

the **Crossfit**
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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

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!

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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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, periodization, 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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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 elasticity 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 unparalleled 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 parameter 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.



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cycle of our template looks like this: Couplet, Focus, Couplet, Off. This is a three days on one day off regimen.

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.

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

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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 than 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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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



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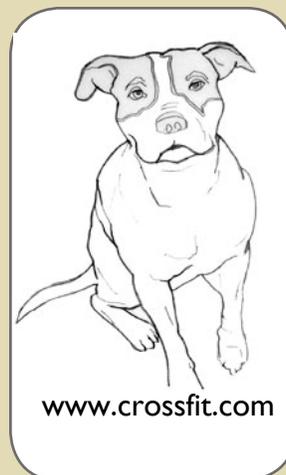
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