympic lifting" is shorthand for saying "doing Olympic lifts with bad form while fatigued" because form tends to break down when fatigue catches up or accumulates during high rep sets. You can see examples of this from breakdown in the various Grace, Nasty Girls, Elizabeth videos that have been posted at CrossFit. (Which is not to take anything away from the athletes in those videos, don't get me wrong.) During the hard work of "for time", form can be compromised. One can make the assumption that injury is more likely with bad form than with good, which is reasonable to some degree for the Olympic lifts. (A question is: to what degree?)

What is the goal of doing Olympic lifts for high reps? Do the weaknesses that are attempting to be addressed with the high reps necessarily need to be addressed using Olympic lifts? Could a "safer" movement be used instead (which presumes that one has accepted that Olympic lifts are "less safe" than some other lifts; I presume Boyle has decided this to be true)? Or could the components be trained separately (strength-endurance vs. metcon, perhaps)?

If so, and if your goal is to avoid higher chances of injury, and if you believe that Olympic lifts with bad form are more likely to cause injury (perhaps because it's so easy to have bad form on the lifts), then, yes, you likely would think that high rep Olympic lifts are better to be avoided.

Use Olympic lifts to train explosiveness, flexibility, and strength, and use something else to drive the trainee hard during high rep weight sets, where proper form is less necessary for a safe lift or where proper form is easier to maintain while fatigued or under hard metcon duress.

Is it true that ANY exercise performed for high reps will lead to form break down? Maybe, but the idea would be that the Olympic lifts, which are quite complex, are more likely to break down before "easier" lifts would.

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Post by "René" continued

As an example of his point of view, he no longer has his trainees do back squats. He has replaced them with front squats because you can get some of the same benefits without the extra loading of the back and without the higher chance of loading the back in a compromised position. (In the front squat, you lose the weight forward if your back gets too far forward or bends, whereas in the back squat the weight keeps bending you even more. So the front squat is "safer".) He also has recommended replacing the conventional deadlift with single leg versions, which gives a similar hit to each leg while the back only sees half the weight. (You can read an article of his stating this on t-nation.)

I would imagine he knows that there are compromises with training this way but believes that the fewer injuries or possibilities for injuries is worth it.

So if Coach prescribes high rep Oly lifts, he clearly believes that some/several/all of these assumptions are pure bunkum. Either that, or the benefits to be gained far outweigh the chances of injury. I know the CrossFit dictum is that "form comes first", but it is clear that in the pursuit of intensity, form does break down and is "allowed" to. For example, the athletes in those videos are not told to stop during the workouts by the CrossFit trainers. How much is too much? Is it that the athletes know themselves enough when to stop or when the weight is too much and can cause injury?

For punters such as myself doing this by myself at home, I have to approach these things with caution and try to figure it out without the benefit of experience or as much knowledge as I would like.

Comment #27
Posted by: René at December 9, 2006 09:18 PM

Post by Greg Glassman

If safety is your sole or even your primary concern, your athletes' fitness potential will be soundly blunted. Where fitness is your sole concern, safety must be given reasonable priority. Safety, efficacy, and efficiency are clearly, mathematically, interdependent. It would be foolish to think otherwise.

Olympic lifts "Highly technical"? Rubbish. Only compared to the rest of weight training. There are thousands of gymnastics movements fantastically more technical than the clean and jerk and the snatch. In any case, CrossFit, with high rep weightlifting, has been shown in clinical and institutional settings to be dramatically safer than the traditional run, sit-up, pull-up, jumping jack, push-up, lather, rinse, repeat, PT. This is not due to the "highly technical" nature of jumping jacks and running.

Not practicing complex movements fatigued? More rubbish. Only by practicing them fatigued will we advance the point where fatigue adversely affects form. Learning to race cars at high speed increases the likelihood of crashing. It is not the crashing that improves the driver's skill, however, but transiently increasing the likelihood of crashing is an essential part of decreasing the likelihood of crashing at any given speed.

Not all form faults are dangerous. Most clearly are not. Most increase the metabolic costs of an exercise or workout, i.e. reduce efficiency, and are not only acceptable but beneficial to conditioning. But what is certain is that only by working to exhaustion, where form faults are ineluctable, will we push the margins of power output where form falters. We push to the point of exhaustion and form breakdown to 1) increase/ improve the safety of high output max efforts, and 2) maximize work capacity. How simple is that?

Show me a program where form is controlled to the point of never failing and I'll show you an athlete who a) will fall apart at output levels where CrossFitters are untaxed and moving with grace, and b) cannot match the work capacity of CrossFitters.

The ideal state for learning new activities is certainly when the athlete is fresh. This should not be confused with advancing the horizon line where form is maintainable under duress.

Mr. Boyle was able to quantify his concerns for the dangers of high rep weightlifting - anything approaching twelve reps. As reported to me, this wasn't load qualified, but rep qualified.

If taking your one 1RM for the C&J and attempting 20 reps is an example of dangerous high rep weightlifting then it's dangerous like trying to jump up and touch

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Post by Greg Glassman continued

the sun, and I haven't met anyone stupid enough to try or even think it possible. Calling 100 clean and jerks with a twenty pound medicine ball for time dangerous makes even less sense, and this effort qualifies by Mr. Boyle's statement. It is also consistent with CrossFit programming. (Hmmm?)

At the SOCOM Conference Mr. Twight (Yes, Mark) appeared with his arm in a sling due to a recent surgical repair of a climbing injury. To great derision and laughter, his condition was attributed to high rep weightlifting. That cheap shot holds the crux of Mr. Boyle's logic and reveals what really motivated his and other presenters' gripes about CrossFit - we're eating their lunch in the marketplace of ideas.

Sadly this has nothing to do with safety, efficacy, and efficiency and everything to do with falling in a very distant second place, or more likely even further, in the quest for improving human performance. Mr. Boyle's problem with CrossFit is that his program got left behind. Think tipped over rice bowls, not dangerous lifts.

Where CrossFit has been analyzed, injuries have been recorded, the analysis has had to bear the investigators' names, and the results made public, CrossFit has been shown to be safer than traditional PT.

The assemblage of presenters at the SOCOM conference is like a conference on retailing where Penny's, Sears, and K-Mart are presenting on WalMart. You bet they think it's dangerous.

We'll hear every bit of noise imaginable from Mr. Boyle, but here's what you'll not ever see: Him posting his athletes' work capacity across broad time and modal domains like we do here three days out of four. That would truly be dangerous.

Comment #41
Posted by: Coach at December 10, 2006 01:54 AM

Post by "BOA"

In the spirit of balanced discussion, I think an invitation to Mike Boyle to join this discussion would be appropriate.

Rest day discussions are usually interesting and the quality of the information presented on this site is always fairly high, but issues are rarely presented in a balanced fashion.

Coach, I love this site and do the WOD faithfully, but your call for evidence/data from your critics is holding them to a higher standard than you hold yourself to. While your ideas are well-conceived extrapolations and postulates derived from medium - to high - quality data, calling them evidence based is a bit of a stretch. You've done an admirable job of designing and disseminating a unique approach to fitness training. The next step to true innovation is to facilitate and participate in a systematic examination of the efficacy of your approach and the presentation of this examination in a form that can be independently validated.

Comment #137
Posted by BOA on December 11, 2006 06:16 AM

Post by Greg Glassman

BOA #137,You've missed something critical. Ironically, we've met and continue to meet daily your stated requirement of facilitating and participating in a systematic examination of the efficacy of our approach and to present this examination in a form that can be independently validated, and the irony is compounded by the amazing fact that you've participated first hand and personally in this examination. You may have missed the forest for the trees. (What bedevils us and you, I believe, is that CrossFit is alone in the game.)

The call for evidenced based fitness is not a call for exercise programs based as are math, physics, and chemistry (biology to a much lesser extent) on first principles and then built upward. Why? It's NOT possible. Not yet.

We're not calling for "peer reviewed literature" supporting ours or any other program because the published exercise science is almost entirely irrelevant to successful exercise prescription. That may someday

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Post by Greg Glassman continued

change. I'm hopeful.

Our methods are empirical and fully transparent; they're posted here daily and have been for years as workouts, slide-shows, still photos, videos, and essays.

Our prescription has been repeated constantly at the risk of annoying: "constantly varied functional movement executed at high intensity."

The sought after fitness that guides, motivates, and defines our intent was answered in a free document entitled "What is Fitness?" that tens of thousands have downloaded and presumably read.

We've boiled that eleven page document down to a simple, measurable concept of "increasing work capacity across broad time and modal domains."

In application CrossFit looks like sport – "The Sport of Fitness" – revealing even the motivational methods we've employed.

The methods and results of our program have been duplicated around the globe and by thousands. The point is not that we have fans but that the program is knowable and capable of duplication.

And when I speak of evidence here is what I mean: When an athlete like Greg Amundson posts a Fran time of 2:48 at a body weight of 205 we can, with simple calculations, universally known and accepted by science, calculate that he has performed 54,225 ft-lbs of work in 168 seconds and that this is holding just less than 2/3 of a horsepower for almost 3 minutes.

We can mine data like this for any athlete posting times here in "comments". We can observe that the highest work capacities posted on these pages are trained, i.e., developed from the WOD and that to date no non CrossFitter has come close to these outputs by other methods. We can also readily observe that high work capacity across only a couple of workouts correlates strongly to capacity across nearly all workouts.

But, here's what I'm offered in looking for data to examine the efficacy of a commercial competitor making disparaging claims about our program: "We've coached hundreds of athletes from NHL, NBA, NFL, MLB, MLS, WBA, MLL, NCAA and thousands of High School athletes" - credentials, by the way, that we hold as well, and quite likely, in larger number. Behind a link entitled "proven system" I find neither proof nor system. Comparing CrossFit to this system has been rendered impossible. In much the way that the charge of our being dangerous has been leveled so as to be meaningless yet effective. It's marketing.

Until human performance data is made available the comparison of CrossFit to other programs is a debate not worth having and a colossal distraction to the pursuit of advancing the art and science of improving human performance.

I want to see fitness programming move away from worthless testimonials, incessant back biting, and endless marketing hype and move into the arena of offering measurable, observable, repeatable evidence of efficacy, efficiency, and safety.

Other approaches—ones that modify or entirely avoid our "functionality, intensity, and variance" charter—could adopt standards for fitness that radically depart from our chosen "increased work capacity across broad time and modal domains" and we could still make viable, interesting, and meaningful comparisons, but the defining standards need to be testable by CrossFitters and CrossFitting athletes and the other program's athletes would have to be willing to be tested by the measures we value. Some of that has already happened. (That is how we allied with Coach Mike Burgener, incidentally.)

This is evidence-based fitness.

Comment #151
Posted by: Coach at December 12, 2006 08:10 AM

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Post by Michael Boyle

People have asked me to speak so I will. To address a few points

1- It amazes me how people can turn idealogy person. I don't feel I have a big ego and don't consider myself a capitalist. I paid my own way to the SOMA Conference to sit on a panel and provide an opinion. I did that and fully expected to be asked the "CrossFit" question. I gave my opinion. I don't like high rep olympic lifting and particularly dislike it for those who are not good at it. There are better ways to work hard and develop muscle endurance.

2- I sat next to Mark Twight. I had a good conversation with him and exchanged emails. I don't believe any comments were directed at Mark. Hopefully if he reads this board he can address this himself.

3- My athletes regularly use olympic lifts. We hang clean, snatch and dumbell snatch. I have written articles on teaching olympic lifts and have produced a video on the same. We rarely do more than 5 reps. I use olympic lifts for power and other methods for endurance.

4-I train kids and adults as well as professional athletes. I have no interest in making money off the military and have no issue with the people at CrossFit.

That being said, I stand by original comments.

Thanks
Michael

Comment #152

Posted by: Michael Boyle at December 12, 2006 08:50 AM

I want to see fitness programming move into the arena of offering measurable, observable, repeatable evidence of efficacy, efficiency, and safety. -Greg Glassman

Greg Glassman is the Founder of CrossFit, Inc. and Crossfit Santa Cruz and is the publisher of the CrossFit Journal. He is a former competitive gymnast and has been a fitness trainer and conditioning coach since the early 1980s.

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The Grinder

CrossFit FRAGO #6, "GOMEZ"

CFHQ
Santa Cruz, CA
USA

01 Jan 07

OPS 07
FRAGO 06 to OPOrd 01 — OP GRINDER

Ref: A. OPORD 01 01 Jul 06

Task Organization: Annex A

1. SITUATION. No change.

2. MISSION
"Gomez": Complete as many rounds as possible in 20 minutes: 10 thrusters, 8 pull-ups, and 150 meter run.

3. EXECUTION

a. Concept of Operations

(1) Intent. Complete as many rounds of the exercises as possible in 20 minutes in a safe manner. This is a four-person-team "time-specific" workout. The purpose of this workout is to develop cohesion and combat fitness under fatigue conditions through shared hardship, challenges, and competition.

(2) Scheme of Maneuver. The platoon will be divided into teams of four. Each team will require two 25mm ammo cans (70 lbs) and two pull-up bars. All teams will start at the same time. Each exercise must be completed before moving to the next one (all 10 thrusters must be finished before starting the pull-ups, and all pull-ups must be finished before starting the run). The soldiers can rest at any time during the workout. Each soldier has to complete as many rounds as he can in the 20 minutes. The total number

of 5

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of rounds for each team member will be added together to obtain the total score for the team. For example, if soldier A completes 12 rounds, soldier B 15 rounds, soldier C 13, and soldier D 9, the total score for the team would be 49. Spotting is not permitted at any time.

