

Episode 038: How Hard Should I Work During Aerobic Exercise?

This is The TD Fitness Podcast with Coach T, episode number 38.

Welcome to The TD Fitness Podcast, giving you ways to live a healthy lifestyle without giving up the things that make life worth living, and now your host, certified health coach and personal trainer, Coach T.

Hey, guys. Welcome back to TD Fitness. This is episode number 38. In this episode, we are answering the question, "How hard should I work during aerobic exercise?" I think this is important because I spend a lot of time talking to you guys about fitness and about exercise, and I don't want you to waste your time, okay?

If you want specific results, then there are specific approaches, specific modes and methodologies that you should use to achieve those results. The takeaway here is that there is a simple way to determine how hard you should work and what your intensity level should be when you're performing aerobic exercise, and I'm going to give that to you in this episode. Now, here's how this topic came about. Every year, I create triathlon plans for groups of folks to use in a specific race or whatever race they choose really, but typically, we get a group of folks together every year and try to go out and do half Ironman distance triathlon. During one of the training seasons, I got a question, "Hey, Coach. What pace should I be running during my aerobic workouts in preparation for this race?"

That's a valid question, and we typically tend to think that the answer is, "Go as hard as you can all the time. That's how you're going to get better." That couldn't be farther from the truth, okay? There's an African proverb that says, "If you want to go fast, go alone, but if you want to go far, go together", and you may think, "I want to go fast." Endurance events aren't necessarily about speed.

They're about distance. That's why they're called 'Endurance events'. I often have to caveat my advice and remind you all that I'm talking about general fitness here. I'm not talking about elite athletes and elite performers, and again, I'm talking about endurance, not sprinters or power athletes, because many of you who follow TD Fitness are embarking on your first endurance event. Even if it's what's considered to be a short event, something like a 5K, you're still starting your first one, and I want you to be as prepared as possible when it comes to understanding the best way to train. What's wrong with the thinking, "If I want to be faster in the race, then I need to be faster in my training"?

What's wrong with that? This is actually one of the biggest mistakes runners make. I'm using runners as the primary example here, but understand that this advice is grounded in science, and it applies to all modalities of endurance events, whether you're talking about running, biking, swimming. You name it, and yes, that was my subtle reference to triathlon to try to work some subliminal messaging in there, but back to the scenario, we tend to think that running faster in training is going to lead to running faster in the race, so we run faster than our fitness level, and expect our body to catch up all during training. I want you to remember this, races tell you how fast you are, and that should dictate your training speeds.

It's not the other way around, so instead of practicing running faster, you want to improve your body function so that you will be able to run faster. Let's talk a little bit about how to do

that, but first, I want to back up a bit and go over a couple of definitions. The first definition is a term called 'VO2 max'. You may have heard this term before, but VO2 max is the maximum amount of oxygen that muscles can consume per minute, and it's determined in part by the heart's ability to pump blood and oxygen. It's widely considered the best measure of cardiorespiratory fitness.

Now, the next few terms have to do with your heart rate. One is your maximum heart rate, another is your resting heart rate, and another is your heart rate reserve. Now, as I said, you may have heard these terms in relation to cardiovascular training and performance where maybe you were told to work at a percentage of your heart rate for the best cardio efficiency, or to hit the fat burning zone, or to do interval training, so we base a lot of things on heart rate. Heart rate helps us gauge how hard we're working. The reason we use heart rate is because the only way to get a true and accurate measure of how hard we're working would be to conduct tests where your breathing output and your blood are measured in periodic increments, and that's just a little too cost-prohibitive. It requires special equipment, and it's time-consuming, so a while back, some experts came up with the 220 minus age equation to determine your estimated maximum heart rate, and then based percentages off of that number.

For example, if you're 40 years old, then your maximum heart rate was calculated to be 180 beats per minute. Above about 75% of that was considered high-intensity training, and 50 to 65% of it was considered maybe on the lower end of the intensity realm. That's a pretty unreliable measurement of how hard we're working just to base that off of your age, the difference in your age and 220. It's very rough. It didn't account for different fitness levels.

I mean, two 40-year olds could be drastically different in their fitness levels, yet both would still have a calculated maximum heart rate of 180 beats per minute. That may not maximize the training benefits for someone who's very fit and 40 years old, but even worse, you could really hurt somebody, or worse, if they're not fit at all and they try to exercise based on 180 beat per minute maximum calculation. Then, heart rate reserve came about, and I was pretty excited about that, that essentially took your resting heart rate into account, and assume that a low resting heart rate meant that you were more fit. The difference then between your maximum heart rate and your resting heart was called your 'Heart rate reserve', and you base your workouts on a percentage of your heart rate reserve, and that was a commonly accepted practice in the fitness industry. A lot of people still use this, basing your exercise intensity on a percentage of your heart rate reserve, but unfortunately, the ranges provided are often so, so broad that they don't really give us any real guidance.

