the CrossFit JOURNAL ARTICLES

Performance and Health

Tony Leyland

Do your friends and family think you are a little crazy for doing CrossFit? At the very least I think that the majority of CrossFitters are viewed as a group highly devoted to elite fitness, conscious of their bodies and diets, and perhaps "taking it all a bit too far." My wife thinks my love of CrossFit is all part of my midlife crisis but harmless enough—despite the fact that I spent a couple thousand dollars on my garage gym. (Of course, with a good friend getting a classic Lotus Elan when he turned 50, my wife thinks she is way ahead.)

Maybe seeing the term "Forging Elite Fitness" on the website is why some view CrossFit as being for a select few, but I would suggest the main reason is the standard understanding that "fitness for health" means traditional cardio exercise and maybe some low-weight, high-repetition resistance training (with machines and/or springs).

Obviously, our military, police, firefighters, coast guard, and other first responders are striving for an exceptionally elite level of functional fitness, as their vocations—and lives—depend on it in a very real and immediate sense. And equally obvious, martial arts fighters and competitive athletes will also benefit greatly from CrossFit programming. However, what is less obvious is what CrossFit athletes like me are doing in the program (and reading the daily posts reveals that there are plenty of us middle-aged CrossFit followers). I am 50. In addition to three or four CrossFit workouts a week, I play over-40 masters soccer, singles tennis, and occasionally squash. However, the LA Galaxy didn't offer me a deal like David Beckham's and the latest reports are that Roger Federer isn't too concerned by my improving fitness level. So with the realization I am not going to make a living out of my sport and am not in the police, military, or the like, what I am doing here? Why don't I just do my twenty minutes on an elliptical trainer, some nice, comfortable, low-weight, high-rep, machine-based resistance work and shuffle off home like a good boy?

Well to put it simply, I believe appropriately scaled CrossFit programming is the best way to protect the health of people of all ages. I could write a book on the research and personal training/coaching experiences to back that statement up, but for this month I'll just discuss some examples.

In CFJ #53 I talked about the need to focus on physiological and performance parameters and not things like bodyfat levels. In that article I showed a list of fitness components from the ExRx website's description of the components of fitness:

Fitness components

Health Related	Performance Related
• Body composition • Cardiovascular endurance • Muscular strength • Muscular endurance [i.e. stamina] • Flexibility	• Power • Speed & quickness • Agility • Balance • Motor skill [i.e., coordination & accuracy]

This list is a good example of the typical but misleading separation of fitness components in mainstream thinking. By separating the components, the fitness industry, and many academics, are saying that you don't need to worry about the performance side of things. When people view anything as separate and give them different labels, they

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create a hierarchy. And obviously we all "know" that the general public should be concerned with health and that only athletes need worry about performance. Right?

Wrong.

Now this could be the start of a book-length discussion, so to keep things manageable I'll explain why this thinking is a mistake by giving some brief examples.

Back injuries and motor control

Many people misguidedly think that back injuries are caused by lifting things that are too heavy. On the contrary, the most common causes of back injury are:

- poorly conditioned muscles,
- muscle imbalances in the trunk,
- inflexibility in muscles crossing the shoulders and hips,
- poor lifting technique, and
- poor motor control of the spinal musculature.

The first observation is obvious. We probably all know many people who have "lifted their way out of back trouble." If you do not use muscles they become weak and vulnerable to injury. That is—or should be—obvious.

The other points are less intuitive. Dr. Stuart McGill is a spinal biomechanist at the University of Waterloo, Canada. Because of the inherent instability of the spine, McGill argues that spine stiffness, and hence stability, is achieved by a complex interaction of stiffening structures (muscles and ligaments) along the spine and forming the torso wall. Balancing stiffness on all sides of the spine is more critical to ensuring stability than having high forces on a single side. In fact McGill argues, absolute endurance and strength is probably secondary in importance to the relationship between muscle groups, as it is thought muscle imbalances are a primary cause of back problems. For example, McGill points out that people with low back problems often have weaker extensor strength relative to their flexor strength (rather than actually having weak muscles). This is not uncommon even among athletes, who are likely to be better at sit-ups than at back extensions. (The number of "abdominal exercisers" on the market is amazing and yet depressing. Do people really think focusing on one muscle group is a good idea?)