(3) Main Effort. The safety of all personnel, and the development of unit cohesion and combat fitness through shared challenge and hardship.

(4) End State. The safe and successful completion of all exercises.

b. Coordinating Instructions

(1) Team Organization. Squad leaders can organize their soldiers however they wish. It is a leadership decision on how best to deploy each soldier to accomplish the mission.

(2) 25mm Ammo Can Thrusters. For safety reasons, it is imperative that the 25mm ammo can be lifted from the ground by the proper technique. The ammo can must be placed on the ground upside-down (so that the lid of the ammo can is on the ground). With his back held flat in the proper deadlift position, the lifter deadlifts the ammo can to the hang position, where it remains inverted, with the lid facing the ground. From the hang position, he cleans the ammo can to the rack position (the thruster start position). It is during this transition, from the hang to the racked position, that the ammo can rotates 180 degrees (to end with the lid facing up). This is the start position for the thrusters.

(3) Scaling. The workout can be conducted in PT gear or full battle gear to include vests with plates, depending on the fitness levels of the soldiers. The number of reps can be increased or decreased based on the skill level of the troops.

(4) Scoring. The final score for each team will be calculated using completed rounds; partial rounds will not be counted. For example, if at the end of 20 minutes, an individual completes 12 rounds plus 6 thrusters of the 13th round, his score would be 12. The team that has the most rounds comes in first.

(5) Safety. Ensure that all equipment is checked and serviceable before conducting the workout and that all soldiers are proficient in the required exercises. Safety is every member's responsibility.

(6) Follow-on Tasks. The next workout will require a 200-meter running route and two pull-up bars per eight-person team.

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4. SERVICE SUPPORT

a Equipment Weights

Ammo Can Nomenclature	Qty/Size	Type/NSN	Weight	Contents
Cart 25mm APFSDS-T	30 rds	PA125	70 lbs	sand

b. Equipment Requirements. Each four-man team will require two 25mm ammo cans and two pull-up bars (Ref Annex B).

5. COMMAND AND SIGNAL

a Timer/Score Recorder. Only one timekeeper is required for all teams. All teams begin and end the workout at the same time. It is recommended that at least one person per team start his stopwatch to act as a backup in case the primary timekeeper's stopwatch fails. A method of recording each team's rounds is also required.

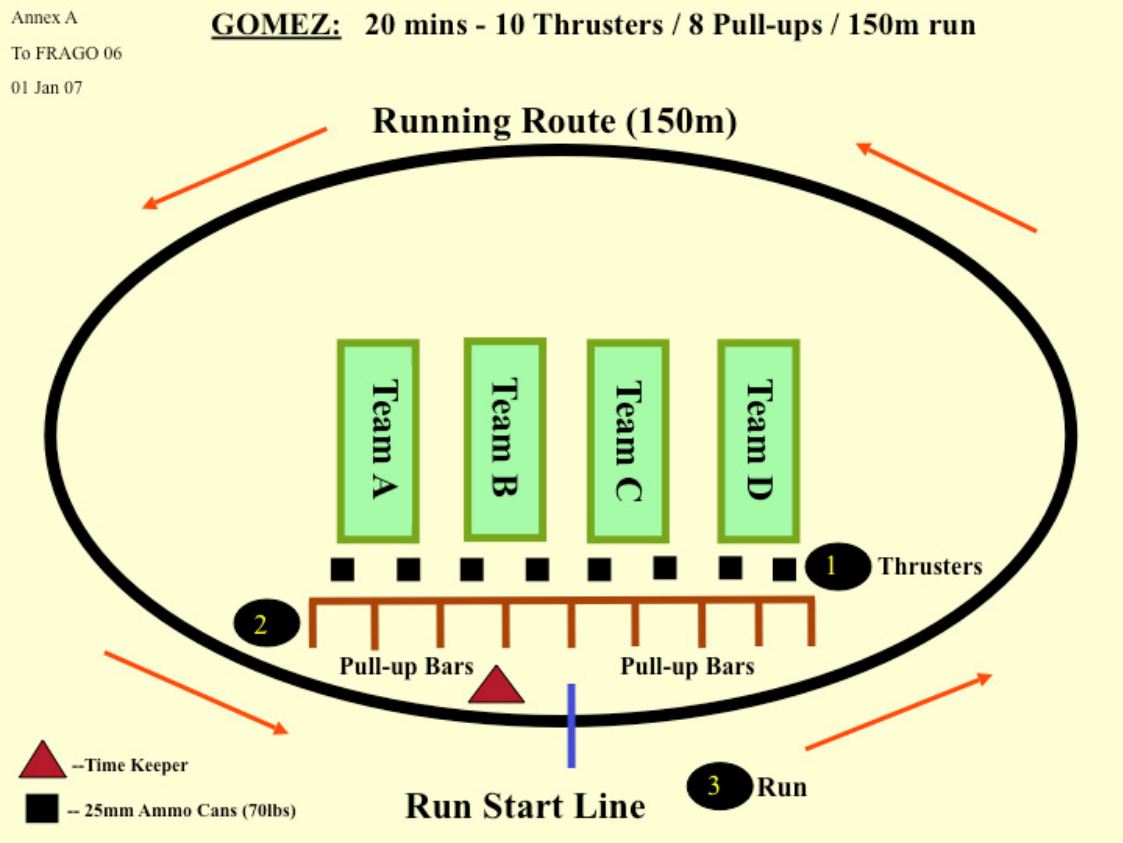
b Instructor/Coach. To ensure proper conduct of the workout, use of correct exercise form, and safety of execution, a designated member of the platoon can fill this billet.

Annexes

Annex A Workout diagram (AOO)
Annex B Equipment
Annex C Exercises

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Annex A Workout Diagram



Annex B Equipment



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Annex C Exercises





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The Grinder

CrossFit FRAGO #7, "DYER"

CFHQ
Santa Cruz, CA
USA

01 Feb 07

OPS 08
FRAGO 07 to OPOrd 01 — OP GRINDER

Ref: A. OPORD 01 01 Jul 06

Task Organization: Annex A

1. SITUATION. No Change.

2. MISSION
"DYER": For time: 10 reps, 200m, 9 reps, 200m, 8 reps, 200m, 7 reps, 200m, 6 reps, 200, 5 reps, 200m, 4 reps, 200, 3 reps, 200m, 2 reps, 200m, 1 rep, 200m run, with reps of pull-ups, push-ups, squats, sit-ups, and burpees in each round.

3. EXECUTION

a. Concept of Operations

(1) Intent. Complete all rounds of the exercises as quickly as possible in a safe manner. This is an eight-person-team "task-specific" workout. The purpose of this workout is to develop cohesion and combat fitness under fatigue conditions through shared hardship, challenges, and competition.

(2) Scheme of Maneuver. The platoon will be divided into as many teams of eight as possible. Each team will require two pull-up bars. All teams will start at the same time. Each soldier will run 200 meters and then perform 10 pull-ups, 10 push-ups, 10 squats, 10 sit-ups, and 10 burpees. Once he *of 3*

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has completed all the required reps, he will then run 200 meters again and repeat the exercises, this time doing 9 reps of each. This pattern continues until 1 rep of each exercise is completed and the final 200 meters is run. All reps of an exercise must be completed before moving on to the next one (all 10 pull-ups must be completed be for moving to push-ups, and so on). Soldiers can rest at any time during the workout, but the clock keeps running. Each member of the team must complete all required reps and runs in order for his team's time to count. The team's time ends when the final member finishes the last 200m run. Spotting is not permitted at any time.

(3) Main Effort. The safety of all personnel and the development of unit cohesion and combat fitness through shared challenge and hardship.

(4) End State. The safe and successful completion of all exercises.

b. Coordinating Instructions

(1) Team Organization. Squad leaders can organize their soldiers however they wish. It is a leadership decision on how best to deploy each soldier to accomplish the mission.

(2) Scaling. The workout can be conducted in PT gear or full battle gear to include vests with plates, depending on the fitness levels of your soldiers. The number of reps can be increased or decreased based on the skill level of your troops. Jumping pull-ups can be substituted for pull-ups. The sit-ups are conducted unsupported

(3) Scoring. The final score for each team will be calculated based on the finish time of the team. The team that has the quickest time comes in first.

(4) Safety. Ensure that all equipment is checked and serviceable before conducting the workout and that all soldiers are proficient in the required exercises. Safety is every member's responsibility.

(5) Follow-on Tasks. The next workout will require a wall or solid structure for conducting handstands against; also, individual mats or a grass area around the wall or structure are suggested.

3. SERVICE SUPPORT

a. Equipment Requirements. Each eight-man team will require two pull-up bars.

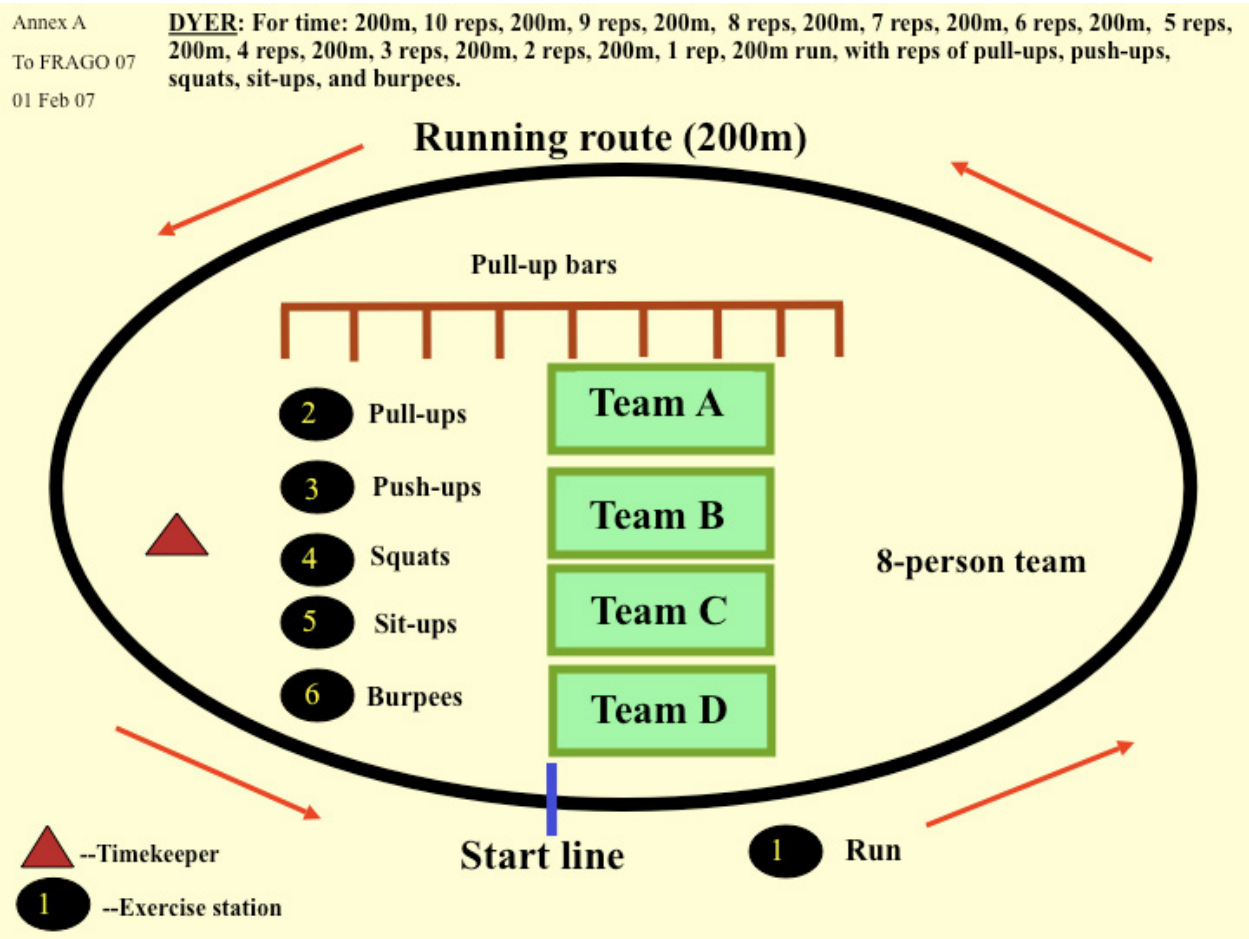
4. COMMAND AND SIGNAL

a. Timer/Score Recorder. Only one timekeeper is required for all teams. All teams begin the workout at the same time. It is recommended that at least one person per team start his stopwatch to act as a backup in case the primary timekeeper's stopwatch fails.

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b. Instructor/Coach. To ensure proper conduct of the workout, use of correct exercise form, and safety of execution, a designated member of the platoon can fill this billet.

Annexes:
Annex A Workout diagram (AOO)



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CrossFit FRAGO #8, "SHANE"

CFHQ
Santa Cruz, CA
USA

01 Mar 07

OPS 09
FRAGO 08 to OPOrd 01 — OP GRINDER

Ref: A. OPORD 01 01 Jul 06

Task Organization: Annex A

1. SITUATION. No Change.

2. MISSION
"SHANE": Complete as many rounds as possible in 20 minutes: 8 inverted burpees, 21 squats, and 12 burpees.

3. EXECUTION

a. Concept of Operations

(1) Intent. Complete as many rounds of the exercises in 20 minutes as possible in a safe manner. This is a four-person-team team "time-specific" workout. The purpose of this workout is to develop cohesion and combat fitness under fatigue conditions through shared hardship, challenges, and competition.

