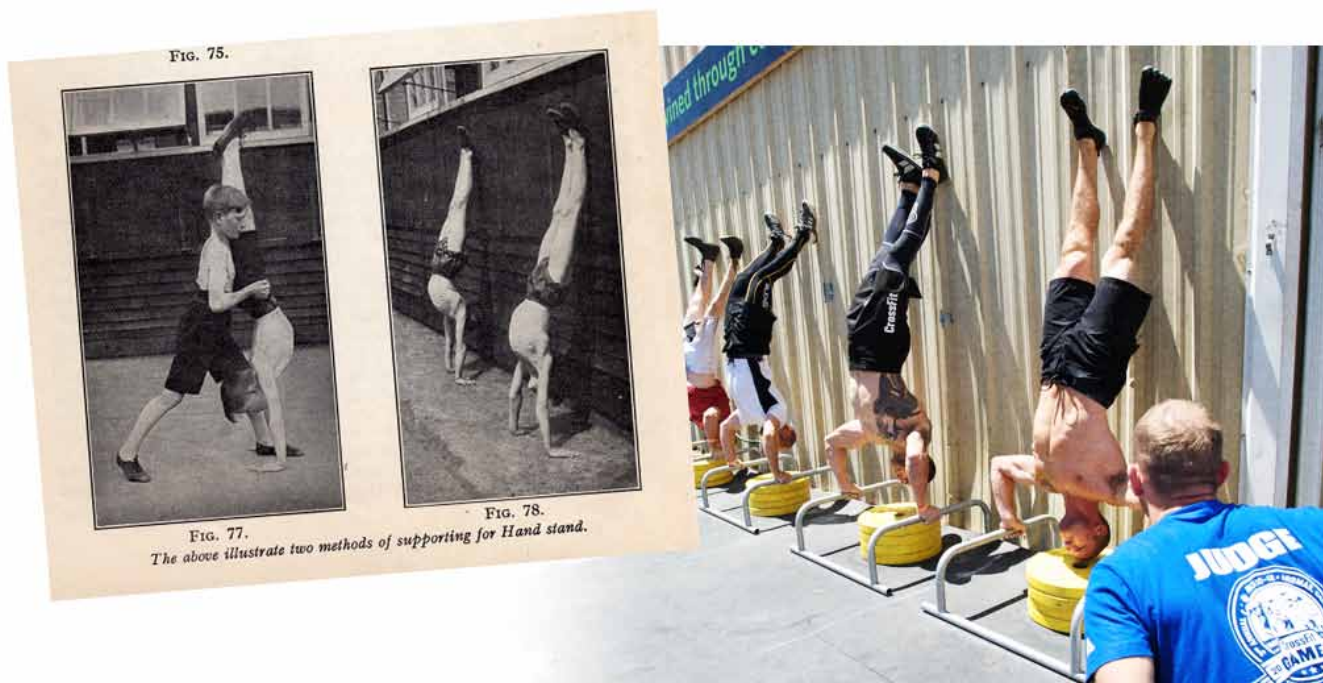


How We Got Here: CrossFit vs. the Fitness Industry

A CrossFitter who teaches undergraduate courses in exercise education finds a connection between our detractors and the evolution of physical-activity guidelines. He takes a look at what's next.

Dr. Tony Webster



Many academics and fitness professionals are highly suspicious of CrossFit. In turn, CrossFitters are often quick to dismiss conventional fitness approaches. It doesn't have to be this way. Call me optimistic, but I think we can learn a lot from each other. CrossFit is forging an impressive path, but it can't afford to ignore conventional fitness wisdom entirely. At the very least, an understanding of fitness history and current scientific research can help us defend and promote our methodology.

Exercise and Health—Then and Now

Some very brief but very important perspective is in order. In the past three to four decades, our understanding of the health benefits of exercise has deepened tremendously. We now understand that physical activity is necessary for health and that millions of years of evolution have firmly imprinted this requirement into our genetic makeup. The problem we now face is an “obesogenic” 21st-century environment that conspires against our paleolithic genome. Lack of physical activity and poor nutritional habits have been major contributors to the unprecedented current levels of obesity, heart disease, cancer and diabetes in Western society. These are the so-called diseases of modern civilization.

