



## **STRENGTHENING YOUR HEART**

**By Robert B. Crenshaw, NSCA-CPT**

**Many people see the effects and understand the benefits of lifting weights to strengthen and build their skeletal muscles. The more you work a given muscle with proper nutrition, the bigger and/or denser that muscle gets, just look at any bodybuilder or fitness model. Also, the more you work a muscle or a set of muscles, the more calories you will burn causing a reduction in body fat percentage. Again, just look at bodybuilders or marathon runners for good examples.**

**Although people tend to focus on the “mirror” muscles, or the muscles that you can physically see when you look in the mirror, many tend to overlook other muscles that you can’t see, but are much more important. Fortunately, most of these muscles are also improved when one works on the “mirror” muscles. These overlooked muscles include the diaphragm, the internal abdominals, and probably the most important one is the heart. So how do you target the heart to strengthen it and what are the benefits of doing so?**

**First, let’s get a direction in mind so we know where we are going. I am going to use an extreme example to describe the goals that we all should aim for in strengthening our hearts. Then I will get into the benefits of each of these areas. By focusing on something beyond where we want to get to, we will be sure to achieve our goals. Just like a martial artist who demonstrates their skill by breaking a board by aiming for a spot behind the board, we will focus on levels beyond what we need for our fitness levels.**

**The extreme example is none other than the living cyclist legend, Lance Armstrong. Although he doesn’t hold the record in all the levels I will be describing, he probably has the strongest cardio system out there overall. Lance is the 5 time winner of the Tour de France. He has reigned over this grueling race for half a decade because of many factors. Most importantly for him, his lactate threshold is at a heart-rate of 178 beats per minute (bpm). This means that he can exercise at a level where his heart rate gets up to that point before lactic acid begins to enter the muscles which then causes fatigue. Most people don’t even workout on the treadmill at a heart-rate higher than 130-140. Combine this with the fact that his resting heart-rate is 32 to 34 bpm, almost half of the average person’s resting heart-rate and you can see why he can peddle at a much higher spin rate than most people without fatiguing. For a healthy heart, a lower resting heart-rate means a lower heart-rate when exercising at similar exertion levels compared to others. In other words, if I went jogging with Lance, his heart-rate would be much lower than mine even though we would be feeling the same amount of exertion. (Of course, my perceived exertion level may be higher than his.)**

**VO2max is the standard measure of aerobic fitness based on the body's ability to take up oxygen. This is a measure of how the lungs can take oxygen out of the air we breathe in and put it into the blood stream and how the muscles then are able to take it out of the blood and utilize it for their needs. Lance's level of 83.8 ml/kg/min is much higher than the average person whose levels measure in between 40-50 ml/kg/min. The average male endurance athlete usually has levels near 70 ml/kg/min. This is important, because the higher this number is, the fewer times the heart has to pump to get oxygenated blood to the muscles. If his blood had lower levels of oxygen, his heart would have to pump more often to get more blood to the muscles. Also, Lance's heart is 30% larger than the average heart again allowing his heart to beat fewer times to push the needed blood through the body. This would be similar to someone with larger muscles being able to squeeze something harder than someone with smaller muscles.**

**Because of Lance's training, he has strengthened his heart to accomplish all of this plus allow him to workout at a maximum heart rate of 201bpm. The average healthy 30 year old male should be very careful about working out at heart rates approaching 190bpm. An average healthy 50 year old male should only workout at a heart rate of 170 bpm under direct supervision of a physician.**

**Just like your skeletal muscles where you strengthen them by lifting heavier weights or pressing against bigger resistance, you have to strengthen your heart by exercising it against greater resistance. You wouldn't start out trying to lift 500 lbs in the gym and you shouldn't try to maximize your heart rate right from the start either. So let's get into how you train to strengthen your heart.**

**The general belief is that you need to do cardio exercises such as running, cycling, or walking to work the heart. This is true, but it is not the only way to get your heart rate up.**

**When you increase the load on your muscles through resistance (weight training) or through increased frequency of use (running), the muscle requires more oxygen to perform its functions properly. It is the heart's responsibility to move the blood through the body to transport the oxygen from the lungs to the muscles and return the used oxygen (which has been combined with carbon to form carbon monoxide) back to the lungs to be expelled from the body. This is one way to increase the resistance against the heart. Another way is strictly through weight training. When you contract a muscle, it forces blood out of the muscle. The heart then has to push harder to get the blood back into that muscle after it relaxes. Jet pilots use this process to keep from blacking out in mid flight. They practice on contracting their neck muscles in such a way to keep blood in the head when they experience increased gravity forces. The harder and faster that you squeeze a muscle, the harder and faster your heart has to pump to get the blood back into the muscles.**