(2) Scheme of Maneuver. The platoon will be divided into as many teams of four as possible. Each team will require a wall or other stable object to conduct the inverted burpees against. All teams will start at the same time. Each exercise must be completed before moving to the next one (all 8 inverted burpees must be finished before starting the squats and all squats *of 5*

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finished before starting the burpees). The soldiers can take a rest at any time during the workout. Each team has to complete as many rounds as possible in the 20 minutes. The total number of complete rounds for each team member will be added together to obtain the total score for the team. For example, if soldier "A" completes 12 rounds, soldier "B" 15 rounds, soldier "C" 13 rounds, and soldier "D" 9, the total score for the team would be 49. Spotting is not permitted at any time.

(3) Main Effort. The safety of all personnel, and the development of unit cohesion and combat fitness through shared challenge and hardship.

(4) End State. The safe and successful completion of all exercises.

b. Coordinating Instructions

(1) Team Organization. Squad leaders can organize their soldiers however they wish. It is a leadership decision on how best to deploy each soldier to accomplish the mission.

(2) Scaling. The workout can be conducted in PT gear or full battle gear to include vests with plates, depending on the fitness levels of your soldiers. The number of reps can be increased or decreased based on the skill level of your troops.

(3) Scoring. The final score for each team is the total of completed rounds by all members of the team; partial rounds are not counted. For example, if at the end of 20 minutes, a soldier has completes 12 rounds plus 6 inverted burpees of round 13, his score is 12. The team that has the most total rounds comes in first.

(4) Inverted Burpee. There are two methods of conducting the inverted burpee. For the first variation, the soldier begins supine on the ground, kips to standing, and then kicks up to handstand. However, few soldiers will be capable of kipping up to a standing position from their backs. For the second variation, the soldier begins in a standing position, squats down and rolls onto his back, and then, using momentum, rolls up to his feet and into a handstand (see Annex C). The two inverted burpee variations involve equal or greater work and greater skill than the traditional burpee.

(5) Safety. Ensure that all equipment is checked and serviceable before conducting the workout and that all soldiers are proficient in the required exercises. Safety is every member's responsibility.

(6) Follow-on Tasks. The next workout will require 2 x .50 Cal ammo cans and 2 x 25mm ammo cans per each four-man team. Soldiers must be proficient in the dead-lift, push-press, and thruster.

3. SERVICE SUPPORT

a. Equipment Requirements. Each four-person team will require a wall or other tall, sturdy object to conduct the inverted burpees against; also, the use of a mat

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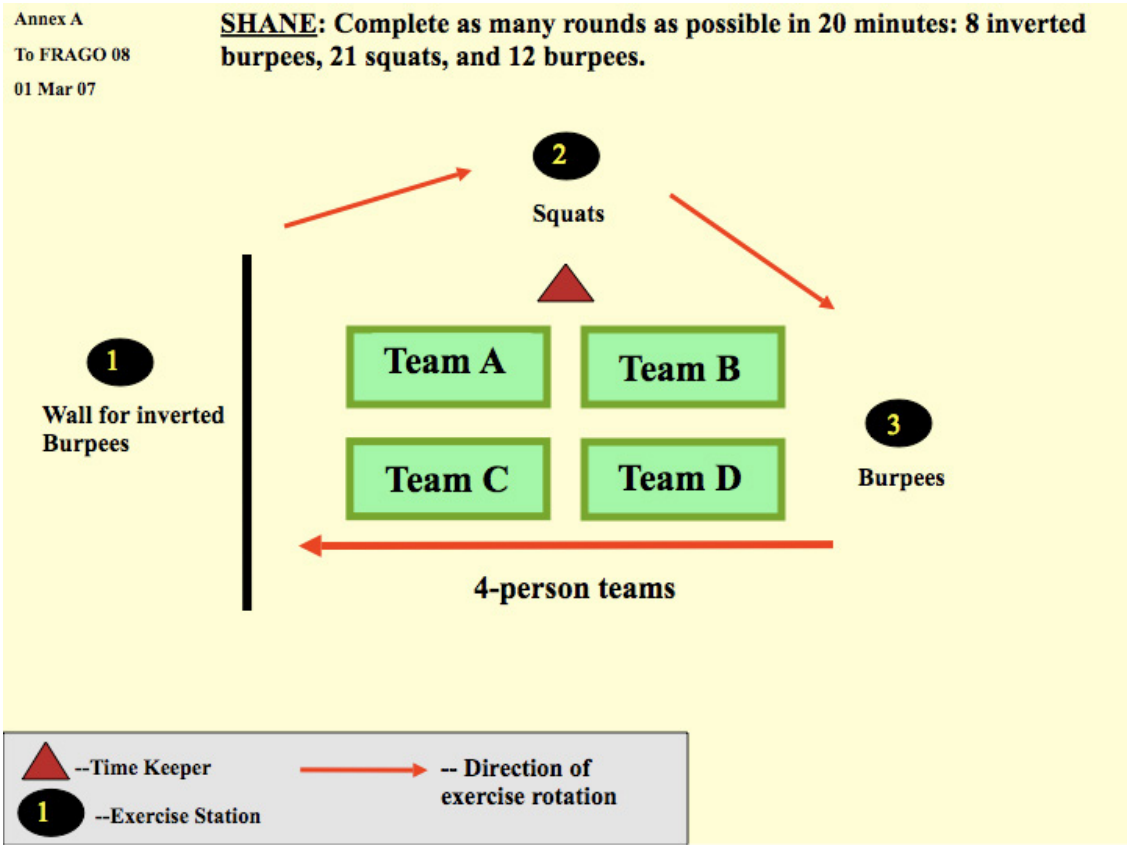
is recommended if conducting the inverted burpee on a hard surface such as a cement or wood floor.

b. Time and Repetition Recording. One stopwatch for all teams and a method of recording each team's rounds.

4. COMMAND AND SIGNAL

a. Timer/Score Recorder. Only one timekeeper is required for all teams. All four-man teams begin and end the workout at the same time. It is recommended that at least one person per team start his stopwatch to act as a backup in case the primary timekeeper's stopwatch fails. A method of recording each team's rounds is also required.
b. Instructor/Coach. To ensure proper conduct of the workout, use of correct exercise form, and safety of execution, a designated member of the platoon can fill this billet.

Annexes:
Annex A Workout Diagram (AOO)



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Annex B Exercises
Photos 1-6: Inverted burpee





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Annex B Exercises







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The Grinder

CrossFit FRAGO #9, "GIROUARD"

CFHQ
Santa Cruz, CA
USA

01 Apr 07

OPS 10
FRAGO 09 to OPOrd 01 — OP GRINDER

Ref: A. OPORD 01 01 Jul 06

Task Organization: Annex A

1. SITUATION. No Change.

2. MISSION
"GIROUARD": Five rounds for time: deadlift, thruster, and push press, with the following repetition scheme:

Round	DL reps	Thruster reps	Push press reps
1	25	15	5
2	20	15	10
3	15	15	15
4	10	15	20
5	5	15	25

3. EXECUTION

a. Concept of Operations

(1) Intent. Complete five rounds of the exercises as quickly as possible in a safe manner. This is a four-person-team, "task-specific" workout. The purpose of this workout is to develop cohesion and combat fitness under fatigue conditions through shared hardship, challenges, and competition. *of 5*

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(2) Scheme of Maneuver. The platoon will be divided into as many teams of four as possible. Each team will require two .50-cal ammo cans for deadlifts, one 25mm ammo can for thrusters, and one 25mm ammo can for push presses. All the teams will start at the same time. Each team member has a specific exercise to perform: he will be doing deadlifts, thrusters, push-presses, or waiting at the rest station. Once each soldier has completed his required reps of the exercise at each station, the team rotates together so that each soldier is at the next station (Ann A). This rotation will continue until each soldier has successfully competed five rounds of each exercise. The first round will end when each soldier returns to the station he began at. Rounds 2 to 5 are executed in the exact same order, with different repetition requirements for the deadlift and push press. Spotting is not permitted at any time.

(3) Main Effort. The safety of all personnel, and the development of unit cohesion and combat fitness through shared challenge and hardship.

(4) End State. The safe and successful completion of all exercises.

b. Coordinating Instructions

(1) Team Organization. Squad leaders can organize their soldiers however they wish. It is a leadership decision on how best to deploy each soldier to accomplish the mission.

(2) Scaling. The workout can be conducted in PT gear or full battle gear to include vests with plates, depending on the fitness levels of your soldiers. The number of reps can be increased or decreased based on the skill level of your troops.

(3) Scoring. The finish time for each four-person team is recorded. The team or squad that has the fastest time comes in first.

(4) 25mm Ammo-Can Thrusters. For safety reasons, it is imperative that the 25mm ammo can be lifted from the ground by the proper technique. The ammo can must be placed on the ground upside down (so that the lid of the ammo can is on the ground). With his back held flat in the proper deadlift position, the lifter deadlifts the ammo can to the hang position, where it remains inverted, with the lid facing the ground. From the hang position, he cleans the ammo can to the rack position (the thruster start position). It is during this transition, from the hang to the racked position, that the ammo can rotates 180 degrees (to end with the lid facing up). This is the start position for the thrusters (Ref. Annex C).

(5) Safety. Ensure that all equipment is checked and serviceable before conducting the workout and that all soldiers are proficient in the required exercises. Safety is every member's responsibility.

(6) Follow-on Tasks. The next workout will require two 25mm ammo cans and two pull-up bars or sets of rings for each four-person team.

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3. SERVICE SUPPORT

a. Equipment Weights

Ammo Can Nomenclature	Quantity / Size	Type	Weight	Contents
Cart 25mm APFSDS-T	30 rds	PA125	70 lbs	Sand
Cart cal .50 4B/1T	100 rds	M2A1	50 lbs	Sand

b. Equipment Requirements. Each four-person team will require two .50-cal ammo cans and two 25mm ammo cans.

c. Time and Repetition Recording. One stopwatch for all teams and a method of recording each team's rounds.

4. COMMAND AND SIGNAL

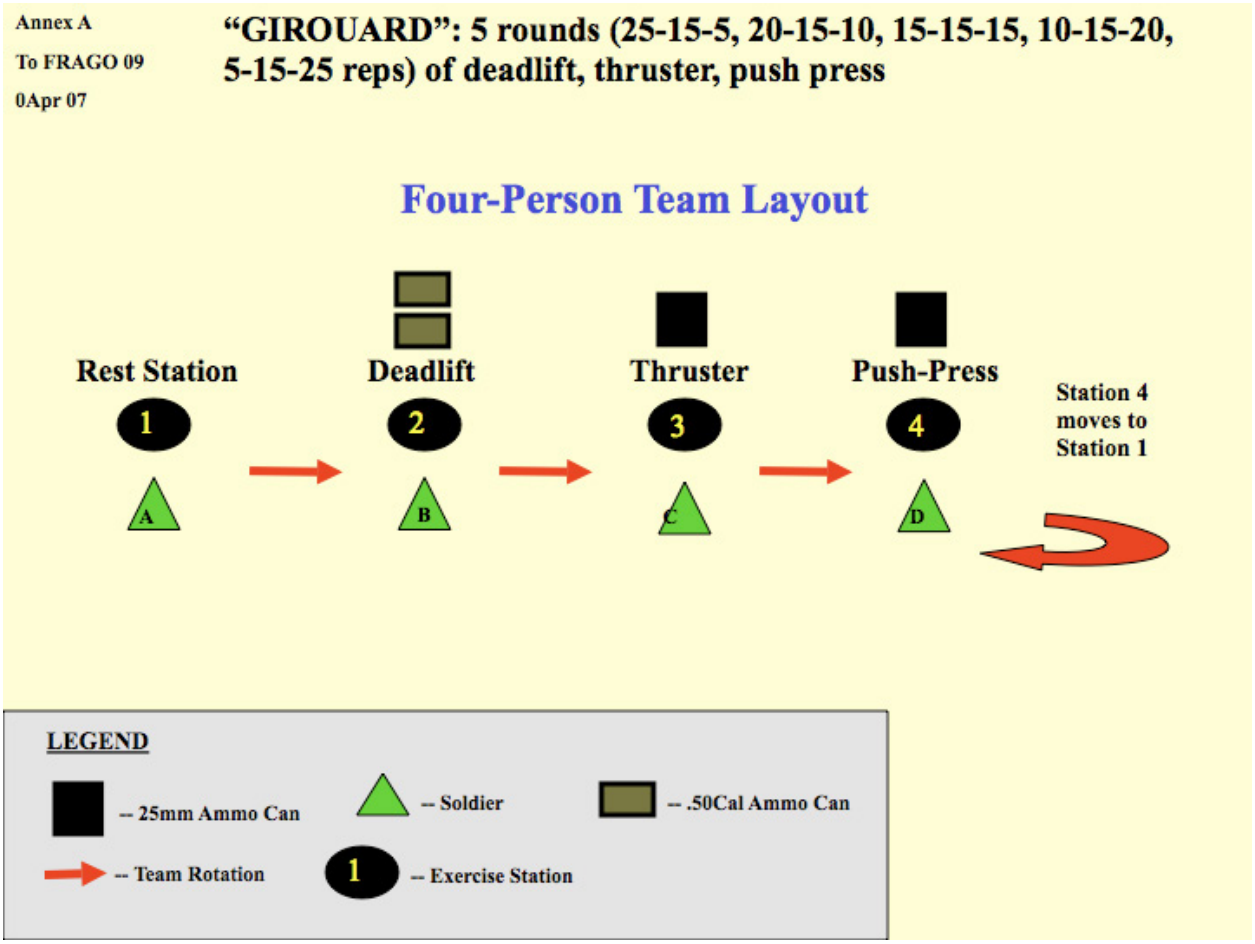
a. Timer/Score Recorder. Only one timekeeper is required for all teams. All four-person teams will begin and end the workout at the same time. It is recommended that at least one person per team start his stopwatch to act as a backup in case the primary timekeeper's stopwatch fails. A method of recording each team's rounds is also required.

b. Instructor/Coach. To ensure proper conduct of the workout, use of correct exercise form, and safety of execution, a designated member of the platoon can fill this billet.

