

Cardio 101

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For part two in our series of the three components of body fat reduction, we will discuss cardiovascular training. Cardio is defined as the ability to perform repetitive, moderate-to-high intensity muscle movement for a prolonged period of time. The benefits of cardio training are numerous and significant. First and foremost, we strengthen the single most important muscle in the body, the heart. In addition to countless health benefits, which will be discussed later, cardio is an essential weapon in the weight loss battle. Getting leaner is all about expenditure versus intake, when we expend more than we take in, we use fat for fuel and get leaner. This process is not as complicated as we tend to make it to be. And, obviously, cardiovascular training increases the expenditure component in this equation.

Benefits of cardio training include stronger heart, lowered blood pressure, increased HDLs (good cholesterol), stronger bones, improved sleep, decreased body fat, increased ability to work with less fatigue, increased stroke volume, increased cardiac output, improved cholesterol ratio, decreased stress and depression, improved immune function, improved glucose tolerance and insulin sensitivity, improved quality of life, decreased resting heart rate, increased caloric expenditure, increased metabolism, increased endurance, stamina and energy and increased ability to metabolize fat.

Certainly there are some pretty beneficial perks on that list, are there not? So how do we get there? The key components to address are frequency, intensity, duration and mode. Asked, now let's answer.

Frequency, how many days per week should we engage in cardiovascular training? The American College of Sports Medicine suggests three to five days a week. Studies have also shown that more than five days a week does not significantly improve one's VO_2 max, or the ability to consume oxygen, a key indicator of cardio fitness. And training more than five days per week does contribute to burnout and injuries. One can obtain 98% of the benefits of cardio training with 20 minutes three days per week. However, if body composition changes are sought, those numbers would not be optimal. If getting leaner is one's primary objective, the recommendation would be as much cardio as possible without exceeding the maximum guidelines.

Intensity is a key element in the cardio game. How hard should we work? When it comes to strength training, an advanced strength trainee would approach 100% intensity for a short duration, such as a set of twelve squats, with that last rep being extremely close to muscle failure. However, with cardio training, 100% is not optimal, and we have already established that by definition cardio is for a prolonged period of time. Obviously we are not going to operate at 100% intensity for very long. Cardio training intensity is directly related to heart rate. Studies have shown that the greatest increase in cardiovascular fitness is obtained when training between 65% and 85% of one's maximum heart rate. And $220 - \text{your age}$ is a ball park estimate to determine maximum heart rate that is commonly used.

Therefore, the ideal training heart rate range for a 40-year-old would be between 117 and 153. This formula works for about 75% of the population. However, certain medications and even caffeine can affect the accuracy. In addition, a significant portion of the population simply has a higher or lower range. I was talking to a 50-year-old woman client of mine the other day. She was on the lifecycle at the time and her heart rate was 171. And as I said, she was talking. Theoretically, she was above her max heart rate. Pretty safe to say at 100% intensity one would not be very chatty.

So how do we prescribe training intensity without a formula for everyone? We could determine the client's personal max heart rate. This would be done by a cardio session in which the intensity is

progressively raised to the point where the heart rate just stops going up; thereby the max rate has been established. I wonder how many clients would come back for a second session if we did that on day one. Needless to say this is not a very pleasant experience and is not recommended.

Perceived exertion is an excellent way to gauge intensity. Using a scale of one to 10, with 10 being all you can do, we want to be around a seven. If you are unable to talk, the intensity is too high. If your breathing is not labored, you are probably below the optimal level. A good rule is that you should be able to talk, but you do not really want to do so. Studies have also shown that there are benefits of training as low as 50% of maximum heart rate. So the message here is get out there; even low intensity training is better than no training at all.

Now that we know how hard to train, the next question is for how long? As previously stated we can receive 98% of the benefits of cardio training 20 minutes for three days a week. However, most of us have some body composition goals and that may not be ideal for those goals. The suggested range, according to the American College of Sports Medicine, is 20-60 minutes. When the duration of your cardio training is longer, you tend to use a higher percentage of fat for fuel. And we experience a margin of diminishing returns when we go beyond 60 minutes, not to mention the rate of injury goes up significantly. Of course, this needs to be progressive, and if 20 minutes sounds like a lot, and it may since most of our society is sedentary, anything is better than nothing. All training is more effective when it is goal oriented, so start slow and build.

We, as personal trainers, are quite frequently asked what is the best cardiovascular exercise? My most frequent response is the one you like the most. Obviously, we are talking about an activity that will demand a portion of your precious time. Therefore, the likelihood of you doing it may be directly linked to your enjoyment. As long as the exercise you select fulfills our definition of cardio and you are able to attain the necessary intensity, take your pick.

Some forms of cardio require more energy expenditure than others. Running and cross-country skiing are at the top of most lists of high energy cardio. There are some other factors to consider when selecting an exercise. The higher the impact of an activity, the greater the chance of injury. I have run 10 marathons, but have never sat down with a client and suggested running. It is an extremely high impact activity. Pick up any issue of *Runner's World* and notice how many articles are devoted to injury prevention. Running has a purity about it that is very appealing and one can do it most anywhere. Not to mention there are lots of opportunities to compete. Just be sure not to increase your weekly mileage more than 10% per week. Cycling, elliptical trainers and swimming are nice joint-friendly alternatives.

There may be a significant benefit to cross training as well. Our bodies are very efficient machines, and if we do the same form of cardio all the time, we become very efficient at that particular form. By alternating the mode of our cardio training, overall energy expenditure can be increased. This could be three 10-minute sessions on three different cardio machines, or alternate cycling one day and power walking the next. The choice is yours. In addition, by not doing the same thing every day, the rate of injury and burnout will be reduced.

The two primary methods of cardio training would be continuous training and interval training. Both forms have their place and are effective in improving cardio fitness. Continuous training would be staying in the lower to middle portion of the prescribed training range for the duration of the session. The intensity does not change. This is certainly an effective fat-burning tool and is probably the best place to start. However, it can become a bit boring.

Interval training is defined as periods of higher intensity, followed by periods of recovery. One would train at the upper end of the intensity range and recover to the low end. This is my preferred way to train.

It is more advanced, but produces a lot of bang for your buck. Studies have shown that interval training increases fitness at a higher rate than continuous training. There also appears to be more of an after-burn effect, such as what we experience with strength training. Meaning we burn calories at an accelerated rate for several hours after the session is over. Most cardio machines have interval programs and any form of cardio can be converted into interval work. Those who live in hilly areas are already very familiar with the concept. Hill work is interval training; we work hard on the climb and recover on the descent. However, it can be as simple as following a three-minute jog with a 60-second power walk. I find this form of training tends to be more interesting than continuous. It is also a bit more stressful, so moderation needs to be observed. Probably best to limit your interval training to 40% of your overall cardio schedule.

There you have the basics of cardio training. This does not take a significant amount of time and the benefits will permeate every aspect of your life. The maximum amount of time would be five hours a week. Can you find five hours a week? How many hours a week does the average American watch TV? Training tends to have a significant effect on our mood. I do believe the runner's high/endorphin buzz is real and applies to all forms of cardio. So you will look and feel better, as well as increase the likelihood of a long, quality-filled life.