By the 1970s, sufficient scientific research linking exercise to improved health had accumulated to support construction of the first physical-activity guidelines. The American College of Sports Medicine (ACSM) took the lead in this area and is still probably the most respected institution around the world for all matters related to exercise. In 1975, the first edition of the ACSM's *Guidelines for Graded Exercise Testing and Exercise Prescription* was published. Table 1 shows the original recommendations for the type, frequency, intensity and duration of exercise, along with subsequent modifications found in updated issues of the book.

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Until 1990, the definition of “exercise” was rather limited. Early public-health guidelines spoke only of aerobic exercise with little recognition of resistance or flexibility training. Many would argue this bias persists today. The media and the public still idolize endurance athletes as the “fittest” individuals on the planet. The much broader view of fitness forged by CrossFit is, in my view, its greatest strength.

The guidelines in Table 1 have evolved over the years. The goal of the earliest recommendations was to improve cardiovascular fitness with structured exercise sessions. The problem was that many were left with the impression that exercise not meeting these criteria was of little value. By the late 1980s, things had changed. Sufficient information had accumulated to suggest lower amounts of exercise had significant positive effects on cardiovascular health (see Figure 1).

Table 1: Dose of aerobic physical activity recommended in the ACSM's *Guidelines for Graded Exercise Testing and Exercise Prescription* (1975-2000).

Objective and year of edition	Activity *Frequency (days/wk)	Duration (min/day) **	Intensity (% HRR) ***
Cardiorespiratory fitness:			
1975	3 - 5	20 - 45	70 - 90
1980	3 - 5	15 - 60	50 - 85
1986	3 - 5	15 - 60	50 - 85
1991	3 - 5	15 - 60	40 - 85
1995	3 - 5	20 - 60	40 - 85
Health promotion:			
2000	7	≥ 20	40 - 85

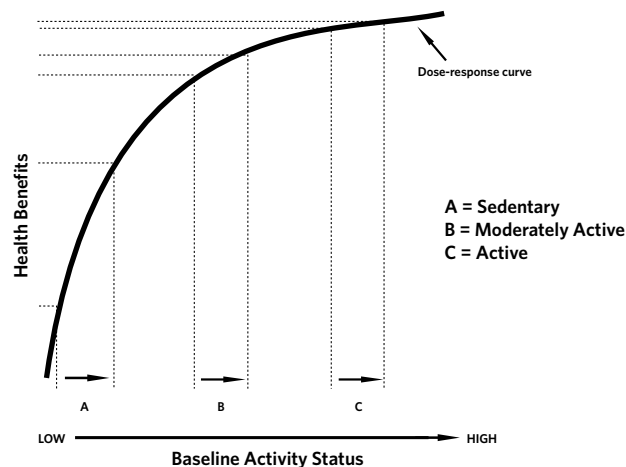
* Any activity that uses large muscle groups and is rhythmical and aerobic in nature

** Continuous activity except for the guidelines from 2000, which were for cumulative totals, with a minimum of 10 minutes of activity per session