Conditioning of the muscles on all sides of the trunk is obviously important, but this discussion has focused on a health component in the above list, namely muscular endurance. However, Cholewicki and McGill (1996) also blame poor motor control as a potential contributing factor to the risk of back injury. Modeling data from their research shows that the spine "can easily buckle" during a task as benign as picking up a pencil from the floor. Even when muscle forces are low, a small motor control error can cause rotation of a single spinal joint, placing all bending support responsibility on the passive tissues (ligaments and disks). So we need to challenge the control of our balanced trunk musculature, and sitting on a chair with a back rest pushing a bar overhead attached to a pulley and weight stack isn't going to do that.

So here is one of the eminent academics in the field of spinal biomechanics arguing that motor control of the spinal musculature is essential to back health. If the research shows that 80 percent or more of the North American population will experience back problems in their lifetime, is motor control not a health-related component of fitness?

Fall prevention and balance training

Statistics show that 40 percent of those 75 years and over fall each year. And 40 percent of seniors who move into residential care do so because of a fall. When it comes to seniors, falls are right up there with heart disease and cancer as a major cause of death. I have a better 40 percent statistic for you though: strength and balance training can reduce falls by 40 percent. And this training is particularly effective in people over 80 years of age.

The longer you can do dips, or assisted dips, as you age, the longer you are gong to be able to push yourself out of a chair. The longer you can do squats and lunges, the stronger your legs will be and the longer you'll be able to handle stairs. The more deadlifting you do, the longer you'll be independent and able to lift groceries, etc.

Steve Wolf et al. (1996) showed that tai-chi and computerized balance training helped reduce falls by seniors. This study was part of a large group of studies that showed that tai-chi (which for seniors is essentially strength and balance training) was the best exercise modality (of those studied) to prevent falls. CrossFit challenges and improves your balance by using free weights in a dynamic fashion and by incorporating gymnastic movements.

Eighty-four percent of injury-related hospitalizations of seniors are from falls, 40 percent hospitalized from a

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fall have a hip fracture, 90 percent of hip fractures are caused by a fall, and 20 to 25 percent of seniors who suffer a hip fracture die with in one year (and of those that survive that year, 50 percent never fully regain their pre-fracture functioning). Is balance not a health-related component of fitness?

What happens when you slip or lose balance? You attempt to right yourself by rapidly driving your center of gravity back inside your base of support. Fall-prevention strategies include vigorous cross-steps or shooting out an arm or two to grab something. Are these slow methodical movements? Obviously not; they are fast, powerful movements. So, for example, dumbbell snatches even with very light dumbbells will help protect people's muscles from injury when they have to react quickly.

Functional movements

What about coordination of movements required to achieve a functional outcome? I read recently about a physiotherapist who trains seniors who are frail and fearful of falling by getting them to lie down and get back up again (as part of a general strength program). This functional exercise not only helps the physical side of things but comforts the seniors in the knowledge that if they fall they can get up and get to the phone to call for help. Brilliant! (By the way, if you haven't tried Turkish get-ups with a dumbbell locked out over your head, why not?)

I said at the beginning that I believe appropriately scaled CrossFit workouts are the best way to protect health. CrossFit encourages people to vary and adapt the workouts (for example, see this video, posted recently on CrossFit.com). How about the following for a CrossFit workout for a relatively frail senior?

> Walk around the block briskly; come back inside and do ten wall push-ups, get down on the ground, lie flat then and get back up again (repeat 5 times), do 10 modified pull-ups (probably pulling on a low bar or rope with feet still on the ground and body at a slight incline), sit in a comfy chair and push yourself up to standing (repeat 10 times). Repeat whole cycle 2 or 3 times, depending on the individual.

Your training is limited only by your imagination and a mainstream fitness industry that doesn't have any imagination to begin with.

The fitness industry has taken skill out of exercise, yet the examples I have discussed above show that motor coordination and balance work incorporated into functional exercises are very important "health" components of fitness. I am sure you can think of other examples that debunk the notion that we should only focus on these so-called "health components". The bottom line is that performance and health are inseparable and the fitness industry shouldn't confuse this fact.

Studies and text cited in this article:

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