**This is very important in the strengthening of your heart. You need to increase how hard your heart has to work to have strength gains. If you did a bicep curl with just a bubble gum wrapper you wouldn't see improvement in the strength or size of your**

**bicep. The same concept implies to your heart. You aren't going to strengthen your heart if you don't require it to force more blood through your body. So when you work harder, either by running faster, peddling faster, or lifting heavier weights, more blood is returned to your heart causing more resistance for your heart to push it back through your body. This means that it is more important for you to work harder, or at a higher intensity, than it is for you to workout longer. The stronger your heart gets, the more blood it can pump with less effort. So how hard should you workout or at what intensity level? A fitness professional can help you determine what heart rate will be the best for you to target. But if you don't have a heart rate monitor there is a simple way to determine how hard you should be working out. I will describe this when I talk about starting a workout program.**

## **BENEFITS**

**The increase working capacity of the heart is just one of the benefits to strengthening your heart. Others include preventing heart disease (the leading cause of death in men and women) and stroke. The increased exercise will also cause the lowering of your blood pressure, the raising of your high-density lipoprotein (HDL) levels (Healthy cholesterol) and the lowering of your low-density lipoprotein (LDL) levels (Lazy cholesterol). Other benefits from exercising to strengthen your heart include the prevention or reduction of obesity, increase in mental health, and lower body fat percentages. The increase in blood flow will also bring more nutrients that the muscles need to at least maintain or grow allowing them to function better for better daily activity. It also helps in removing waste from your muscles, such as lactic acid that I described earlier when talking about Lance. Not only does this also improve the performance of your muscles, it reduces soreness after workouts.**

## **EXERCISE**

**As I discussed earlier, both cardio workouts as well as weight training workouts help strengthen the heart. If you are new to weight training, start with machines and learn the proper way to set them up to avoid injury. Most gyms will have someone on staff to help you do this. Use a weight that is heavy enough to feel the resistance but light enough not to fatigue the muscle in 20 repetitions to start with. Once you get used to the movement, usually after a few times of trying it out, you can then increase the weight so that when you reach that twentieth repetition you feel that you couldn't do one more. When this weight becomes easier add in another set until you are doing at least 3 sets of 18 reps. Whenever you feel that you can do 3 or 4 more after the last rep of the last set without resting, increase the weight the next time you workout. You will need to rest the muscles you worked for 48 hours so they can recover and repair themselves allowing them to grow stronger. You should notice that you are breathing heavier during and right after each set. This means that you are working the heart harder to get the blood back in those muscles. If you don't experience heavier breathing, then try using more weight the next time.**

**When starting a cardio routine, your goal is to get at least 20 minutes at a higher intensity during your workout. At first, you may need to do light cardio for only 10 minutes. I have had clients who could only go for 5 minutes before needing a break. They soon were able to build that up 10, 15, and then up to 20 minutes. After you are used to 20 minutes, you can increase your time up to 45-60 minutes. There is no real need to go longer than 60 minutes unless you are training for a long run such as a 10K, 20K or marathon. Ideally, you should do 40 minutes of moderate to heavy intensity four days per week.**

**In order to workout at a moderate to heavy intensity, you need to know how it feels at those levels. Here are some basic guidelines to follow to determine how intense your workout is for you. Remember, your fitness level will determine how fast are hard you have to go to get to these levels. In other words, it will take a faster pace for Lance Armstrong to get to a moderate intensity than it will for the 65 year old obese person just starting out. If you feel weak or dizzy, slow down or stop, and of course, consult a physician if you have any health problems before you begin.**

#### **INTENSITY LEVELS DEFINED**

**Very low level of intensity - You are able to sing without difficulty.**

**Low level of intensity – You are able to talk without much difficulty.**

**Moderate level of intensity – You can talk with a little difficulty.**

**Heavy level of intensity – You can almost not talk at all.**

**Very high level of intensity – You can't talk at all. This level is not recommended for beginners. You should only workout at this level after being on a program for a few months.**

**You do not need to maintain the exact same level of intensity throughout your workout. At times you can push a little harder and slow down at others. This is commonly referred to as interval training. It is beneficial to workout both at a constant rate as well as doing interval training. The fluctuation of your heart rate helps train it to recover faster and studies have shown a greater fat loss during interval training. Also, your mind is more active and the exercise isn't as monotonous which helps to prevent boredom. If you can't dedicate a full 30-40 minutes at one moment during the day, you can split that up into 10 and 20 minute segments throughout the day.**

**Get out there and do it!**

**Now you know the benefits of a stronger heart, you know how to strengthen your heart, there is just one more thing for you to do. Get out there and work it. Have fun doing it and you not only get the benefit of a healthier heart, you also get the benefits of the good feeling that you did when you were playing like when you were a kid!**

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