

Heart Rate Training

Understanding Exercise Intensity and Target Zones

Different training workouts require you to exercise at different intensities. As your training intensity increases, so does your heart rate, and monitoring your heart rate is probably the most widely known method of determining your training intensity. The development of wireless heart rate monitors has given many athletes, from beginners to experts, an easy, effective way to gauge their training intensity.

You can't always predict how your heart is going to respond to exercise. Fatigue, illness and overtraining can have profound effects on heart rate, so always listen to your body. Don't be a slave to your heart rate monitor; you should look at it about every 10 minutes, not every minute, especially during a race.

Objectives:

After completing this chapter you will:

- Understand what exercise intensity is and why it should be measured or tracked during activity.
- Determine your estimated maximum heart rate and your personal target heart rate zone for exercise.
- Be able to measure how your body responds to cardiovascular activity.

The New Tools of the Trade

With a heart rate monitor (HRM), you have at your disposal a powerful control tool for making your workouts more effective and time efficient, safer and equally important much more fun.

The Heart Rate Window

Your HRM gives you a physiological window through accurate heart rate measurement into your body's response to the moment to moment rigors of physical activity. This precise view of what's happening inside your body allows you to make immediate adjustments in your exercise intensity to the level most appropriate for your body and your particular needs. Far more accurate than any other measure of physical activity how fast you're going, or how far you've gone, for example your heart rate reflects exactly how your system is functioning, and provides a measure of how hard you're working. (It's like watching a car's tachometer: The tach tells you how hard your engine's working in revolutions per minute, while your HRM tells you how hard your heart is working in beats per minute).

More Is Not Better

There is a considerable body of research that tells us that more is not necessarily better when it comes to exercise. In fact, training to exhaustion does far more to hurt performance than to enhance it. A typical adult can train at far lower levels of intensity than has been traditionally thought and still get fit; even reducing dress or slack sizes. Monitoring your heart rate to keep yourself at the right level of exercise intensity has become the training secret of the decade.

Benefits of Proper Training

Some basic exercises and training goals are universal. For example, strengthening the heart muscle through aerobic activity helps the heart pump more blood with each stroke. As total blood volume increases, the blood becomes better equipped to transport oxygen. Lung capacity increases, blood pressure decreases, and the entire cardiovascular system functions more efficiently. Some well-known benefits of aerobic training are better performance, better general health, improved muscle tone, weight loss and relief from stress and insomnia.

Training Smart

Monitoring your heart rate will take the guesswork out of training and ensure that your training intensities are optimal. If your heart rate during exercise is too low, you aren't working yourself hard enough to do yourself much good. If your heart rate is too high, you will most likely fatigue before the exercise can be beneficial. Monitoring your heart rate ensures that you stay within your optimal target heart rate zone, optimizing the benefits of your workouts and eliminating uncertainty about safety.

The Benefits of Monitoring Heart Rate

Heart Rate Monitors and Motivation

Statistics show that over 70% of the people who start an exercise program will quit within the first six months and many within the first few weeks. What makes it so hard for individuals to stick with an exercise program? Why do they give up so quickly? One of the primary factors affecting adherence to exercise is a loss of motivation.

Most people start an exercise program with a specific goal or need in mind that becomes the driving force or motivation behind their desire to exercise. However, many individuals run into common obstacles that cause them to lose sight of these goals and begin to lose their motivation to keep going.

Fortunately, a heart rate monitor can provide the solution to many of the obstacles that stand in the way of success in an exercise program.

Keeps You in Your Zone

If you want to reach your exercise goals, it's important to stay in your target heart rate zone during workouts. A heart rate monitor is your constant reminder of the intensity and quality of each workout session. Nothing keeps you in your zone more accurately than a Heart Rate Monitor. The Polar brand of Heart Rate Monitors are some of the best monitors available.

Heart Rate Monitor Shows Your Progress

It takes four to six weeks of consistent exercise before you begin to see any external changes to your body. Although you can't see them, internal improvements begin to take place immediately. Your heart rate is an efficiency rating for your entire body. As your fitness level improves, your heart rate improves along with it. A heart rate monitor gives you a physiological window into your body's response to the daily improvements in your physical health.