Annexes:
Annex A Workout Diagram (AOO)
Annex B Equipment
Annex C Exercises

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Annex A Workout Diagram (AOO)



Annex B Equipment





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Annex C Exercises









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Understanding CrossFit

Greg Glassman



The aims, prescription, methodology, implementation, and adaptations of CrossFit are collectively and individually unique, defining of CrossFit, and instrumental in our program's successes in diverse applications.

Aims

From the beginning, the aim of CrossFit has been to forge a broad, general, and inclusive fitness. We sought to build a program that would best prepare trainees fir aby physical contigency- prepare them not only for the unknown but the unknowable. Looking at all sport and physical tasks collectively, we asked what physical skills and adaptations would most universally lend themselves to performance advantage. Capacity culled from the intersection of all sports demands would quite logically lend itself well to all sport. In sum, our specialty is not specializing. The second issue ("What is Fitness?") of the CrossFit Journal details its perspective.

Prescription

The CrossFit prescription is "constantly varied, high intensity, functional movement." Functional movements are universalmotor recruitment patterns; they are performed in a wave of contraction from core to extremity; and they are compound movements-- i.e, they are multi-joint. They are natural, effective, and efficient locomotors of body and external objects. But no aspect of functional movements is more important than their capacity to move large loads over long distances, and to do so quickly. Collectively, these three attributes (load, distance, and speed) uniquely qualify

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functional movements for the production of high power. Intensity is defined exactly as power, and intensity is the independent variable most commonly associated with maximizing favorable adaptation to excercise. Reconizing that the breadth and depth of a program's stimulus will determine the breadth and depth of the adaptation it elicits, our prescription of functionality and intensity is constantly varied. We believe that preparation for random physical challenes - i.e., unknown and unknowable evets - is at odds with fixed, predictable, and routine regimens.

Methodology

The methodology that drives CrossFit is entirely empirical. We believe that meaningful statemenrs about safety, efficacy, and efficiency, the three most important and interdependent facets of any fitness program, can be supported only by measureable, observable, repeatable facts, i.e., data. We call this approach "evidence based fitness." The CrossFit methodology depends on full disclosure of methods, results, and critiscms, and we've employed the Internet (and various Intranets) to support these values. Our Charter is open source, making co developers out of participating coaches, athletes, and trainers through a spontaneous and collaborative online community. CrossFit is empiraclly driven, clincally tested, and community developed.

Implementation

In implementation, CrossFit is, quite simply, a sport—the "sport of fitness." We've learned that harnessing thenatural camaraderie, competition, and fun of sport or game yields an intensity that cannot be matched by other means. The late Col. Jeff Cooper observed that"the fear of sporting failure is worse than the fear of death." It is our observation that men will die for points. Using whiteboards as scoreboards, keeping accurate scores and records, running a clock and precisely defining the rules and standards for performance, we not only motivate unprecedented output but derive both relative and absolute metrics at every workout; this data has important value well beyond motivation.

Adaptations

Our commitment to evidence-based fitness, publcly posting performance data, co-developing our program in collaboration with other coaches, and our open-source charter in general has well positioned us to garner important lessons from our program—to learn precisely and accurately, that is, about the adaptations elicited by CrossFit programming. What we've discovered is that CrossFit increases work capacity across broad time and modal domains. This is a discovery of great import and has come to motivate our programming and refocus our efforts. This far-reaching increase in work capacity supports our initially stated aims of building a broad, general, and inclusive fitness program. It also explains the wide variety sport demands met by CrossFit as evidenced by our deep penetration among diverse sports and endevours. We've come to see increased work capacity as the holy grail of performance improvement and all other common metrics like VO_2 max, lactate threshold, body composition, and even strength felxibility as being correlates - derivatives, even. We'd not trade improvements in any other fitness metric for a decrease in work capacity.

Conclusions

The modest start of publicly posting our daily workouts on the Internet beginning six years ago has evolved into a community where human performance is measured and publicly recorded against multiple, diverse, and fixed workloads. CrossFit is an open-source engine where inputs from any quarter can be publicly given to demonstrate fitness and fitness programming, and where coaches, trainers, and athletes can collectively advance the art and science of optimizing human performance.

Greg Glassman is the Founder of CrossFit, Inc. and Crossfit Santa Cruz and is the publisher of the CrossFit Journal. He is a former competitive gymnast and has been a fitness trainer and conditioning coach since the early 1980s.

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The Grinder

CrossFit FRAGO #10, "NOLAN"

CFHQ
Santa Cruz, CA
USA

01 May 07

OPS 11
FRAGO 10 to OPOrd 01 — OP GRINDER

Ref: A. OPORD 01 01 Jul 06

Task Organization: Annex A

1. SITUATION. No Change.

2. MISSION
"NOLAN": Complete as many rounds as possible in 20 minutes: 12 thrusters and 10 pull-ups

3. EXECUTION

a. Concept of Operations.

(1) Intent. Complete as many rounds of the exercises, as quickly as possible in a safe manner. This is a four-person-team, "time-specific" workout. The purpose of this workout is to develop cohesion and combat fitness under fatigue conditions through shared hardship, challenges, and competition.

(2) Scheme of Maneuver. The platoon will be divided into as many teams of four as possible. Each team will require 2 x .50-cal ammo cans for thrusters and two pull-up bars or two sets of rings. All the teams will start at the same time. Once each soldier has completed his required reps of thrusters, he will transition to pull-ups. Each exercise must be completed *of 5*

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before moving on the next one—i.e., you must finish all 12 thrusters before starting the 10 pull-ups. However, each exercise may be broken up into sets as desired—e.g., two sets of 5 pull-ups to complete the required 10, or a set of 7 and a set of 5 thrusters to complete the set of 12. If a soldier is unable to complete 10 pull-ups on his own, spotting will be permitted. However, spotting will be executed by supporting the back of the person doing pull-ups, not by supporting his feet, and assistance can be provided only by a team member who is also conducting pull-ups. Spotting is only permitted for pull-ups.

(3) Main Effort. The safety of all personnel, and the development of unit cohesion and combat fitness through shared challenge and hardship.

(4) End State. The safe and successful completion of all exercises.

b. Coordinating Instructions.

(1) Team Organization. Squad leaders can organize their soldiers however they wish. It is a leadership decision on how best to deploy each soldier to accomplish the mission.

(2) Scaling. The workout can be conducted in PT gear or full battle gear to include vests with plates, depending on the fitness levels of your soldiers. The number of reps can be increased or decreased based on the skill level of your troops.

(3) Scoring. The number of rounds competed by each soldier in the team is recorded. The team score is the combination of all four soldiers' completed rounds. For example, if soldier A completes 10 rounds, soldier B completes 12 rounds, soldier C completes 9 rounds, and soldier D completes 15 rounds, the team's score will be 46. The team or squad that completes the most rounds comes in first.

(4) 25mm Ammo-Can Thrusters. For safety reasons, it is imperative that the 25mm ammo can be lifted from the ground by the proper technique. The ammo can must be placed on the ground upside down (so that the lid of the ammo can is on the ground). With his back held in the proper deadlift position, the lifter deadlifts the ammo can to the hang position, where it remains inverted, with the lid facing the ground. From the hang position, he cleans the ammo can to the rack position (the thruster start position). It is during this transition, from the hang to the racked position, that the ammo can rotates 180 degrees (to end with the lid facing up). This is the start position for the thrusters.

(5) Safety. Ensure that all equipment is checked and serviceable before conducting the workout, and that all soldiers are proficient in the required exercises. Safety is every member's responsibility.

(6) Follow-on Tasks. The next workout will require a 400-meter running route, two 25-mm ammo cans, and two pull-up bars or sets of rings for each six-person team.

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3. SERVICE SUPPORT

a. Equipment Weights

Ammo Can Nomenclature	Quantity / Size	Type	Weight	Contents
Cart 25mm APFSDS-T	30 rds	PA125	70 lbs	Sand
Nylon webbing, plain weave, tubular (austere rings)	NA	8305-21-111-5411	NA	NA
Snap Link, Mountain Piton (austere rings)	12mm	8465-21-896-8280	NA	Claw snap and screwgate
PVC pipe 1 ½ inch (austere rings)	8 inch x 2 per rings	Standard	NA	NA

b. Equipment Requirements. Each four-person team will require two 25-mm ammo cans and two sets of pull-up bars or two sets of rings (austere or regular).

c. Time and Repetition Recording. One stopwatch for all teams and a method of recording each team's rounds.

4. COMMAND AND SIGNAL

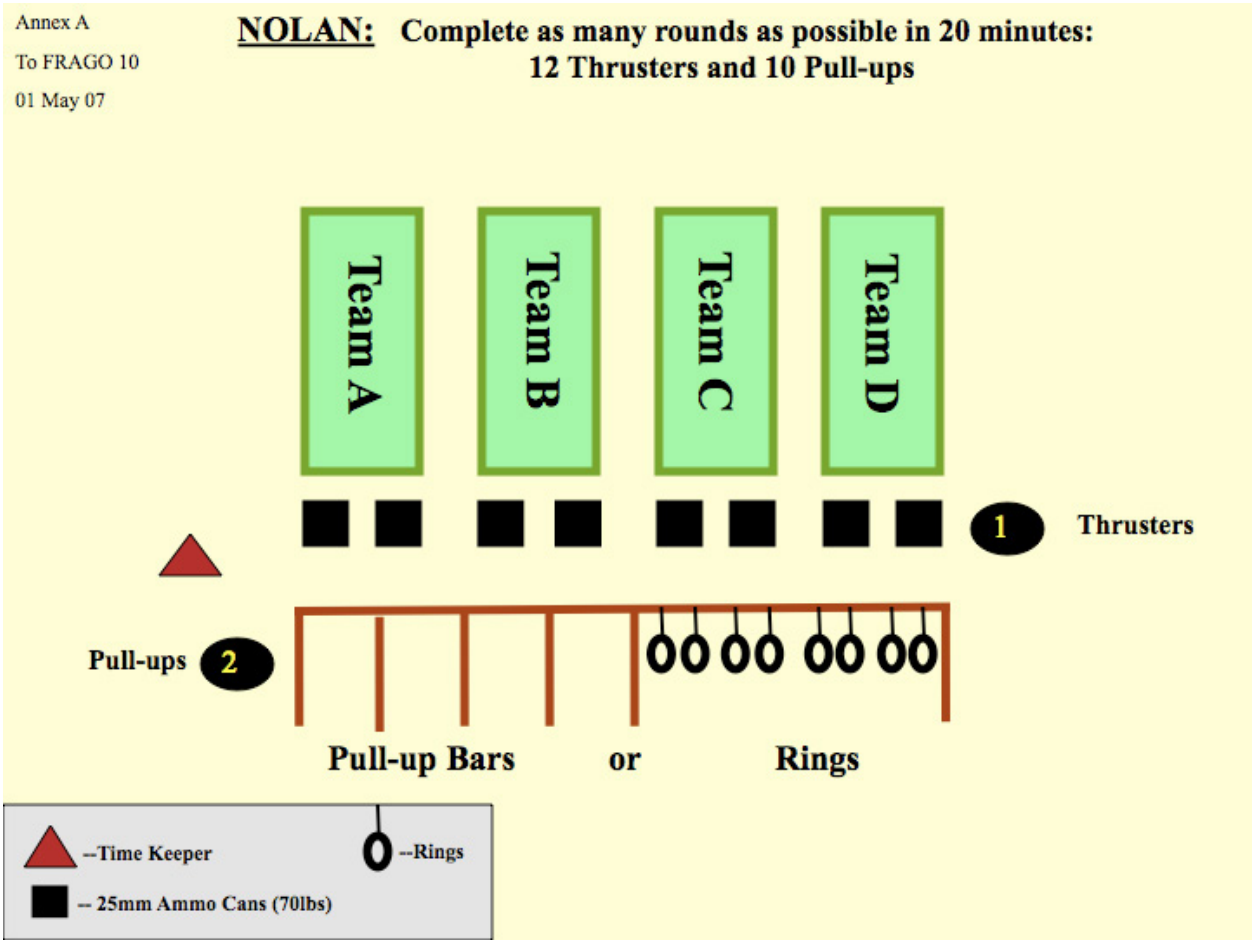
a. Timer/Score Recorder. Only one timekeeper is required for all teams. All four-person teams begin and end the workout at the same time. It is recommended that at least one person per team start his stopwatch to act as a backup in case the primary timekeeper's stopwatch fails. A method of recording each soldier's rounds is also required.

b. Instructor/Coach. To ensure proper conduct of the workout, use of correct exercise form, and safety of execution, a designated member of the platoon can fill this billet.

