

VO2 MAX TESTING—IS IT FOR YOU?

Have you ever thought about having a VO2 Max test done? How about this—do you know what it is? Many people think that VO2 Max tests are stress tests, and in a way they are, but not really. A medical stress test is looking at how the heart and circulatory system reacts to physical stress. This stress test takes you up to about 85% of your age-predicted max, and the physician looks at your EKG for signs of heart health. A VO2 Max test is more for the performance-minded, and the idea is to evaluate your physical fitness and give you training parameters. VO2 is simply volume of oxygen, and a VO2 Max test measures the rate of oxygen being consumed. Although these tests look the same on the outside, the purpose and evaluation of data is far different.

WHAT YOU'LL LEARN FROM THE TEST

A VO2 Max test will tell you many valuable pieces of information for your training and racing. The first thing it will tell you is your **AEROBIC THRESHOLD**. Don't confuse this with your **ANAEROBIC** threshold. The aerobic threshold is the point at which your body uses more glycogen than fatty acids. Below this point, you're using primarily fat. In most people, this point occurs at 60-65% of their VO2 max. And this is typically around 20 beats below the anaerobic threshold. Up to the aerobic threshold, the intensity is very low, so duration can be very long. This leads to building greater endurance while building up (not breaking down) bone and soft tissue strength. Knowing this number is invaluable because if you know it, you can train just below it and train your body to use more fatty acids for fuel and conserve glycogen. For marathon training this is especially important. The aerobic threshold will have a heart rate that corresponds to this point, and a good test will reveal this.

The next piece of important information a VO2 Max test will reveal is the famous **ANAEROBIC THRESHOLD**. This, of course, is the point at which your body goes from aerobic metabolism to anaerobic metabolism. This point is intense, and at it is typically 10K pace for runners and 40K pace for cyclists (assuming they are going as hard as they can at this distance). Typically the AT is between 80-90% of max VO2 in trained endurance athletes and can be as low as 60% in untrained individuals. This is a number you want to be high. The higher the AT, the faster you can go and keep lactic acid from entering the game to slow you down. Lance Armstrong's AT is reported to be at 95% of his VO2, which is about 96% max heart rate. Is it any wonder why he's simply the best? Once you cross your AT, you are now using carbohydrates for energy, which depletes glycogen very rapidly. So it's important to know this number so you can stay below it in any event lasting more than 2 hours. A good VO2 test will reveal at what heart rate you exactly hit your AT.

Finally, the test ramps all the way up beyond the anaerobic threshold, and the VO2 max is challenged for an outright number. More than anything, knowing your VO2 max will tell you your potential for endurance sports. It is the gold standard of aerobic fitness. I'll use an example here for 40-49 year old men and women: A VO2 of 30.2 (milliliters of oxygen) for a male in this age group is considered poor, a reading of 33.6-38.9 is fair, and 48 is considered superior. For women of the same age it's: 20.9 poor, 24.5-28.9 fair, and 37 or higher superior. To keep this in

perspective, Lance Armstrong (Mr. Lungs and Legs himself) measures a VO2 of 84! His buddy Miguel Indurain was right up there with him. To my knowledge, these two have the highest VO2 maxes ever reported. A good test will reveal what this number is and what the corresponding heart rate will be to this number. So you'll get your maximum heart rate.

WHY IS THIS GOOD TO KNOW?

For starters, it's nice to know what kind of potential you have. The actual VO2 does not change that much over time. As I've stated before, it's only 5% trainable. So it may go down as you age, but you'll find that you pretty much stay in the same category. If VO2 is the predictor of outright ability (and it is), then anaerobic threshold is how much of and how long that potential can be tapped. So knowing this number is invaluable. It's like an ace in the hole. There may be some guy in front of you with the gift of a smoking VO2, but if he's racing over his head and you're kicking back below your AT, chances are you'll beat him to the line. We all know, or hopefully you're learning, that the fastest way to gain speed is to raise that AT. If you don't know it, can you raise it? You probably could if you did structured intervals at a proper pace, but it's always nice to know for sure. Research has demonstrated that you should train just below your AT (from your AT to 10 beats below) on your tempo run. If you know what this number is, it would be far easier to hit it. The best thing, I believe, about knowing your AT is so you don't overtrain. It's when we train above the AT zone that we feel the muscle soreness and we don't recover as well. So making sure we stay away from this zone on our easier and/or longer days will help us avoid overtraining. And it's also great to know your aerobic threshold. It would be good to really know what an easy day should feel like. And this type of easy day is very beneficial. If we teach our bodies to burn more fat as fuel, this will go a long way in helping our next marathons or ironman races. Again, knowing this number will take the guess work out of it.

A SUMMARY OF THE ZONES:

ZONE	INTENSITY	FUEL
Aerobic Threshold	about 20 beats sub anaerobic threshold 60-65% VO2 max	Fat
Anaerobic Threshold (AT)	10 beats to AT 80-90% VO2	Aerobic Glycolysis
Over AT	AT to VO2 max 90-100% VO2	Anaerobic Glycolysis