A Heart Rate Monitor Eliminates Frustration

If your heart rate is too low during exercise your body reaps little or no benefits. This means you're not likely to see the results you want, like weight loss or increased endurance. If your heart rate is too high during exercise you may tire too quickly and become frustrated, or even run the risk of injury. In either case, you're likely to quit exercising because you're not getting the results you want or because it's simply too difficult. A heart rate monitor keeps you exercising by showing you results that you otherwise would not see.

Keeps you Safe

Exercising too hard can put you at risk for injury. A heart rate monitor reminds you of the safe and effective heart rate intensity in which you should exercise and warns you when you leave that safety zone.

Exercise Intensity and Heart Rate Monitors

To understand exercise intensity and how a heart rate monitor helps achieve fitness goals, our friends at Polar Heart Rate Monitors provided these rules be familiar with Three Keys to Success:

1. Working out at the correct exercise intensity is the only way to achieve your fitness goals.

Too hard = injury, muscle soreness = can't finish workout.

Too easy = no improvement or results = will not reach fitness goals.

2. Heart rate is the only accurate measurement of exercise intensity.

3. HRMs are the easiest and most accurate way to measure continuous heart rate.

The continuous display of heart rate is what makes your workout effective. This is because your heart rate is guiding you during your whole workout, just like a coach. As the speedometer in your car tells you how fast your car is going, your heart rate tells you how fast and hard you are going.

What Is Exercise Intensity?

Exercise intensity is simply a measurement of how hard you are working at a given time during exercise. The American College of Sports Medicine (ACSM), the world's leading medical and scientific authority on sports medicine and fitness, recommends that every individual involved in an exercise program should know how hard their body is working during exercise.

Your heart provides key information for determining how intensely you are working during exercise. Your heart rate (how many times your heart beats per minute) is really an efficiency rating for your entire body. The number of times your heart beats during each minute of exercise is a measurement of the intensity of the exercise. If your heart rate is low, exercise intensity is low; if your heart rate is high, your exercise intensity is high.

Why Should Exercisers Monitor Exercise Intensity?

Your heart is the most important muscle in your body and, like all muscles, must be exercised regularly to remain strong and efficient. According to fitness experts, exercise is more effective when you work out in a specific heart rate range or zone. (This is referred to as your Target Heart Rate Zone (TZ)). This zone can vary greatly depending on your age, fitness level and various other factors.

Example

Debby and Thomas are at the same cardiovascular fitness level and plan to run 5 mi. Debby decides to jog and Thomas decides to sprint. Whose exercise intensity level will allow them to maintain their speed for the entire 5 mi.? The answer is Debby. Thomas will be too tired to sprint the entire 5 mi.; he cannot maintain an exercise intensity that high.

Monitoring exercise intensity helps you stay at a level of exercise that allows you to accomplish your goals. In fact, the ACSM recommends that, in order to get the most benefits from your cardiovascular exercise, you should work within your Target Heart Rate Zone for at least 20 to 60 minutes per workout, three to five times per week, at an intensity of 60% 80% of your maximum heart rate. Knowing your exercise intensity (heart rate) will allow you to work at the right level of exercise to accomplish this.

What is Maximum Heart Rate?

Maximum heart rate (MHR) is the maximum attainable heart rate your body can reach before total exhaustion. True maximum heart rate is measured during a fatigue or "stress" test. This test must be done in a clinical setting and is not practical or accessible for most people. Fortunately, your maximum heart rate can be estimated with a high degree of accuracy using the following simple formula:

Estimated Maximum Heart Rate = 220 - Your Age

If John is 30 years old, what is his estimated maximum heart rate?

John's Estimated Maximum Heart Rate = 220 - 30

John's Estimated Maximum Heart Rate = 190

John's heart can beat an estimated maximum of 190 times per minute before his body would fatigue or "max out." This number is extremely helpful because it tells us the absolute highest exercise intensity John can handle before his body wears out. What this means is that during exercise, John should keep his heart rate below his maximum so that he will not become exhausted and have to quit. In fact, this gives John a specific percentage range of his maximum heart rate to exercise in known as his Target Heart Rate Zone (TZ).

How Do I Determine My Target Heart Rate Zone?

