

TRAINING FOR THE HALF MARATHON

In an earlier issue of LAS&F I wrote about successful marathon training. In this installment, I want to serve up the meat and potatoes of using heart rate as the principle training guide for a half marathon.

Over the past 15 years I have tried desperately to “dummy down” the explanation regarding physical adaptations that occur when heart rate is systematically used in training.

I am reminded time and again to employ the K.I.S.S. (*keep it simple stupid*) principle when trying to explain these concepts to my clients. Here at last, I think we have successfully achieved that end.

Before we get into the nitty-gritty, we need two things; first, is a reliable heart rate monitor. I am personally vested with Polar. They have the greatest variety of monitors on the market. My favorite model for serious runners is the RS800sd. The reason I prefer this monitor is because of the highly detailed feedback it can provide, such as speed, distance, cadence, stride rate and of course all of the heart rate related data. This monitor is a bit pricey, selling for around \$499.00 retail. If this is a bit too much for your budget, my next best choice is the RS400sd which provides all of the aforementioned details minus cadence and stride rate. Other less expensive monitors are available, as you lose some of the functionality the price drops considerably. A word of caution; avoid cheating yourself from these valuable functions, once you get accustomed to using heart rate while you train you will become addicted to the feedback, the more the better. As they say “its better to spend a little more than you planned than a little less than you should have”.

Next, we need to establish some base parameters, namely your anaerobic threshold and maximal heart rate. Your anaerobic threshold is the line in the sand so to speak, between your bodies' energy systems. Further referred to as your “AT”, the point which defines when you have stopped accessing your fat stores and are now completely drawing from your sugar stores for energy. This bit of information is critical in that it defines the intensity of all of your training.

In a perfect world, to arrive at this priceless information you need a VO2 max test. We perform these tests everyday in our lab for runners, triathletes and fitness enthusiasts interested in weight management. This approach is highly recommended. On the other hand, if you are on a tight budget, the next best approach is to employ predictive measures. Unfortunately, a host of variables can affect the accuracy, but it is easy, and costs you nothing.

The formula I would suggest goes like this; simply subtract your age from 180 to arrive at a base heart rate threshold and infuse a plus or minus 5 beats per minute based on your current state of fitness, for example:

- If you are new to running and this is your first long event, don't add or subtract points.
- If you have been away from training or recovering from a virus subtract 5 points.
- If you have been running and healthy for the past 6 months, add 5 points.

Your newly established “AT” serves as the nucleus of your training plan. Once you have this value, you now need to establish a one mile “AT” time trial. To do this, you simply go to your local track, warm up and run until you achieve your “AT” heart rate and begin timing yourself at this heart rate for exactly one mile. This test is important because it will serve as your progress report throughout the course of your training.

Once this is done, it's a good time to determine a maximal heart rate as well. This can be done by running up to your peak effort, recovering for about thirty seconds and repeating this process about 3-4 times. The highest attainable heart rate is a pretty close indication of your peak heart rate.

Now that we are empowered with the governing heart rate responses it's time to apply them to the four principle training stimuli.

Example: *Sally is 40 years old and has been healthy and training for the past year. She would subtract $180-40=140$ bpm, add 5bpm for her fitness level and arrive at an AT of 145bpm. Afterwards Sally performed a field test and found she could not exceed a max heart rate of 180bpm with this information we can now begin to build the correct intensity for each training stimulus*

- **AB** –135-145bpm “aerobic base training” training conducted for long duration below the anaerobic threshold.
- **MSD**- 110-170bpm “motor skill development” interval training that focuses on enhanced economy at speed.
- **LT**- 140-160bpm “lactate tolerance” training which is analogous to race pace efforts with governed recovery.
- **AR**- 120-130 bpm “active recovery” low intensity training that promotes recovery and preparedness to get back to training soon.

Organizing these training components properly will prepare you for nearly any endurance event. This is not rocket science, varying intensity and duration is nothing new. However, as they say “the devil is in the details”. Instead of using pace, distance and time to govern your training, you are now using critical feedback from your bodies pump (the heart) to dictate how hard, how long and when to recover from your efforts. Keep in mind that your central nervous system is the boss; it regulates bodily functions to protect and serve. Trying to follow a program that does not account for this bio-feedback will never be as effective.

Arranging the schedule to meet my level of ability

The primary concept of an endurance program is to gradually build “resistance to fatigue”. Our template ensures that all the pertinent elements of your training are integrated into your daily, weekly and monthly program.

Once you understand and can conceptualize what I have done here, you are able to adjust the workloads, days off etc. to match your lifestyle and responsibilities.

How do I rate my level of experience?

With running, it is always better to error with less than more mileage in your planning. After all, you can always increase your mileage, however if you take on too much too early you risk injury.

The following training mileage/time recommendations should adequately place most runners into a scheme that works well for a successful outcome. Keep in mind that in our training, your principle concern is the volume of time committed to each specific component of training NOT mileage. Your mileage increases proportionately with your improvements over time.

Beginner	3.0 to 4.5 hours per week	(aprox. 18-25 miles per week)
Intermediate	4.5-6.0 hours per week	(aprox. 25-40 miles per week)
Advanced	6.0-8.0+ hours per week	(aprox. 40-60+ miles per week)

Caution:

BE CONSERVATIVE don't take on more work than you are physically prepared to achieve. You can always add mileage but you cannot subtract injury or over training once it occurs.