Annexes:
Annex A Workout Diagram (AOO)
Annex B Equipment
Annex C Exercises

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Annex A Workout Diagram (AOO)



Annex B Equipment





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Annex C Exercises





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The Grinder

CrossFit FRAGO #11, "LEGER"

CFHQ
Santa Cruz, CA
USA

01 June 07

OPS 12
FRAGO 11 to OPORD 01 — OP GRINDER

Ref: A. OPORD 01 01 Jul 06

Task Organization: Annex A

1. SITUATION. No change.

2. MISSION
"Leger": 400-meter run
21 thrusters
30 pull-ups
800-meter run
30 pull-ups
21 thrusters
4 run

3. EXECUTION

a. Concept of Operations.

(1) Intent. Complete the exercises in order, as quickly as possible, in a safe manner. This is a six-person-team "task-specific" workout. The purpose of this workout is to develop cohesion and combat fitness under fatigue conditions through shared hardship, challenges, and competition. *of 5*

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(2) Scheme of maneuver. The platoon will be divided into as many teams of six as possible. Each team will require two .25mm ammo cans for thrusters and two pull-up bars or two sets of rings for pull-ups. All teams will start at the same time. Once each soldier has completed the first 400-meter run, he will begin the thrusters. After completing the required reps of thrusters, he will transition to pull-ups. Each exercise must be completed before moving on the next one—i.e., you must finish all 21 thrusters before starting the 30 pull-ups. However, each exercise may be broken up into sets as desired—e.g., three sets of 7 thrusters to complete the required 21, or two sets of 15 for the 30 pull-ups. If a soldier is unable to complete 30 pull-ups on his own, spotting will be permitted. However, spotting will be executed by supporting the back of the soldier doing pull-ups, not by supporting his feet, and only by a team member who is also conducting pull-ups. If a soldier is in the midst of his own set of thrusters, he is not permitted to spot another team member doing pull-ups. *2 of 5*

(3) Main Effort. The safety of all personnel, and the development of unit cohesion and combat fitness through shared challenge and hardship.

(4) End State. The safe and successful completion of all exercises.

b. Coordinating Instructions.

(1) Team Organization. Squad leaders can organize their soldiers however they wish. It is a leadership decision on how best to deploy each soldier to accomplish the mission.

(2) Scaling. The workout can be conducted in PT gear or full battle gear to include vests with plates, depending on the fitness levels of your soldiers. The number of reps can be increased or decreased based on the skill level and capacity of your troops.

(3) Scoring. The individual finish times for each soldier are added together to determine the total finish time for the team. For example, if the finish times for the six soldiers on a team are: 18:10, 18:20, 18:30, 19:00, 19:15, and 20:00, when the individual soldiers' times are added together, the team's score is 113:15. The team that has the lowest combined time comes in first. Also, each individual soldier's time can be ranked.

(4) 25mm Ammo-Can Thrusters. For safety reasons, it is imperative that the 25mm ammo can be lifted from the ground by the proper technique. The ammo can must be placed on the ground upside down (so that the lid of the ammo can is on the ground). With his back held in the proper dead-lift position, the lifter dead-lifts the ammo can to the hang position, where it remains inverted, with the lid facing the ground. From the hang position, he cleans the ammo can to the rack position (the thruster start position). It is during this transition, from the hang to the racked position, that the ammo can rotates 180 degrees (to end with the lid facing up). This is the start position for the thrusters.

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(5) Safety. Ensure that all equipment is checked and serviceable before conducting the workout, and that all soldiers are proficient in the required exercises. Safety is every member's responsibility.

(6) Follow-on Tasks. The next workout will require a sash-cord or skipping rope, a 20-pound medicine ball, a 25mm ammo can, a .50 Cal ammo can, a 24-inch ply -box or two Stryker tires per five-man team.

3. SERVICE SUPPORT

a. Equipment Weights

Ammo Can Nomenclature	Quantity / Size	Type	Weight	Contents
Cart 25mm APFSDS-T	30 rds	PA125	70 lbs	Sand
Nylon webbing, plain weave, tubular (austere rings)	NA	8305-21-111-5411	NA	NA
Snap Link, Mountain Piton (austere rings)	12mm	8465-21-896-8280	NA	Claw snap and screwgate
PVC pipe 1 1/2 inch (austere rings)	8 inch x 2 per rings	Standard	NA	NA

b. Equipment Requirements. Each six-man team will require 2 x 25mm ammo cans and two sets of pull-up bars or two sets of rings (austere or regular).

c. Time and Repetition Recording. One stopwatch for all teams and a method of recording each team's rounds.

4. COMMAND AND SIGNAL

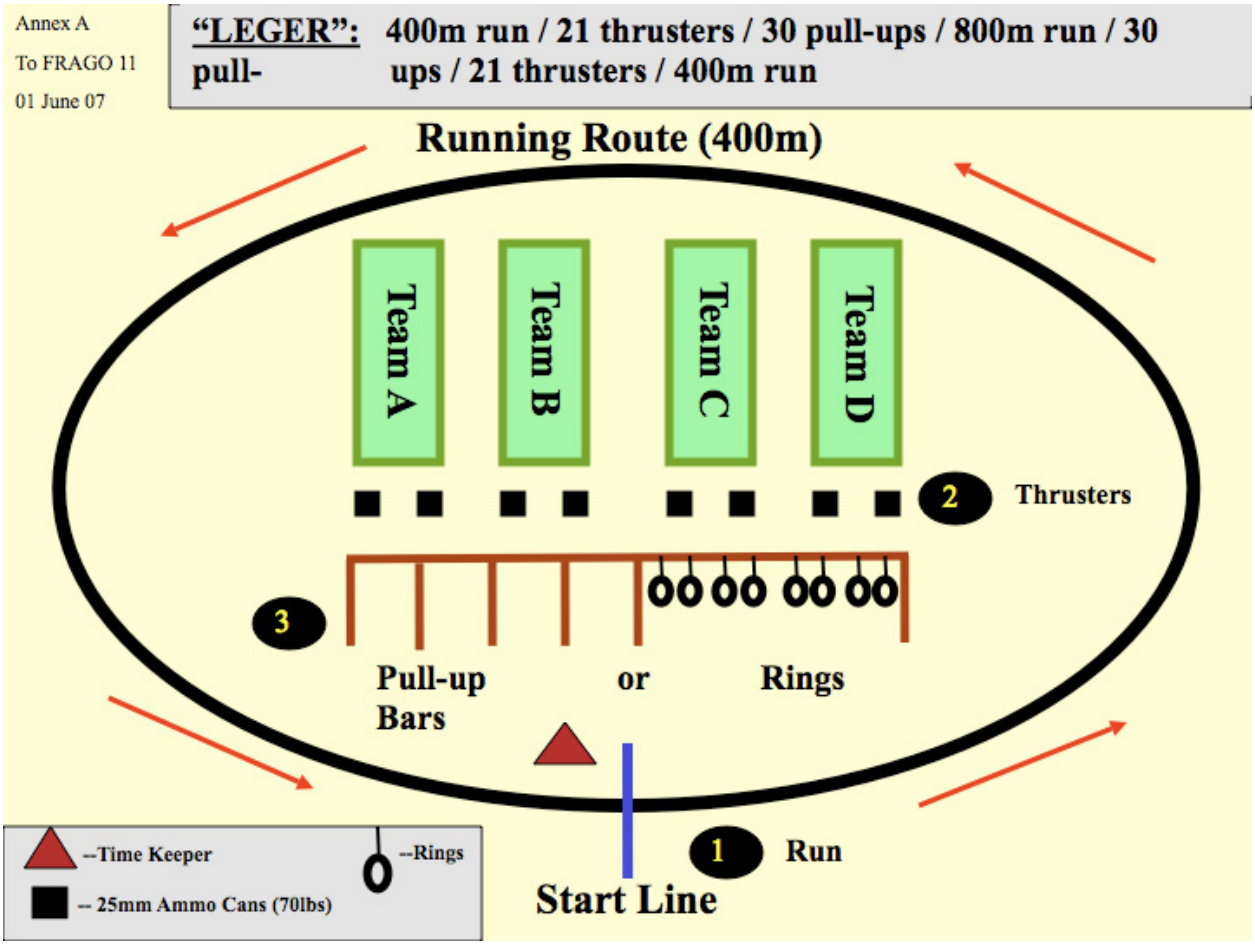
a. Timer/Score Recorder. Only one timekeeper is required for all teams. All six-man teams begin the workout at the same time. It is recommended that at least one person per team start his stopwatch to act as a backup in case the primary timekeeper's stopwatch fails. A method of recording each soldier's time is also required.

b. Instructor/Coach. To ensure proper conduct of the workout, use of correct exercise form, and safety of execution, a designated member of the platoon can fill this billet.

Annexes:
Annex A Workout Diagram (AOO)
Annex B Equipment
Annex C Exercises

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Annex A Workout Diagram (AOO)



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Annex B Equipment





Annex C Exercises



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The Grinder

CrossFit FRAGO #12, "PALMER"

CFHQ
Santa Cruz, CA
USA

01 JULY 07

OPS 13
FRAGO 12 TO OPORD 01 — OP GRINDER

Ref: A. OPORD 01 01 Jul 06

Task Organization: Annex A

1. SITUATION. No Change.

2. MISSION
"PALMER": Three rounds, one minute of each exercise per round: double-unders, wall ball, sumo deadlift high pull, push press, and box jump.

3. EXECUTION

a. Concept of Operations.

(1) Intent. Complete the exercises, as quickly as possible, in a safe manner. This is a five-person-team, "task-specific" workout. The purpose of this workout is to develop cohesion and combat fitness under fatigue conditions through shared hardship, challenges, and competition.

(2) Scheme of Maneuver. The platoon will be divided into as many teams of five as possible. Each team will require a skipping rope or sash cord for double-unders, a 20-lb medicine ball or austere medicine ball for wall ball, a .50-cal ammo can for sumo deadlift high pulls, a 25-mm ammo *of 6*

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can for push presses, and two Stryker tires for box jumps. All teams will start at the same time. Each soldier will start the workout at a specific exercise station. The soldiers will rotate to the next station after a minute of exercising, completing as many reps of the exercise as possible. The clock does not stop between exercises. After each five-minute round, at the completion of all five stations, there is a one-minute break. One point is given for each rep of each exercise. Spotting will not be permitted at any time during the workout.

(3) Main Effort. The safety of all personnel, and the development of unit cohesion and combat fitness through shared challenge and hardship.

(4) End State. The safe and successful completion of all exercises.

b. Coordinating Instructions.

(1) Team Organization. Squad leaders can organize their soldiers however they wish. It is a leadership decision on how best to deploy each soldier to accomplish the mission.

(2) Scaling. The workout can be conducted in PT gear or full battle gear to include vests with plates, depending on the fitness levels of your soldiers. Also, soldiers can rest at any time during the workout, if required; however, the clock does not stop.

(3) Scoring. One point is given for each rep completed of the exercises; for example, one point is given for each double-under, wall-ball shot, sumo deadlift high pull, push press, and box jump. The total reps from each round are added together. The scores of each soldier on the team are combined to obtain the team's total score. The team that has the highest combined score comes in first. Also, each individual soldier's score can be ranked in the platoon.

(4) Safety. Ensure that all equipment is checked and serviceable before conducting the workout, and that all soldiers are proficient in the required exercises. Safety is every member's responsibility.

(5) Follow-on Tasks. The next workout will require two .50-cal ammo cans, four 6-foot pickets, and one 25-mm ammo can per four-person team.

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3. SERVICE SUPPORT

a. Equipment Weights

Ammo Can Nomenclature	Quantity / Size	Type	Weight	Contents
Cart 25mm APFSDS-T	30 rds	PA125	70 lbs	Sand
Cart cal .50 4B/1T	100 rds	M2A1	50 lbs	Sand
Stryker tire and rim	1	2610-20-000-7697	approx 350 lbs	NA

b. Equipment Requirements. Each five-person team will require a skipping rope, a medicine ball, a .50-cal ammo can, a 25-mm ammo can, and two Stryker tires (which will be stacked).

c. Time and Repetition Recording. One stopwatch for all teams and a method of recording each soldier's reps. The fire-team partner of the soldier conducting the workout keeps score on the score sheet. After the soldier has completed all three rounds of the workout, he switches with his fire-team partner and becomes the score keeper.

4. COMMAND AND SIGNAL

a. Timer/Score Recorder. Only one timekeeper is required for all teams. All five-man teams begin the workout at the same time. Each soldier conducting the workout has a scorekeeper who follows him throughout the workout, recording his reps at each station. It is recommended that at least one participant start his stopwatch to act as a backup in case the primary timekeeper's stopwatch fails.

b. Instructor/Coach. To ensure proper conduct of the workout, use of correct exercise form, and safety of execution, a designated member of the platoon can fill this billet.