*** Percentage of heart rate reserve (the difference between resting heart rate and maximal heart rate)

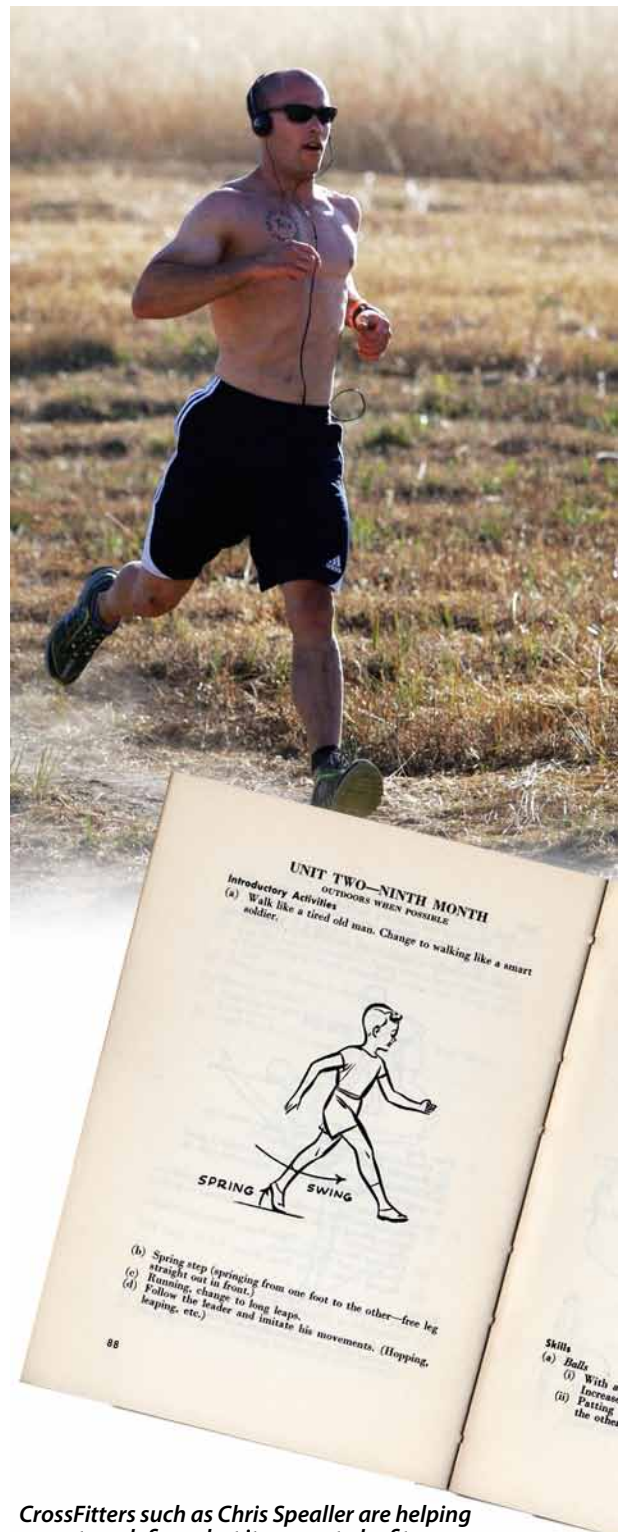
The implication was clear: sedentary individuals had a great deal to gain by engaging in low-to-moderate amounts of physical activity. Getting “off the couch” might just help ward off that catastrophic premature heart attack. (Note that the relationship shown in Figure 1 is now better understood. The shape of the curve varies depending on the specific health benefit concerned.)

Figure 1: The relationship between amount of physical activity and potential health benefits



The discovery of the relationship in Figure 1 led to a fundamental shift in thinking regarding exercise recommendations for public health. The 1990 ACSM position stand signalled a shift away from an exclusively performance-related fitness paradigm towards one that placed greater emphasis on lower levels of activity and health. To quote the position stand: “The ACSM recognizes the potential health benefits of regular exercise performed more frequently and for longer duration, but at lower intensities than prescribed in this position statement.”

The next significant development was the 1995 joint report by the Centers for Disease Control and Prevention (CDC) and the ACSM. Terminology was greatly simplified and the message was clear and concise: “Every U.S. adult should accumulate of 30 minutes or more of moderate physical activity on most, preferably all, days of the week.” Moderate activity was defined as equivalent to a brisk walk that “noticeably accelerates the heart rate.” Vigorous activity was defined as equivalent to jogging which causes “rapid breathing and a substantial increase in heart rate.”



CrossFitters such as Chris Spealler are helping to redefine what it means to be fit.

The target population for the 1995 CDC/ACSM statement was clearly the large group of sedentary American adults who accounted for much of the public-health burden of chronic disease. Also note the word “accumulation.” The prescription could be met by accumulating three 10-minute bouts of activity during the day as opposed to one continuous bout of exercise. This was a further important step in the evolution of lifestyle-friendly activity guidelines. The aim was to make physical activity more achievable and more attractive to more people.

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The message of the 1995 CDC/ACSM report can still be seen in the most recently updated physical-activity guidelines for public health. In 2007, the American Heart Association (AHA) and the ACSM released a joint updated recommendation that contained an important recognition of the potency of vigorous physical activity. The AHA/ACSM guidelines state, “To promote and maintain health, all healthy adults aged 18 to 65 years need moderate intensity aerobic (endurance) physical activity for a minimum of 30 minutes on five days each week or vigorous intensity aerobic physical activity for a minimum of 20 minutes on three days each week.” (If you check the current recommendations regarding aerobic activity for healthy adults on the [CDC website](#), you will see a recommendation that is essentially identical).

The addition of the vigorous-intensity phrase was significant. It acknowledged the efficacy of higher intensity exercise for achieving fitness and health benefits. The most frequently cited barrier to physical exercise is “lack of time,” so this new addition has important implications. Consider the total exercise time required per week: five bouts of 30 minutes equals 2.5 total hours of moderate exercise. Three bouts of 20 minutes equals one hour of vigorous exercise. Quite a difference!