FIRST FOUR WEEKS OF TRAINING

Key emphasis aerobic base development (80% of volume / 20% motor skill) ** "m" = MINUTES

Sunday		Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Volume
Task	Time	Task	Time	Task	Time	Task	Time	Task	Time	Task	Time	Task	Time	Time
AB	45 m	Off	Off	AB	45 m	Off	Off	AB	45 m	Off	Off	MSD	45 m	3:00 hrs
Off		AB	45 m	Off	Off	AB	45 m	Off	Off	MSD	45 m	AB	60 m	3.25 hrs
Off		AB	60 m	AB	60 m	AR	30 m	MSD	45 m	Off	Off	LT	60 m	4.00 hrs
Off		MSD	45 m	AB	60 m	Off	Off	AB	60 m	AR	30 m	AB	75 m	4.50 hrs

SECOND FOUR WEEKS OF TRAINING

Key emphasis aerobic base development (65% of volume / 35% skill / tolerance)

Sunday		Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Volume
Task	Time	Task	Time	Task	Time	Task	Time	Task	Time	Task	Time	Task	Time	Time
Off		LT	60 m	AR	30 m	Off	Off	AB	45 m	Off	Off	MSD	45 m	4:50 hrs
AR	30 m	AB	75 m	Off	Off	AB	45 m	Off	Off	MSD	45 m	LT	60 m	5.50 hrs
AB	60 m	AR	30 m	AB	60 m	Off	Off	MSD	45 m	Off	Off	AB	75 m	4.50 hrs
LT	75 m	Off	Off	MSD	45 m	AB	90 m	AB	60 m	Off	Off	AB	90m	6.50 hrs
												LT	30m	

LAST FOUR WEEKS OF TRAINING

Key emphasis aerobic base development (60% of volume / 40% Pace tolerance)

Sunday		Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Volume
Task	Time	Task	Time	Task	Time	Task	Time	Task	Time	Task	Time	Task	Time	Time
AR	30 m	AB	60 m	Off	Off	AB	90 m	AB	75 m	Off	Off	MSD	45 m	5:50 hrs
						LT	30 m							
AR	30 m	AB	60 m	Off	Off	LT	60 m	Off	Off	MSD	45 m	LT	60 m	6.50 hrs
Off		AB	60m	AR	30 m	MSD	45 m	AB	75 m	Off	Off	AB	75 m	6.00 hrs
		LT	30 m											
Off		MSD	45 m	AB	90 m	AR	30 m	MSD	45 m	AR	30 m	Off	Off	RACE

AB "Aerobic Base" is widely recognized as the principle activity of the endurance athlete. The term "aerobic" was first coined in the mid-sixties by Dr. Kenneth Cooper of the Cooper Research Center in Dallas Texas, it means, "In the presence of oxygen". I will continually remind you of importance of developing a strong aerobic base. Principally "fat burns in the presence of oxygen", given that all of us carry an abundance of this energy form, to condition our bodies to draw from it helps to spare our sugar stores which are in limited supply. Developing an aerobic base is achieved through moderate intensity, long duration training just shy of the "AT". (*Total workout at least 60 minutes and up to 3 hours*)

MSD "Motor Skill Development" is conducted by assembling brief bouts of high intensity work followed by adequate recovery. This allows the muscles to replenish energy and recover from the intense pace. The goal is to improve the rate and speed of contractions without a contra-dominant shift in the energetic pathways. In order to do this, you need to escalate your running pace until you achieve a minimum of 80% to a maximum of 95% of your able heart rate. Sustain this effort for up to 30 seconds followed by recovery as low as 100-120 bpm before repeating. I refer to this stimulus as motor skill development and with this outcome in mind, running form, stride rate and cadence are best addressed now. If you try and maintain peak speeds for too long the training effect is more of sub-maximal tolerance and more of an anaerobic influence which is not intended here. (*Total workout is 45 minutes including warm up and cool down*)

LT "Lactate Tolerance Training" is training in where the production of lactate exceeds the oxygen uptake and waste clearing potential of the circulatory system. Appropriate application of tolerance training teaches the body intuitively relocates via what is termed "the lactate shuttle system" provides energy to do more work. The key to these intervals is to find a pace that is clearly anaerobic yet tolerable for up to six minute and as little as three

minutes followed by a moderate amount of recovery just below the anaerobic threshold. This roller coaster effect allows a bit of waste clearing while promoting tolerance. Hill training is an excellent vehicle for LT applications as intermittent climbing provides the effect we are hoping to achieve. It also provides muscular endurance which is missing from both AB and MSD sessions. As a rule it is better to push at an aggravated pace for a shorter time, say three minutes than to try and hold on to a lesser pace for ten minutes. *(Total workout time 60-90 minutes including warm up and cool down)*

AR "Active Recovery" is work at a low level of intensity rather than complete rest. The intent is to aide the circulatory system in the removal of waste by-products and to enhance rejuvenation of muscle that has been traumatized from training. Heart rate is a great indicator of the need for recovery. If you find that your heart rate is elevated by ten or more bpm over the usual levels during training, your body is telling you that some active recovery is in order. *(Workout time 30-45 minutes)*