Annexes:
Annex A Workout Diagram (AOO)
Annex B Equipment
Annex C Exercises
Annex D Implementation Photograph

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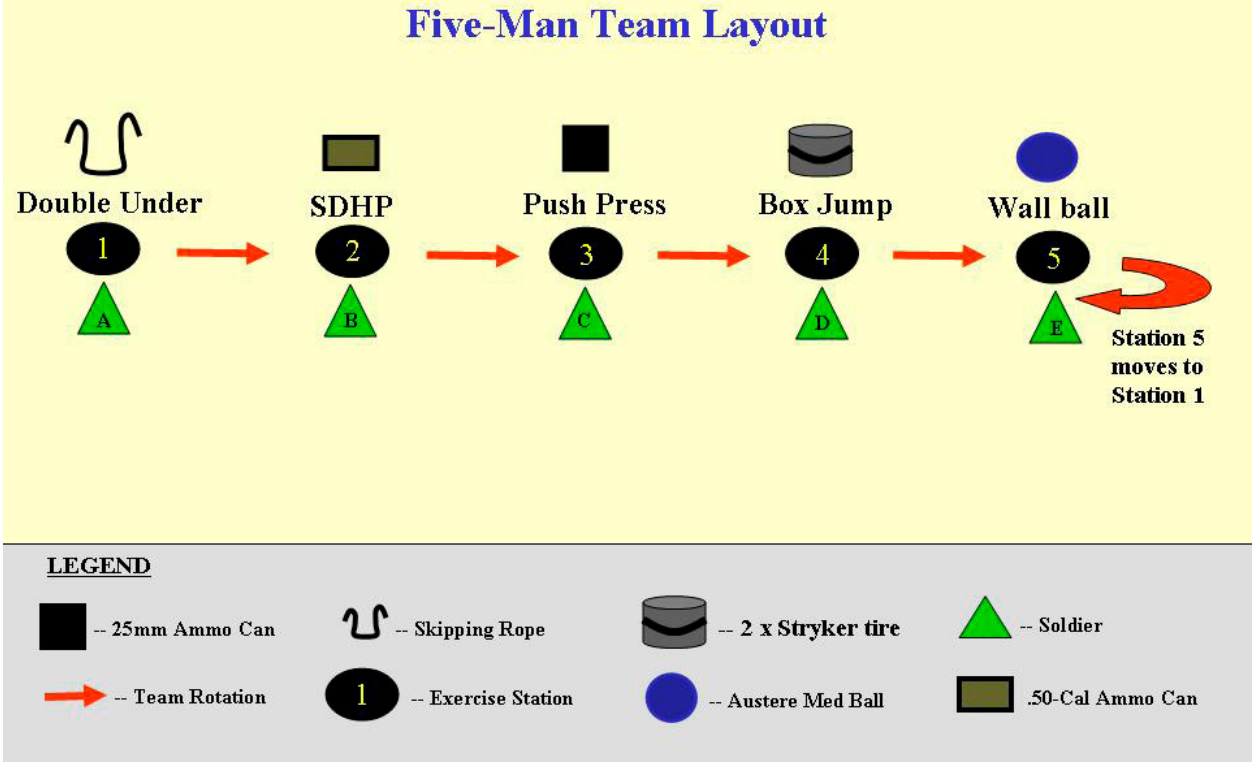
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Annex A Workout Diagram (AOO)

Annex A
To FRAGO 12
01July 07

PALMER, an austere "Fight Gone Bad": Three rounds of double-unders, wall ball, sumo deadlift high pull, push press, and box jump.



Annex B Equipment






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Annex C Exercises











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Annex C Exercises (cont'd)





Annex D Implementation Photograph



A recent 80-person implementation of "Palmer"

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The Grinder

CrossFit FRAGO #13, "SHORTY"

CFHQ
Santa Cruz, CA
USA

01 Aug 07

OPS 14
FRAGO 13 to OPOrd 01 — OP GRINDER

Ref: A. OPORD 01 01 Jul 06

Task Organization: Annex A

1. SITUATION No change.

2. MISSION
"SHORTY": Complete as many rounds as possible in 20 minutes: 21 deadlifts, 15 overhead squats, and 9 thrusters.

3. EXECUTION

a. Concept of Operations

(1) Intent. Complete the exercises in order, as quickly as possible, in a safe manner. This is a four-person-team, "time-specific" workout. The purpose of this workout is to develop cohesion and combat fitness under fatigue conditions through shared hardship, challenges, and competition.

(2) Scheme of Maneuver. The platoon will be divided into as many teams of four as possible. Each team will require two .50-cal ammo cans for deadlifts, four 6-foot pickets for overhead squats, and one 25-mm ammo can for thrusters. All teams will start at the same time. Each soldier will complete as many rounds of the prescribed exercises as he can in *of 6*

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20 minutes. One soldier from each team begins with the deadlifts; after completing 21 reps, he moves on to the overhead squats, and the next team member begins deadlifts. Ultimately, all team members will be working their way through the rounds at the same time but at their own pace. The soldiers will complete the exercises in order; they must finish the deadlifts before starting the overhead squats and then finish the overhead squats before starting the thrusters. However, they can break up the sets if needed to complete the exercise—for example, the nine thrusters may be completed in three sets of three. Also, solders may take a break at any time during the workout. During these breaks, another team member who is on the same exercise can "work in" and conduct his reps of the exercise. This will allow for maximum use of equipment and time. Spotting will not be permitted at any time during the workout.

(3) Main Effort. The safety of all personnel, and the development of unit cohesion and combat fitness through shared challenge and hardship.

(4) End State. The safe and successful completion of all exercises.

b. Coordinating Instructions

(1) Team Organization. Squad leaders can organize their soldiers however they wish. It is a leadership decision on how best to deploy each soldier to accomplish the mission.

(2) Scaling. The workout can be conducted in PT gear or full battle gear to include vests with plates, depending on the fitness levels of your soldiers. Also, soldiers can rest at any time during the workout, if required; however, the clock does not stop.

(3) Scoring. One point is given for each round completed; for example, if a soldier completes 10 rounds and 21 deadlifts plus 15 overhead squats but only 6 thrusters, his score would be 10. The scores of each soldier on the team are combined to obtain the team's total score. The team that has the highest combined score comes in first. Also, each individual soldier's score can be ranked in the platoon.

(4) Safety. Ensure that all equipment is checked and serviceable before conducting the workout, and that all soldiers are proficient in the required exercises. Safety is every member's responsibility.

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3. SERVICE SUPPORT

a. Equipment Weights.

Ammo Can Nomenclature	Quantity / Size	Type	Weight	Contents
Cart 25mm APFSDS-T	30 rds	PA125	70 lbs	sand
Cart cal .50 4B/1T	100 rds	M2A1	50 lbs	sand
Picket	6 feet	5410-990139-4444	10 lbs	NA

b. Equipment Requirements. Each four-person team will require two .50-cal ammo cans, four 6-foot pickets (taped or zap strapped together, Ref Ann B) and a 25-mm ammo can.

c. Time and Repetition Recording. One stopwatch for all teams and a method of recording each soldier's reps.

4. COMMAND AND SIGNAL

a. Timer/Score Recorder. Only one timekeeper is required for all teams. All four-person teams begin the workout at the same time. It is recommended that at least one participant also start his stopwatch to act as a backup in case the primary timekeeper's stopwatch fails.
b. Instructor/Coach. To ensure proper conduct of the workout, use of correct exercise form, and safety of execution, a designated member of the platoon can fill this billet.

Annexes:

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Annex B Equipment
Annex C Exercises

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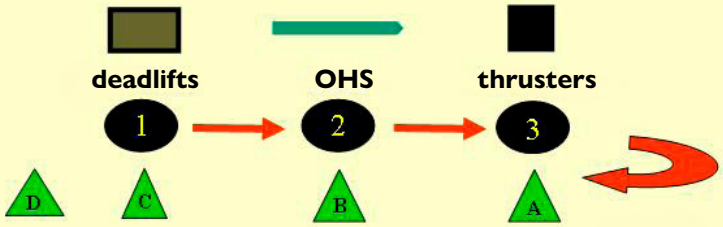
Annex A Workout Diagram (AOO)

Annex A
To FRAGO 13
01Aug 07

"SHORTY": Complete as many rounds as possible in 20 minutes:
21 deadlifts, 15 overhead squats, 9 thrusters

Four-Man Team Layout

Soldier A completes 21 deadlifts. Then he moves on to OHS, and Soldier B begins his deadlifts, and so on. All soldiers rotate through the excercises in order, individually completing as many rounds as they can.



Stand 3 moves to Stand 1

LEGEND

-- 25mm Ammo Can
-- 6 Foot Picket
-- .50 Cal Ammo Can
--Team Rotation
1 -- Excercise Station
-- Soldier

Annex B Equipment







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Annex C Exercises

Thruster





Deadlift





Overhead Squat




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E.M. Burton



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THE CrossFit JOURNAL

THE CROSSFIT SAT-PREP PROGRAM

CrossFit Founder and CEO Greg Glassman describes a pilot program that combines CrossFit training with education—a perfect fit with CrossFit's mission to change lives.

Greg Glassman as told to Mike Warkentin

CrossFit has been in the business of improving athletic proficiency for a long time.

We've got a physiological answer to the question of fitness, and it's constantly varied functional movement performed at high intensity. But in net what we do is we make people better, and that's the more important part.

Curiously, "better" is really fuzzy language –but you get to decide for yourself and measure for yourself what "better" is.

If you would come into my box on Day 1,

I'd tell you to go off in a corner and write down five things that would make you a better human being. Forget CrossFit. Just write down five things that you wish were true of you. Make them subjective or objective, something you can measure or not, and then put the list away. I'd want you to work out with us three to five times a week for six months, and we'd then review that list and see if we're closer or further from the target. I

If better involves academic success, getting into the right schools, and getting the right job–and that is indeed a definition of "better" for many–I think in our gyms we can improve cognitive function by just about any standard or accepted measure. We can do it with children, and we're going to start by improving SAT scores. We can make kids smarter and improve their thinking processes, logic, vocabularies. We'll give them better tools to process and understand. The CrossFit SAT-prep program is going to do all this.

For long periods of time, I tutored training clients and some of their kids to tremendous net effect. I also learned early that the emotional and character components that led to significant training effect–success in athletes, success in training–were also carried over perfectly to academic success. It was after finding success with gymnastics, for instance, that I found success with mathematics. Not the other way around.

Mind-body dualism is a myth. I don't want to train like there's some sharp division between what happens from the collarbones up and the rest of the body. Brain function is part of the body. I've long thought that our training was a metaphor for boatloads of life lessons and patterns for success. It's time to tie already know what the answer would be. all of that together with the SAT-prep project.

CrossFit has a number of gyms that are currently playing with the SAT-prep concept with between three and 25 kids or so, and we're already seeing some data. It's just what you would think.



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Every SAT tutor knows you can improve SAT scores. Guess what? We are. To see if this becomes something that the affiliate can fuse into his culture or her culture, and the box's culture, is the remaining question, and I don't see how you can miss.

The affiliate now has a wonderful opportunity. What a great thing it is to be able to tell a parent, "I'm going to take care of your kid's physical and mental fitness. Ask me how." That's a sign to put on the wall.

It used to be the most important thing I could do was unlock the door in the morning and stand there with somebody and teach him how to squat. We are in a position now to serve those affiliates that are unlocking the door every morning, and they don't need me standing over their shoulder giving them pointers on squatting. But if I could go back to that original little CrossFit gym in Santa Cruz and unlock the door, I'll tell you right now what I would do next: I would take those chairs we were using for seminars and I'd hold SAT-prep classes. I'd teach math to people who are afraid of math, and I'd be doing everything I could to improve the cognitive processes of my friends. And we'd have fun with it, too.

I've got these gyms that sit empty at least for a good portion of the night and a good chunk of the weekend. The whiteboards are already there, and we need 20 $5 plastic stacking chairs. And I need an instructor, someone to raise a hand and say, "I'm a teacher." And suddenly all of us are in a completely different place.

In Kenya, we're building schools and bringing fresh water, and I don't think it's lost on anyone that there will eventually be gyms at each of these schools. On that side of the world, we've got schools that are going to become gyms, and on the other side of the world we've got gyms that are going to become schools. You know the old adage about teaching someone to fish rather than feeding him? This is clearly a case of teaching someone how to fish. I don't think there's any member of our community more deserving of a helping hand than these student athletes.

And we're going to help them.

Above-the-Neck FitNess

By Hilary Achauer

"I hate math. I'm horrible at it." Kelsey, a tall, 16-year-old high-school girl from Murietta, Calif., had made up her mind about math.

When her friend Morgan told her about a 12-week program that combined CrossFit instruction with SAT-prep classes, Kelsey figured she didn't have anything to lose. She needed help with the math portion of the SAT, and the course was free. Morgan's mom worked out at CrossFit by Overload, the box offering the class. Other than cheerlead-ing, Kelsey didn't have a particularly athletic background, but Morgan told her she'd have fun. This is how Kelsey, Morgan and five other high-school girls found themselves at CrossFit by Overload's 6 p.m. class, nervously facing a warehouse full of barbells, rings, pull-up bars and other unfamiliar equipment. "When they started, they didn't want to get uncomfortable," said Paula Gravatt, one of the owners of CrossFit by Overload and the person in charge of the program.

"In the beginning, all they wanted to do was sit-ups," said Dustin Marshman, who taught both the CrossFit and SAT portions of the program. "They had no experience with a barbell, and none of them could do even one pull-up."