Let's come back, let's circle back to how to train the right way for cardiovascular fitness and endurance. The idea of using heart rate to determine your exercise intensity is a valid, valid approach, but the issue is, "How do we get an accurate gauge of what our heart rate is and how it corresponds to our individual fitness levels and goals? How do I do that from one person to the next when we can vary so drastically and so differently in our levels of health and fitness?" One of the things that I try to do here is spread simple solutions to common problems, solutions that will help you train smarter, safer, and more efficiently, right? The particular solution that I'd like to give you here is what's known as the 'Talk Test', and here's how it works.

You have to understand first that there's a spectrum of the type of fuel that's used for energy as exercise intensity increases. At rest, if you're not doing anything, if you're just sitting on the couch watching TV, your body is primarily burning fat, and oxygen is required in this state. In that case, we have plenty of oxygen. We're just breathing. It's readily available. We're not exerting ourselves at all, so there's plenty of oxygen coming in.

In fact, that's the definition of aerobic. It means requiring oxygen, but as you gradually increase your intensity in exercise, you require more and more oxygen to burn more and more fat for fuel. This is what's commonly referred to as the 'Fat burning zone', as low-intensity exercise regions. As exercise intensity increases though, you move from aerobic exercise, where you're burning primarily fat to anaerobic exercise, where you're burning primarily carbohydrates, and as you increase intensity in exercise, your breathing increases because your body requires more oxygen to send to the muscles, and this breathing or 'Ventilation' as it's called, this increase is fairly linear with a couple of notable exceptions. Those two exceptions are what we call 'Deflection points', okay?

The first occurs at a point when the body can no longer supply its energy needs aerobically, so it needs to begin supplementing that with anaerobic metabolism, and this point has several names. It's been referred to as the 'Ventilatory threshold' or 'VT1'. That's what I'll call it here in this episode. Some people call it the 'Crossover point'. Others call it the 'Lactate threshold', so you're no longer primarily burning fat, you move into burning carbs as the primary fuel source. When you burn carbs, the body produces lactic acid.

The lactic acid begins to accumulate in the blood. The science and chemistry behind this is beyond what I want to get into here, but what results is an excess production of carbon dioxide or CO₂. We expel CO₂ when we breathe, right? This excess carbon dioxide causes us to breathe harder initially by breathing deeper, and because of the increased demands on our breathing, talking then becomes uncomfortable and somewhat challenging, so simply put, if you can talk comfortably in sentences that are pretty short, no more than a few words while you're exercising, you are likely exercising below VT1 or your first ventilatory threshold, or your lactate threshold. This is called 'Aerobic Zone 1', the low-intensity exercise.

Once you start to have difficulty talking, then you're at or above VT1 and you're into zone 2. Now, as exercise intensity continues to rise, more carbon dioxide is created, and we start to breathe quicker in addition to breathing deeper, until we reach a point where we really feel the burn, right? It's hard to sustain that. We're at the higher end of our capacity now, and that's that second deflection point or VT2. Surely, after you reach that point, you'll have to reduce your intensity to continue because the lactate levels are, they rise past the point where the body can get rid of it, so above VT2, we're in zone 3 of exercise intensity. If your response to the question while you're in zone 3, if somebody asks you, "Can you speak comfortably right now?", if the answer is a flat no, then you are at or above VT2 and you're in zone 3.

Quick recap, your heart rate, when it's below VT1, you're in zone 1, if it's above VT2, then you're in zone 3, and anything in the middle is by definition zone 2. What on earth does this have to do with how fast you should run? You should know that elite athletes spend approximately 75% of their training time in zone 1, that low-intensity zone where it's easy for them to converse and talk, and they spend about 15 to 20% in zone 3. That's the really hard, the interval training. They hardly spend any time though in zone 2.

One of the certifications I hold is through the American Council on Exercise, and they developed a model where it essentially says the same thing. It's recommended that 70 to 80% of aerobic training be done in zone number 1, less than 10% in zone number two, and about 10, 20% in zone 3, so again, minimal time in zone 2. Yet, when we try to exercise faster to run faster in a race, we're primarily exercising in zone 2, because we can't sustain zone 3 for any length of time. I mean, you're gassed when you're in zone 3. Instead though, what we should do is train primarily in zone 1, in those very low intensities, and spend time in zone 3.