CrossFit has taught the fitness world that the rings aren't just for specialists—they can be used for general fitness.

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Resistance Training Guidelines

Until the 1990s, very little emphasis had been placed on resistance training for health, perhaps due to the fact that strength training had an image problem. It was viewed as a "fringe" activity, the domain of young males in search of muscular development. Increasing research evidence through the 1980s and 1990s supported the role of resistance training for musculoskeletal health and overall quality of life. Research has now clearly shown resistance training can have favorable effects on the overall functional capacity of all people, influencing everything from muscular fitness to cardiovascular function, balance and fall prevention. Risk of adult-onset diabetes, certain cancers and coronary problems can be reduced. It can even produce favourable effects on psychological well-being.

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The result is resistance training has now become a central part of the fitness movement. Today, women and seniors are taking up resistance training in increasingly greater numbers for its health benefits. That's a big change in the fitness landscape from 10 or 20 years ago.

The ACSM says adults should perform "activities that maintain or increase muscular strength and endurance for a minimum of two days each week." More specifically, it is recommended that: "8-10 exercises be performed on two or more non-consecutive days each week using the major

muscle groups. To maximize strength development, a resistance (weight) should be used that allows 8-12 repetitions of each exercise resulting in volitional fatigue."

The recommendations go on to state that "muscle strengthening activities include a progressive weight training program, weight bearing calisthenics, stair climbing and similar resistance exercises that use the major muscle groups." (For more detail, see [Progression Models in Resistance Training for Healthy Adults](#), the ACSM's recent in-depth review specifically on resistance training.)

The basic ACSM recommendations for resistance exercise endorse a body-part approach that has been the staple in gyms for decades. Most of us have been there and done that at some point in the past. I believe it is a rather restricted view of resistance exercise that merely reflects what we are comfortable with and what has been studied.

Another interesting point is that resistance exercise and aerobic exercise are typically portrayed as quite separate types of activities done with different equipment designed to address different facets of health. This, of course, is an entirely human delineation. Coach Greg Glassman is correct in saying that nature has no regard for the distinction between cardio and strength training. CrossFit has broken through this mold. It has intentionally blurred the distinction between the two forms of training through creative use of gymnastic movements and weights that pack an impressive aerobic punch. I believe the day will come when we will understand that we have been far too limited in our view of resistance training.

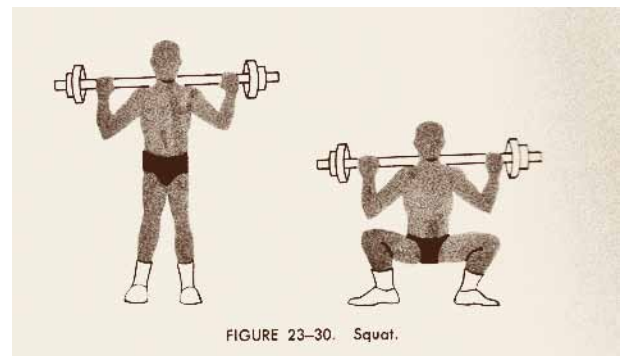
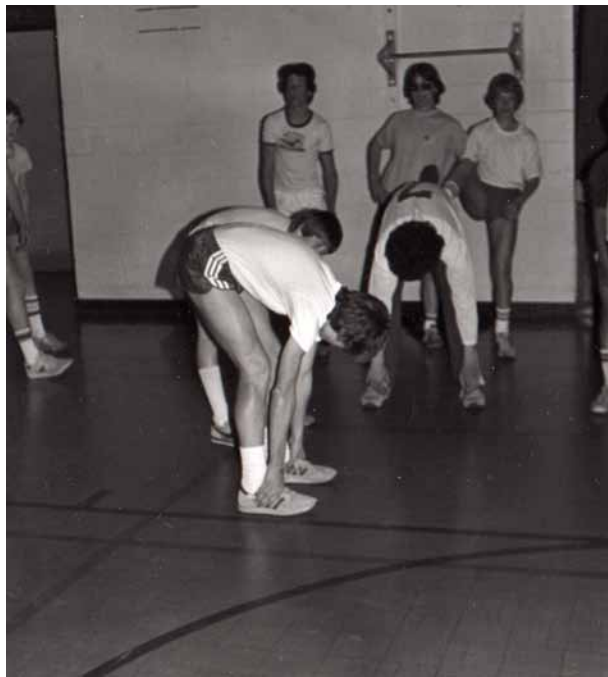


FIGURE 23-30. Squat.