Your Target Heart Rate Zone (TZ) represents the minimum and maximum number of times your heart should beat in one minute of exercise. The ACSM recommends that all individuals should work within a TZ of 60% 80% of their maximum heart rate (MHR). This means that your heart rate during exercise should not fall below 60% or rise above 80% of your maximum heart

rate.

Let's look at John from our earlier example.

John is 30 years old, so his estimated maximum heart rate is $220 - 30$ or 190 beats per minutes (bpm). The ACSM says that John should exercise between 60% and 80% of 190 bpm to stay in his TZ. Let's determine John's TZ:

John's Estimated MHR	=	190 bpm
190 bpm (MHR) x 0.60 (60%)	=	114 bpm
190 bpm (MHR) x 0.80 (80%)	=	152 bpm
John's TZ	=	114–152 bpm

John will want to keep his heart rate in the range of 114–152 bpm during exercise in order to achieve his goals. If John is a beginning exerciser, he'll want to stay at the low end of his TZ. If John is a more advanced exerciser, he may want to work at the higher end of his TZ to challenge himself more.

In summary, to define your TZ:

- The level that your heart rate needs to get to = lower limit
- The level that your heart rate should not exceed = upper limit.
- Keeping your heart rate between the lower and upper limits = staying within your TARGET ZONE.

The formula to find your target zone:

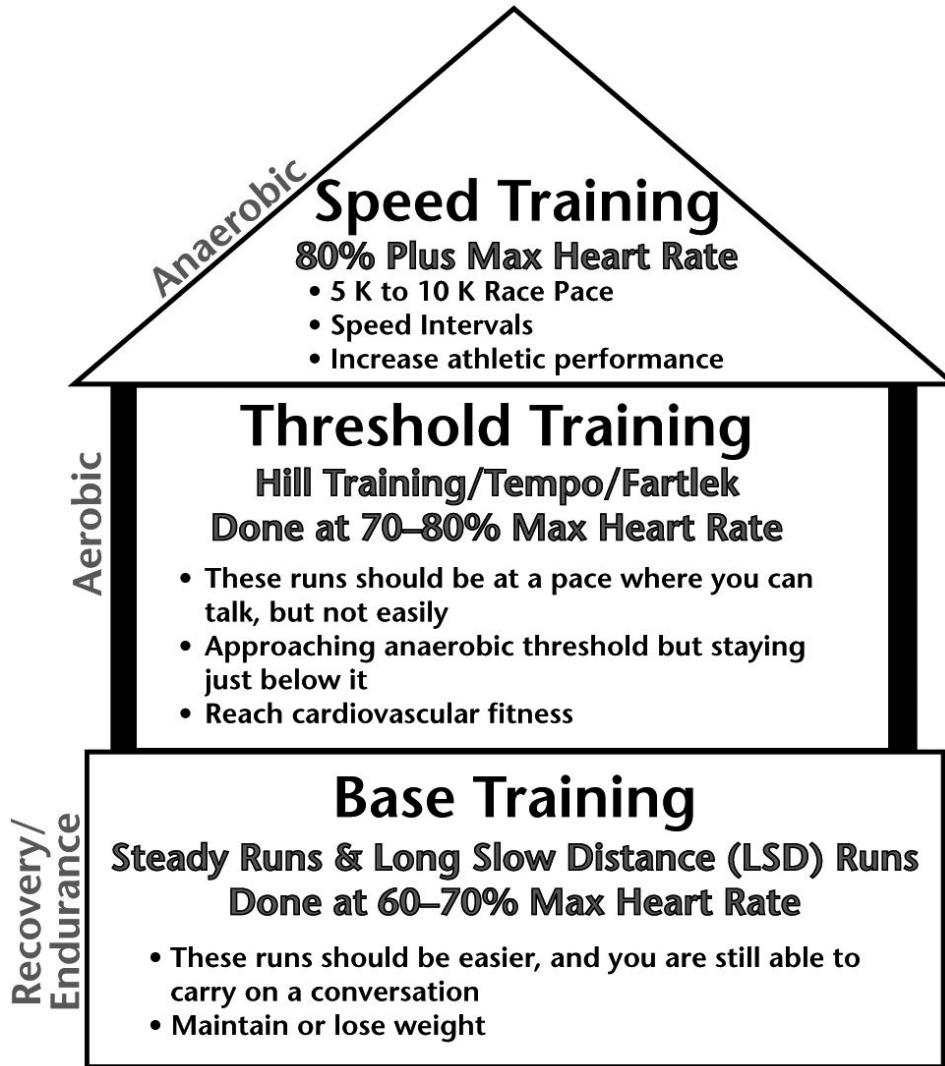
220 minus your age = maximum heart rate (MHR)
 MHR x 60% = lower target zone limit
 MHR x 80% = upper target zone limit