> It's important to be physically strong, but equally important is what Coach Glassman likes to call "above-the-neck fitness."

The SAT-prep program, the brainchild of CrossFit founder and CEO Greg Glassman, combined SAT courses with CrossFit. The program consisted of three days of CrossFit training and two days of SAT tutoring, with CrossFit Endurance homework on the weekend. The classes



Michael Doyle


Michael Doyle


Michael Doyle



E.M. Burton

were free to the students, and their attendance was entirely voluntary.

So what does CrossFit have to do with SAT scores? How were deadlifts and push-ups going to help Kelsey get better at math?

The answer is complicated and goes back to one of Glassman's goals for CrossFit. It's important to be physically strong, but equally important is what Glassman likes to call "above-the-neck fitness."

Fitness and the Brain

CrossFit is not the first to explore the connection between exercise and the brain. Others have already done so, and the connection appears to be real. In their 2008 book *Spark: The Revolutionary New Science of Exercise and the Brain*, John J. Ratey and Eric Hager-man report on a school in Naperville, Ill., where a revolutionary new P.E. program resulted in Naperville students finishing first in the world in science in the international standards test called Trends in International Math and Science Study (TIMSS). That's ahead of Singapore, Korea, Taiwan, Hong Kong and Japan. The authors write about a FitnessGram test in 2001 that found fit kids scored twice as well on academic tests as their unfit peers. And one school that increased P.E. from one class a week to 45 minutes a day saw violent incidents decrease from 228 to 95 for the year.

> Coach Glassman believes that CrossFit not only brings improved fitness but also creates improved people.

Glassman believes that CrossFit not only brings improved fitness but also creates improved people who are fit, smart, and operate with leadership and integrity. CrossFit is not just a fitness program but a lifestyle program, and his goal is to improve people's lives in a variety of ways. Glassman chose to focus on an SAT program because a good SAT score can be the difference between getting a scholarship and facing years of studentloan debt. It can be the difference between a satisfying, high-paying position or a go-nowhere, minimum-wage job.

As Ratey and Hagerman wrote in *Spark*

> As Ratey and Hagerman wrote in Spark, "Exercise provides an unparalleled stimulus, creating an environment in which the brain is ready, willing and able." The administrators in Naperville were so impressed by the effect of exercise on academics that "guidance counselors (began) suggesting that all students schedule their hardest subjects immediately after gym, to capitalize on the beneficial effects of exercise."

Tricked into Teaching

How Marshman found himself in a CrossFit box standing in front of seven 15-year-old girls is another story. This father of two who works as a civil engineer is a former Navy SEAL who also runs an OSHA safety school and is a trainer at CrossFit by Overload. When asked how he ended up teaching the SAT course, he laughed and said, "Paula tricked me!"

One night, after a CrossFit class, Marshman saw a parent struggling to help his child with his junior-high math homework. Marshman stepped in to help, someone snapped a picture, and before Marshman knew it, he had six days to prepare the 12-week SAT-prep program

Marshman used Kaplan SAT 2012: Strategies, Practice, and Review and The Princeton Review's Cracking the SAT 2012 as references and came up with a plan. Marshman and the other instructors gave the students a CrossFit test and a sample SAT test at the beginning if the program. The CrossFit test consisted of a 1RM deadlift and then a timed workout that included a 400-meter run, 40 air squats, 30 sit-ups, 20 push-ups and 10 pull-ups (the students used either a green or blue band depending on their strength).

> If teaching 15- and 16-year-old girls CrossFit was a challenge, trying to get them to pay attention to algebra at 7 p.m. on a Thursday was almost impossible.

"Teenage girls always have somewhere else to be," Marshman said with a laugh. "My tactic was to run this like a college class and give them respect. I did get respect from them, but I had to engage them constantly."

Marshman noticed that Kelsey, the girl who struggled with math, would have to look at a friend's paper in order to figure out how to even start the math problem. ' "I told her, Just start doing math,'" Marshman said. "'It will lead you somewhere. Maybe you don't go down the right path when you start, but somewhere along the way it will lead you to the right trail.'"

That's a little like CrossFit. Fran doesn't do itself. You just have to pick up the barbell and start doing thrusters.

Meanwhile In New Jersey

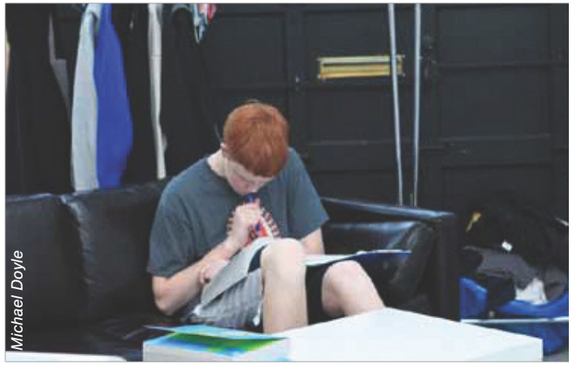
At the same time Marshman and Gravatt were running their program in California, Karianne Dickson was running a similar experiment out of Guerrilla Fitness in Morristown, N.J. Just like the Overload project, Glassman had asked Dickson to hold a free 12-week program that combined CrossFit instruction with SAT prep.

Dickson was able to find tutors– a husband-and-wife team–who run a private SAT-tutoring business. The class included six kids and consisted of semiweekly sessions that combined an hour of CrossFit instruction with an hour of SAT prep. The kids who participated were all somehow connected with Cross-Fit–either their parents were members or they were friends with someone who was a member.

Dickson and her team tried to reach out to the public schools to cast a wider net with this free program, but their proposal met with suspicion.

"The impression we got was that the superintendent thought this was too good to be true," Dickson said. "We weren't a known name, like (test-prep company) Kaplan, so they didn't want to take a risk and send students to us. Our hope is that with this pilot program we can go back and show the kids' progress and reach out to the community."

> "I have been able to learn more in a few months' time than I would have been able to without the CrossFit component."
>
> —Gabrielle


Michael Doyle


Michael Doyle



E.M. Burton

"The SAT program has worked in great tandem with the (CrossFit) classes," said Gabrielle, a student who participated in the Guerilla Fitness program. "Post-workout, with high endorphin levels, I have been able to learn more in a few months' time than I think I would have been able to without the CrossFit component. The mental toughness developed in the gym has played a vital role in my improved SAT scores, allowing me to push longer and harder through the grueling test." The high-school students are not the only ones who benefitted from this program. The adult members would walk into the gym after one of the SAT classes, and instead of WODs and PRs, they'd see math formulas on the board.

"People involved in CrossFit talk a lot about our community involvement, but here the members were seeing it firsthand. They weren't surprised to see us reaching out," Dickson said. "They feel that this is part of what CrossFit is about."

The adults were also impressed by the dedication of these young students, especially because most adults are happy to be finished with studying for the SATs.

"I heard a lot of them say, 'Taking an SAT course is the last thing I would want to do after a WOD!'" Dickson said with a laugh.

THE RESULTS

Marshman carefully tracked his students' progress with both CrossFit and the SAT. For the SAT, which he tested three times over the 12-week course, Marshman saw a linear increase in the class average in the math section of the test. The students' scores increased by 37.9 percent overall. The overall increase in the critical reading portion of the SAT was 21.4 percent.

On the CrossFit side of things, the average deadlift increased by 24 percent, while the average result of the timed workout was 23.9 percent faster. In his written summary of the course, Marshman wrote, "All of the students increased their power output during the baseline test. All but one student increased their deadlift scores."

Over on the other side of the country, the students at Guerilla Fitness did Helen and Jackie at the beginning and end of the program, as well as the CrossFit Total. Gabrielle improved her CrossFit Total from 265 to 390, adding 60 lb. to her back squat. She improved her Helen time by more than 2 minutes and switched from a green band to a blue band for her pull-ups. On Jackie, Gabrielle shaved 50 seconds off her time.

The New Jersey group improved their average math scores by 100 to 150 points, and their critical reading scores increased by 190 points. What's more, the SAT tutors noted that all the students quickened their pace in the critical reading and writing sections, which will help them when they take the SAT in a pressure-filled real-world setting.

YOU CAN DO IT, MOM!

I visited CrossFit by Overload after the SAT program ended to meet withMarshman and Gravatt and interview

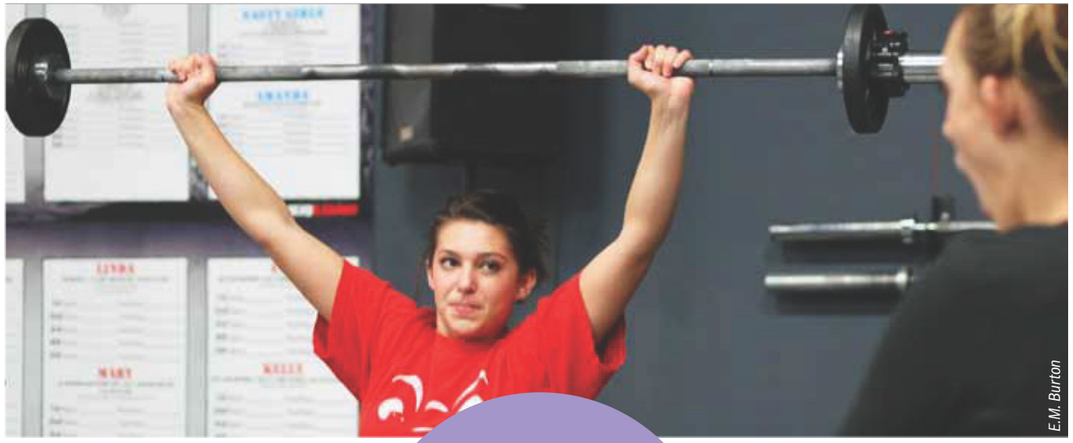


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two of the students who participated in the program. I talked with Gravatt while I watched Kelsey and Morgan go through a workout. Morgan was there with her mom, Maria, and they stood with their arms around each other before the workout. Mother and daughter suffered through the Hero WOD Brenton, a tough combination of bear crawls, standing broad jumps and burpees.

When Maria faltered toward the end, Morgan yelled out, "C'mon, mom, you can do it!"

After they had a chance to catch their breath, I chatted with Kelsey and Morgan about their experience in the SAT-prep program.

"We were welcomed by everybody on the first day," Kelsey said. "We got constant encouragement. And we learned new strategies in the SAT class, like how to break the test up into chunks and look for key words. And if we gave a wrong answer, Dustin would make us do burpees!"

In a warehouse filled with pull-up bars and barbells, Kelsey found someone who made math less intimidating, who made it seem possible.

"None of us did well on the PSAT (Preliminary SAT)," Morgan said. "In this class, we improved our lifting form, got in shape and learned at the same time."

"I loved working together with my teammates during the WOD," Kelsey said. "I learned new (test-taking) strategies. Overall, this was a good experience. I would recommend it to anyone."

She continued: "The SAT tutoring helped with my other classes. Dustin tutored us in Algebra 2."

Just then, Marshman showed up. He greeted the girls and asked Kelsey how she did on her algebra test. Kelsey got a huge smile on her face and said proudly, "I got a B!"

Marshman beamed and gave her a high five. "That's great!" he said.

In a warehouse filled with pull-up bars and barbells, Kelsey found someone who made math less intimidating, who made it seem possible. This same girl increased her deadlift weight by 48 percent and improved her time for the run/sit-ups/push-ups/pull-ups workout by 23 percent.

That sounds a lot like Coach Glass-man's definition of fitness above and below the neck.

A crossFit bribe

Dickson told me that a course like this has a ripple effect beyond the impact on the high-school students. Once members of a CrossFit gym see this kind of outreach and see how CrossFit can affect every aspect of life, the wheels start turning. How else can CrossFit change lives? What else can they do to improve their community? These are the types of questions Glassman is hoping people will start asking themselves.

CrossFit then becomes something more. It's not just, "How can I get a PR in my clean and jerk?" but "How can I make my community, my part of the world, a better place?"

"CrossFit was the glue that connected teens with potentially higher SAT scores."

—Dustin Marshman

Toward the end of the course, Marshman, the teacher of the California group, asked the girls what they thought of the program. The SAT portion helped their SAT scores and their grades, but they were most enthusiastic about the CrossFit workouts.

"They told me they loved the Cross-Fit part. They said they are at school all day," Marshman said. "They are tired of studying. The reason they kept coming was to work out."

He continued: "One of the best parts of the program was watching the students hit a point where they realized CrossFit was for them. The biggest thing I saw CrossFit do for the students was trigger their competitive nature. They would compete against each other in a WOD, and then they took that fire and brought it with them into class. They were easily taught on those days." Gravatt also saw an unexpected benefit of the SAT course.

"This course impacted things they didn't think about," she said. "It improved their regular test taking at school."

"It seemed insignificant to me at the time, but in retrospect, CrossFit was the glue that connected teens with potentially higher SAT scores," Marshman said.

He continued: "We can't prove from our data that CrossFit increases learning ability; however, we can say that without CrossFit the students would have never completed the course. Their love of Cross-Fit helped them stick with the program.

"Parents bribe their kids with everything from money to candy to video games to get them to study hard. We offered a healthy alternative, and they took the bait."

And even if the children would rather deadlift than study at times, it's certain they'll appreciate the program all the more when they're receiving acceptance letters from all the right schools.