You know the drill: knees track over toes, lumbar curve is maintained, weight is on the heels and the hip crease is below the knee.

When it comes to resistance training, CrossFit has been pioneering in other ways. Instead of a body-part approach, CrossFit emphasizes performance and functionality. Strength days are true to their name with repetition schemes that challenge the muscles' ability to apply high levels of force. Power training and Olympic lifting movements are essential components of CrossFit. It is a tragedy that this very important aspect of fitness is so neglected in the fitness industry. Numerous scientific studies have clearly shown the importance of muscular power, especially as we age.

Purists may scoff at the lack of formal periodization in CrossFit, but they forget that CrossFit's specialty is not specializing. Its goal is to develop broad and inclusive fitness. Many underestimate the potency of the CrossFit approach in other ways. The team atmosphere, the learning of new skills, the use of stopwatches, the friendly competition, the constant variety—these are all intangible but powerful factors lacking in the traditional approach. For an overview of some of these factors, I would urge you to read the recent article in the *CrossFit Journal* by Chris Cooper titled [The Secrets of Sticking With It](#).



Fitness is about being able to move your body, whether you did it in gym class in 1972 or whether you do it at your local CrossFit affiliate.

Stretching and Flexibility Guidelines

Regular stretching improves joint range of motion and function and may enhance muscular performance. The importance of flexibility for optimal musculoskeletal health and quality of life as we age has now been appreciated. This goes some way to explaining the recent popularity of activities such as Pilates and yoga.

Information regarding stretching and flexibility was only incorporated into exercise recommendations in 1998. Until that point, attention to flexibility was very much an afterthought incorporated into exercise workouts only as part of warm-ups and cool-downs. The current guidelines regarding stretching and flexibility are as follows:

A general stretching program that exercises the major muscle/tendon groups (lower extremity anterior chain, lower extremity posterior chain, shoulder girdle, etc.) should be developed using static, ballistic, or modified PNF (contract/relax, hold/relax, active/assisted) techniques. Static stretches should be held for 10 to 30 seconds, whereas PNF techniques should include a 6-second contraction followed by 10- to 30-second assisted stretch. At least four repetitions per muscle group should be completed for a minimum of 2-3 days a week.

For many athletes, including CrossFitters, flexibility work seems to take a back seat to everything else. At my gym, we have had great blog discussions about flexibility and the necessity of a dedicated stretching program. Many believe if you perform CrossFit exercises with adequate range of motion, you will develop all the functional flexibility you will need. I understand this point, but I believe some additional flexibility exercises are a good idea for most. Focus on problem areas after your workout or at other times in the day. I happen to believe that regular stretching or yoga practice is an excellent physical and psychological complement to the demands of intense CrossFit training.

The Efficacy of Physical-Activity Guidelines

The underlying aim of public-health physical-activity guidelines has always been to educate the public in the perhaps-blind hope that people will become more physically active.

It's probably fair to say the general public is more educated about exercise than it was 10 or 20 years ago. But the real question is if people are more educated about physical activity, are they more likely to do it and stick to it? Apparently not.

In a recent review of this question in the scientific journal *Sports Medicine*, it was stated that "the effect of physical activity guideline characteristics on behavioural characteristics is not particularly robust." The authors go on to say, "Factors unrelated to the recommended guidelines may be of greater importance when considering behavioural adherence issues. Social cognitive, personality, and environmental or socioeconomic factors have amassed considerable evidence as correlates or determinants of physical-activity."

Are the basic physical-activity guidelines enough for optimal health and fitness? Definitely not. They are more likely the minimal amount compatible with health.

The bottom line is you can lecture and educate people all you like about physical activity. That doesn't mean they will do it. Sticking with exercise is determined by more subtle psychosocial and environmental factors. CrossFit is a highly effective fitness methodology, but that's only one part of the reason people do it. The final critical links in the chain are the dedicated CrossFit trainers and gym owners who are committed to helping their clients achieve greater levels of fitness, performance and—ultimately—health. It's only when you combine CrossFit with passionate CrossFit trainers that you have a truly powerful combination. [CrossFit Taranis](#), where I work out, is one of many affiliates that really embodies this philosophy.

Is the Bare Minimum Enough?

Are the basic physical-activity guidelines enough for optimal health and fitness? Definitely not. They are more likely the minimal amount compatible with health, and they obviously fall short if optimum fitness is your goal.



Sandbag sprints are not in the ACSM guidelines for physical activity—but maybe they should be.