The Importance of Target Heart Rate Zone (TZ) in the Workout

Staying within your TZ is critical to meeting your exercise goals. However, the question becomes, "What is the correct TZ?" Before that question can be answered, you must know what your exercise goal is, because the most effective TZ is matched with your exercise goal.

- Maintain or lose weight, your TZ is 60–70% of MHR
- Reach cardiovascular fitness, your TZ is 70–80% of MHR
- Increase athletic performance, your TZ is 80% + of MHR

The Heart Rate House



Heart Rate Training Made Easy

Base Training (Recovery/Endurance):

Typically you should find it difficult to keep your heart rate below the limits you have set for yourself. Don't cheat! Strict training in this area will prevent you from losing steam the last few kilometers of your long run. All training at this level is done at 60-70% of your maximum heart rate.

Threshold (Aerobic) Training:

Building the Walls

A good guideline in most cases is to run at your 10 K race pace. The purpose of this type of training is to work on proper form, strength and endurance. Hill training qualifies in this part of the house. Like hill training, you are not going to do this type of run every day. Any more than a couple times per week will overfatigue your legs and compromise your long run. All training at this level is done at a range of 70-80% of your maximum heart rate.

Speed Training (Anaerobic):

Putting on the Roof

Remember, owing to intensity, runs of this nature are best done as interval training. Your intervals should be no longer than a few minutes. Your heart rate should recover to approximately 120 bpm (one to two minutes of rest) before starting the next interval. Like hills, start off with only a few (two to three). Vary the distances of each interval and the total distance covered from week to week. Build slowly from there. With this type of training, a warm-up and cooldown are critical. Warm-up with a couple of kilometers of easy running and a stretch. All training at this level is done at a range of 80% plus of your maximum heart rate.

Aerobic or Anaerobic? That is the question

These terms are thrown around quite loosely in the gyms and on the track these days. Here's the low-down on what they really mean. Aerobic means "in the presence of oxygen." What makes an activity aerobic or not is its intensity. Energy for low-intensity exercise can be supplied by aerobic metabolism. Although aerobic metabolism can supply a lot of energy (from birth to death), it can only do so quite slowly. Aerobic metabolism is very efficient and has very few by-products such as lactic acid. Only very small amounts of lactic acid are produced during aerobic exercise, and this can normally be removed by the body before we feel any adverse effects.

During high-intensity exercise there is a quick and high demand for energy at a very fast rate. Since aerobic metabolism is too slow to supply the energy, our body must shift gears and produce energy at a faster rate. Although anaerobic metabolism can produce a lot of energy in a very short time, the chemical reactions involved create a great amount of lactic acid. So much lactic acid is produced that we cannot get rid of it fast enough, causing it to accumulate in the muscles and blood. Lactic acid accumulation to a high level causes that burning feeling in the legs and queasy feeling in the stomach. If anaerobic exercise persists, lactic acid interferes in the energy making process. Exercise intensity will have to slow in order to continue or come to a complete halt. This is why predominantly anaerobic exercise can be done for no longer than approximately two minutes. Yes, only two, even for highly trained athletes. For most of us, it's less!

Examples of predominantly aerobic exercise:

- Walking
- Running easy
- Cycling easy
- Swimming

"Anaerobic" means "in the absence of oxygen"; when the intensity of exercise is too high for the body to get enough oxygen, and aerobic metabolism is too slow to supply energy at such a fast rate, the body must shift gears and produce energy by anaerobic metabolism. Such high-intensity exercise is called "anaerobic exercise."

Examples of predominantly anaerobic exercise:

- Speed work, as outlined Types of Running

No one activity is only aerobic or only anaerobic. Most activities that we participate in day to day require both types of metabolism.