For more info on CrossFit's SAT-prep program, contact Laura Bradrick at Laura@CrossFit.com or 1-605-888-0934.



E.M. Burton

THE CrossFit JOURNAL

A Better Beautiful

The first year of the CrossFit Games was 2007. Sure, we started in Dave Castro's mom's backyard, but it felt like Woodstock and looked like a prison yard—just a tougher workout, a tougher crowd, and coed. Wonderfully coed.

This is not just the first major sport spawned from a peanut roaster, but a moment in physical culture, a rather audacious crowning by CrossFit Inc. of the Fittest Man and Woman on Earth from, of all things, a list of friends competing over a weekend. Our beloved Games had an auspicious beginning even if only a score of us recognized the import of what was unfolding.

It's as easy as this: if fitness can be defined and measured, then it can be tested, and we can, in turn, find the fittest. There's an inevitability to the Games that arises directly from our intellectual DNA.

Roll the clock forward a few years and we're driven from Monterey County (by its now-regretful fathers), in a stadium, and on TV, and Reebok has traded the NFL for the Games. The CrossFit Games quickly became a global put-up-or-shut-up challenge that leaves our critics and competitors gloriously silent during Games season lest they find themselves "honorary invitees" and thrust into the arena. The Games make bragging on the Net dangerous. Each athlete is showcasing an approach—a successful one at that. Internet trash talk is now off center stage.

In this, our seventh year, I call your attention to the bodies. Yes, the flesh—the men, the women, the spectators and the competitors. It's not our usual intellectual focus, but I can no longer pretend not to notice. Everyone is an athlete, but many, maybe even most, are simply beautiful. This menagerie of "Frankenfitters," stadia quite literally full of them, embodies a functional aesthetic that is uniquely ours. Their bodies and our appreciation of them are a direct challenge to a host of pathological aesthetics, whether it's the 16-year-old heroin-chic anorexia of the fashion world or the grotesqueness of bodybuilding and drug-induced hypertrophy.

These athletes and spectators wear the look of enormous work capacity across broad time and modal domains. Theirs is the look of true performance. This is what happens when form, as it should and will, follows function.

What we've made, what you'll see all around you this weekend, is a better beautiful.



Greg Glassman
Founder and CEO
CrossFit Inc.

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THE CrossFit JOURNAL

FITNESS, LUCK AND HEALTH

Fitness can prevent chronic disease—the cause of 70 percent of deaths in the United States.

ADAPTED FROM LECTURES BY GREG GLASSMAN

Dave Re/CrossFit Journal



"(CrossFit affiliates) are the only effective, succesful and growing response to chronic disease in the world today." –Greg Glassman

Dave Re/CrossFit Journal

Adapted from CrossFit Founder and CEO Greg Glassman's Level 1 Certificate Course lectures Feb. 27, 2016, in San Jose, California; March 27, 2016, in Aromas, California; and April 24, 2016, in Oakland, California.

In 2002, we observed that almost any health parameter sits well ordered on a continuum of values that ranged from sick to well to fit. Take high-density lipoproteins (HDL cholesterol), for instance: At less than 35 mg/dL you have a problem, 50 mg/ dL is nice, and 75 mg/dL is a whole lot better. Blood pressure: 195/115 mm Hg you have a problem, 120/70 mm Hg is healthy, and 105/50 mm Hg looks more like an athlete. Triglycerides, bone density, muscle mass, body fat, hemoglobin A1c (HbA1c, aka glycated hemoglobin)—all can be plotted relative to these three values.

The significance is that these are the predictors, the cause and the manifestation of chronic disease. Chronic diseases include obesity, coronary heart disease, Type 2 diabetes, stroke, cancer (to include breast, colon and lung, but my theory is this will include all the positron-emission-tomography-positive cancers eventually, which is 95 percent of all cancers), Alzheimer's, peripheral artery disease, advanced biological aging, drug addiction, among others.

It is very likely that if you have any chronic disease, you have deranged markers. If you have Alzheimer's, you would see your HDL suppressed, your blood pressure up, your triglycerides up, your body fat up, your muscle mass down, your bone density down, your HbA1c high, etc. The same is true with diabetes. The same is true with most cancers.

The CrossFit stimulus … can give you a pass on chronic disease.

Medicine has no effective treatment for chronic disease: It is symptomatic only. The doctor gives you a drug to bring your cholesterol down, a different drug to raise your bone density. You might need bariatric surgery if you have morbid obesity. If you have paved-over coronary arteries, they can do bypass surgery. If you become glucose intolerant, the doctor can put you on insulin. But all of these are not fixes. They are masking the problem. If you have persistent malignant hypertension, you should take an antihypertensive if you cannot get your blood pressure down otherwise. But how would you get it down otherwise?

CrossFit Inc. holds a uniquely elegant solution to the greatest problem facing the world today. It is not global warming or climate change. It is not the worst two choices imaginable for president.

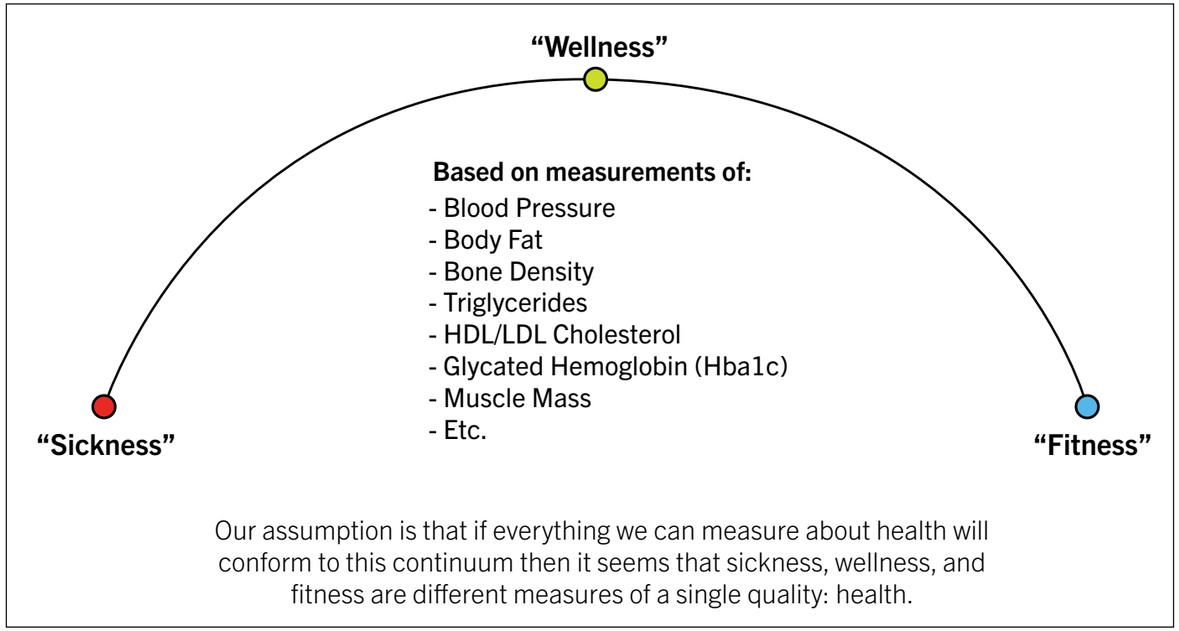
CrossFit trainers provide non-medical health care: By focusing on work capacity, clients can avoid chronic disease.

Adam Bow

It is chronic disease. The CrossFit stimulus—which is constantly varied high-intensity functional movement coupled with meat and vegetables, nuts and seeds, some fruit, little starch and no sugar—can give you a pass on chronic disease. It is elegant in the mathematical sense of being marked by simplicity and efficacy. It is so simple.

Seventy percent of deaths in the United States are attributable to chronic disease. Of the 2.6 million people who died in the United States in 2014, about 1.8 million died from chronic disease. This pattern of increasing deaths due to chronic diseases also holds in countries that are ravaged by infectious disease. The numbers are rising, and when we finally add the positron-emission-tomography-positive cancers in, the number might be 80-85 percent in the United States. It is estimated by the Centers for Disease Control (CDC) that the United States could have up to a hundred million diabetics in 2050. That will affect everyone. You will not go into the emergency room for something as simple as a broken arm: You will be seeing heart attacks on every corner. Medicine has no solution; you do. CrossFit—with meat and vegetables, nuts and seeds, some fruit, little starch and no sugar—will help you avoid all of this.

The other 30 percent are dying from accidents that come in four "-ic" variants: kinetic, genetic, toxic and microbic. Kinetic: physical trauma, car crash, hit on a bike. Toxic: environmental toxins, such as lead poisoning. Genetic: genetic disorders like cystic fibrosis, you are born with it. Microbic: virus, bacteria, prions.



The Sickness-Wellness-Fitness Continuum.

This is where treatment can be symptomatic. This is where the miracles of medicine are. If you have got a genetic disorder that is making you sick, you need a doctor. If you have been poisoned, you need a doctor. If you caught a nasty virus or a flesh-eating bacteria, you need a doctor. You do not need to go to the gym, and you do not need burpees.

Doctors are like lifeguards; CrossFit trainers are like swim coaches. When you are drowning, you do not need a swim coach. You needed one, and you did not get one. What you need is a lifeguard. We will teach people how to swim, and when they do not pay attention and they go under, the doctors take care of it.

Accidents are largely stuff you can do nothing about, but there is one exception. Be fit. Kinetic: We hear stories from war of Cross-Fitters who survive things that people have not survived previously. Toxicity: Someone who is fitter is more likely to survive the same poisoning than someone who is not. Genetic: There are genes you have inherited that will or will not express because of your behavior through diet and exercise. Microbic: Who is most vulnerable to viral pneumonia? The frail, the feeble. So fitness offers a protection here.

But assume there is no protection from fitness because what you need in terms of preventing accidents largely is luck. Luck—there is no "good luck" versus "bad luck"—looks like not having these things happen to you. Seventy percent of what kills people can be addressed by what CrossFit trainers do, and the other 30 percent of deaths occur based on luck, so get fit and do not think about luck. If you stand around worried about germs, worried about the tire that is going to come through the windshield, worried about breathing toxic air and worried about your genes, you are wasting your time. It will not make you happy. It will not make you better. It will not make you safer. You are not going to live any longer.

Make it to the gym, eat like we tell you, and enjoy yourself.

This sums to my "kinetic theory of health." The singular focus on kinematics—increasing work capacity, increasing your fitness — is how to avoid chronic disease. Just get a better Fran time, better deadlift, better Diane time, and do all the things that would support a better Fran time—like eating meat and vegetables, nuts and seeds, some fruit, little starch and no sugar; getting plenty of sleep; and maybe taking some fish oil. After that, we are out of stuff that matters.

With that singular focus on work capacity, we can avoid chronic disease and there is nothing really to worry about. You have the lifestyle answer. Make it to the gym, eat like we tell you, and enjoy yourself.

We have hacked health. Here is the magic formula for you:

Fitness + Luck (bad) = Health

It is the part you can do something about plus the part you can do nothing about that sums to your outcome. So make the most out of fitness and you will not be part of the seven out of 10 who die unnecessarily due to lifestyle. In the end, chronic disease is a deficiency syndrome. It is sedentation with malnutrition.

The cost of chronic disease is such that U.S. medical expenditure is now about $4 trillion a year. In 2008, Price Waterhouse Cooper estimated that roughly half of all U.S. medical expenditure was wasted on unnecessary procedures, administrative inefficiencies, treatment of preventable conditions and so on. Add in fraud and abuse and we are wasting well more than a trillion dollars. We also know 86 percent of overall health-care spending goes to treating the chronically diseased ineffectively. Of the remaining 14 percent, half goes to the stuff that medicine can actually do something about. That means seven percent of health-care spending is not wasted. The amount spent on chronic disease is a waste.

What CrossFit trainers are providing is non-medical health care. When doctors treat those affected by accidents (the 30 percent), that is medical health care. If you are confused about the two, it is easy to distinguish by methods and tools. If someone is cut open, given radiation, prescribed pills, injected with syringes, it is medicine. It is treatment by a doctor.

On our side, it looks like CrossFit. We have rings, dumbbells, pull-up bars, our own bodies—and the prescription is universal. It is not to treat disease. It does not matter where you fall on this continuum: You get put on the same program. If the prescription is universal, it cannot be medicine. If it is something everyone needs—like air or oxygen—that is not medicine.

Without vitamin C, you can get scurvy. Should physicians control orange and lemon groves, onion and kale production because they have vitamin C that you cannot live without? We do not want them doing that to food. We cannot let them do that to exercise, and there is a powerful movement with a lot of funding afoot to do exactly that. Millions of dollars are being spent to bring exercise into the purview of the medical arena so that it falls under the Affordable Care Act.

We have 13,000 gyms with 2 to 4 million people safe from chronic disease right now. This community is doing a lot of good things on a lot of fronts. Yet our gyms are thriving not because of our impact on chronic disease. They are thriving because the end users, the customers, are extremely happy with the transformation. And it is part physical, part emotional, part health markers, part relationships.

That is the miracle of CrossFit: people are getting something that they did not even know they wanted or needed.

Aug. 29, 2016—Corrects stats for chronic disease in the United States and worldwide, 2014 stats for deaths in the United States due to chronic disease, and CDC estimates on the number of diabetics in 2050. Clarifies the costs of medical expenditures related to treating the chronically diseased.

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