

## Training by Speed or by Heart Rate - Which One Should I Use?

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Visit any online running forum or discussion group, and you will see ongoing debates about different types of training. On opposite ends of the debate are two types of training: “velocity based” training and “heart rate” training. One method focuses on speed, the other emphasizes heart rate “zones.” Proponents of each method - and similar variants of these training methods - can sometimes become quite critical of the “other side” in the debate. Runners who are searching for ways to improve their economy, speed, endurance, and stamina easily can become confused by the point/counterpoint in the debate.

There is no stand-alone formula or training method that can guarantee “running success,” however that is defined, for every runner. Some runners want to lose weight and improve their overall endurance. Others aim for specific time goals in the 5K, 10K or other distances.

One constant in the various training methods is *consistency*. Whether a runner is targeting a Boston Marathon qualifying time, or hoping to run a decent 5K at the end of a sprint triathlon, it is important is to find an appropriate training method and *stick to it*. Bouncing from one method to another without understanding the concepts and objectives is frustrating and unproductive.

More important, runners need to understand the basic principles of different training techniques so that they can select a method that best fits their ability and long-term goals.

### **Velocity-based training is all about goal speed.**

In its simplest terms, velocity based training consists of running certain distances at a specified pace, or at workout paces that are tied to that specific pace. This does not mean that any runner can simply pick a goal pace - like 7 minutes/mile for a marathon - and start training at that pace. Sure, it would be nice to run your “wishful” pace for a quarter mile and slowly build that up to 26 miles. But that’s not how it works.

In order to train at appropriate speed, a runner must know his or her “VO<sub>2</sub>max,” which is the maximum amount of oxygen the runner can take in, process, and use to provide energy. Generally, the faster a runner can go, the greater amount of oxygen he or she can use. VO<sub>2</sub>max is not something you can measure on your own using off-the-shelf technology (like a heart-rate monitor). Precise measurement requires laboratory conditions on a treadmill or other exercise equipment. Even with that equipment, determining an exact VO<sub>2</sub>max can be somewhat tricky, and might require repeated tests in a controlled environment. Since that is not readily available to most runners, the next-best-thing to using VO<sub>2</sub>max is the “VDOT” formula. The VDOT system, which was developed by renowned running coach Jack Daniels, approximates VO<sub>2</sub>max based on a runner’s time for any specific distance and assigns a “VDOT value” to the runner.

Once the runner has a VDOT value, the Daniels method assigns training paces for various distances based on that VDOT value. Long runs, easy runs, threshold runs and interval workout

paces are all tied to that VDOT value.

Keep in mind that the objective of endurance training is to increase VO<sub>2</sub>max, and in turn increase the VDOT value. The higher the number, the faster the pace. Using the Daniels Running Formula - or similar systems such as the McMillan Running Calculator - runners find guidance to train for anything from short distances to marathons.

### **Heart rate training is all about staying in a “zone.”**

Heart rate training uses a heart rate monitor and various training zones based on a runner's maximal heart rate. There are dozens of published materials that recommend certain zones for training, ranging anywhere from 60%-80% of maximal heart rate for the “aerobic zone,” and similar percentages for “easy/recovery” zones, “lactate threshold” zones, and so on.

Some materials simply suggest that runners subtract their age from 220 to determine maximal heart rate, but that is extremely simplistic and not very useful. The better method is to use heart rate reserve, or “HRR,” which takes into account a runner's *resting* heart rate as well as *maximal* heart rate. Thus, runners can get an individualized number to determine their ability to go from a state of rest to maximum effort. The methods for determining maximal heart rate vary, and include timed runs on a track, hill repeats at a given distance, and treadmill running at gradually increasing speeds. Whichever method a runner uses to determine maximal heart rate, the key is to use a heart rate monitor while running, and to stay within specified zones depending on the given workout.

### **Speed or heart rate? Which one is “best” for training?**

Proponents of velocity based training maintain that its key advantage is that training paces are directly tied to recent performance and goal racing speed. Some will criticize heart rate training is being too limiting, because factors such as heat, fatigue, and dehydration will affect heart rate and thus require the runner to slow down too much.

On the other hand, proponents of heart rate training will point to the world-class cyclists in the Tour de France, who use heart rate monitors in training and in racing, and say “if they're doing it, then it must have value.” They will also argue that heart-rate during exercise is directly tied to scientific measurements of cardiac output, oxygen usage, and consumption of fuel (carbohydrates and fat).

Again, there is no single method that is a “magic pill” for improving as a runner. There are entire books devoted to each method, and the number of resources in print and online is vast. The best advice for runners is to learn the basic concepts and terminology for velocity based training *and* heart rate training, find a method, learn its principles, and *stick to it*.