Loren Cordain, an expert on the Paleolithic Diet and evolutionary aspects of nutrition and exercise, estimated that the 1998 ACSM recommendations accounted for less than half of the energy expended in hunter-gatherer societies. In other words, the guidelines fall far below the level of physical exertion for which our genetically determined physiology and biochemistry have been programmed through evolution.

So what *is* the optimal amount of exercise for fitness and health? That's a good question, and one that continues to receive lots of research attention. In a nutshell, we have no idea. Physical activity is very difficult to measure accurately, and every human is different. What might be an optimal dose of exercise for my health may not be nearly enough for you. So the notion of a one-size-fits-all public-health physical-activity prescription is probably pie in the sky.

The Future of Physical-Activity Guidelines

Where we are headed in terms of exercise recommendations? Guidelines currently exist for different populations including youths, the elderly and various diseased populations. I think we will see exercise scientists continue to produce further tailored guidelines for more specific segments of the population, with recommendations geared toward diverse groups characterized by age, cultural status, health status, etc.

It is a natural scientific tendency to place individuals into neat categories. While this makes sense from a research perspective, I can't help but feel it overcomplicates the issue. The bottom line is humans of all ages, shapes and sizes have similar exercise needs. We are all genetically designed (i.e., required) to run, jump, throw, lift, carry and climb to varying degrees. The only difference is that while a high-performance athlete pursues functional dominance, a frail, elderly individual seeks functional competence. These goals can be pursued using methods that have far more in common than conventional wisdom often leads us to believe. Personally, I think the CrossFit prescription and its emphasis on variety and functionality is closer to meeting our genetic physical-activity needs than any other fitness approach.

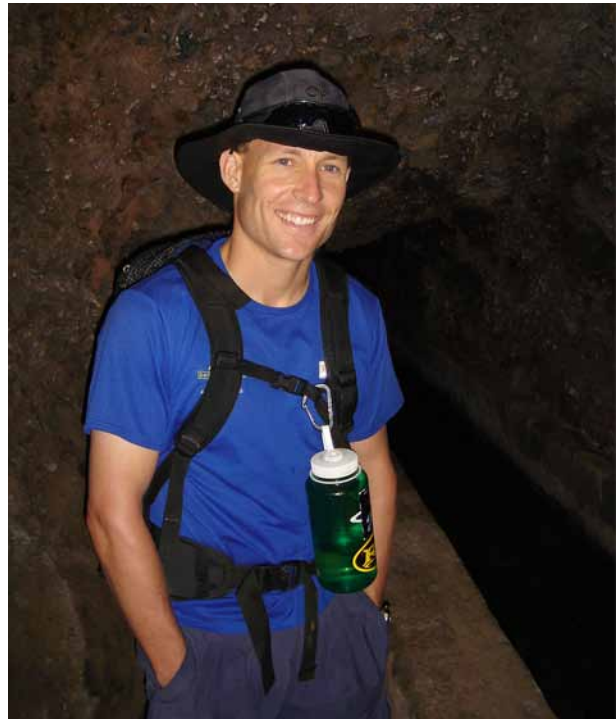
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More and more research studies are demonstrating the efficacy of shorter high-intensity exercise bouts in improving not only fitness but also a whole range of health markers. In fact, plenty of scientific evidence suggests vigorous activity has inherently greater health benefits than moderate activity. Thankfully, this has been partially recognized in the most recent physical-activity recommendations from the ACSM.

I envision future guidelines will increasingly emphasize the importance of quality (intensity) over quantity (volume) of physical activity. But this will have to be balanced by the higher probability of injury or medical complications associated with high-intensity exercise, especially in unfit or diseased populations. This is where an important reminder is due: CrossFit is a potent and effective conditioning tool that, like any other high-intensity fitness approach, has the potential to cause harm unless used sensibly. Remember that proper mechanics

create consistency, which in turn results in intensity. Those new to CrossFit must learn the safe mechanics of the movement and be able to consistently repeat them before being exposed to high-intensity work.

Used safely and sensibly, I believe CrossFit has potential not just to change people's lives, but also to change the fitness industry for the better.



About the Author

Tony Webster has a PhD in exercise physiology and currently works within the Pacific Institute for Sport Excellence at Camosun College in Victoria, British Columbia, Canada. He has his Level 1, Basic Barbell and Olympic Lifting certifications. He trains and coaches at the recently expanded [CrossFit Taranis](#).