Zone 2 doesn't do much for us at all. To understand the counterintuitive nature of this, let me explain it this way. Imagine you're looking at a map, okay? Your location is depicted on the

left side of the map, and the point where you want to travel to is on the right side of the map, and you can take the straight route, a direct line that happens to have a lot of mountains, some terrain, maybe a body of water for you to cross, but it is the most direct path, or you can take the longer distance going around all that, and you'll probably get there in less time and with less effort. While the most direct route seems like the best way to go when you look at it from above, when you're looking down at the map, when you're actually on the ground, you can see it in the other dimensions.

You can see the mountains and so forth, and in the long run, and there's a pun intended there, in the long run, you should smartly use your training zones to provide a shorter path so that your goal of improving your time. I've talked about something similar in previous episodes, if you remember the outcome-based and performance-based goal discussion. Just a recap or reminder, outcome-based goals are goals like, "I want to lose 10 pounds in two months", right? You don't have a lot of control over whether or not you lose 10 pounds in two months because there's a lot that goes into it that's simply beyond your control, but a performance-based goal would be, "I will exercise three days a week", or, "I will eat vegetables four days each week to improve my diet." You can control performance-based goals because they require action on your part, but you can't control the outcome of losing 10 pounds because again, there may just be things happening metabolically that are beyond your control.

We talk about this in the Fit Life Program. You can control the rate and intensity of your exercise. You can control your performance. You can keep it in zone number one. You can exercise in zone number three from time to time, and you can avoid zone 2 or minimize your time in zone 2, and that's the best way to get faster, because by exercising in zone 1, you build the most important muscle, the heart, because you give it a sustained workout that you can maintain, okay?

By exercising in zone 3, you provide that occasional push that we need to get better, to go beyond our limits, but you don't have to do this that often. When you're in zone 2, you're basically working the heart and the muscles too hard to reap the benefits of any kind of sustained growth because you can't maintain it for long enough periods, and you're not working hard enough in zone 2 to tap into the zone where you push yourself to get better. It's like the iced tea and hot tea saying, right? A lot of people like iced tea. A lot of people like drinking hot tea, but no one likes lukewarm tea, so sipping iced tea on a hot day is like exercising in zone 1, and drinking hot tea is like doing interval training in zone 3.

When you're in no man's land, in zone 2, you're just adding unnecessary stress to your legs without any extra benefit, so I encourage you to use the Talk Test to determine your heart rates that define those zones, and the zones can be different in each discipline or sport because each different type of discipline, whether it's running or biking, they each tap into our metabolic systems in different ways, so you may actually have a different heart rate associated with VT1 when you're running than you do when you're riding your bike. There's some benefits to this Talk Test. As I said, in the past, we had to rely on tests that were done in special settings like laboratories with specialized equipment, specifically trained personnel to help us determine our heart rate zones, but now, science has shown us that the Talk Test is indeed a valid and reliable way for accomplishing the same thing. You don't need an expensive exercise test to determine appropriate training intensity, so you want to find VT2, and then exercise slightly above it for short periods of time. Again, that zone 3, that's your interval training.

Then, you want to come back down and exercise below it, and that's going to increase VT2 over time and improve your performance, and your ability to exercise at those higher intensities for longer periods of time as you go on. You'll find that as you reach that goal ... Again, think back to that map. As you get closer to your goal, you'll find that your

performance is actually coming up and improving because you spent the right amount of time in the right cardio zones, so the majority of time in zone 1, building your heart and your other muscles, your endurance muscles up to the point or at a level where they're not being taxed too much, but they're actually exercising over a period of time, and sometime in zone 3, where that's when you really push yourself, but again, you don't have to do it that often. Zone 3 training again, 10 to 20% of the time, okay?

Those are your intense interval trainings. In sum, you can use that Talk Test to determine VT1 and VT2 for running or whatever cardiovascular exercise or sport you choose, and then define your zones and spend the majority of your time in zone 1, less time in zone 3, doing interval training and minimal time in zone 2. That is all I have for you in this episode. I want to remind you that the show notes for this episode can be found at TDFitness.net/038. There, you can get the show notes.

You can read the transcript. You can find links to any references I made in this episode, basically listen or watch, however you want to consume it. Again, thank you all so much for tuning in. As always, I want you to have a blessed one. Coach T, out.