Heart Monitor Training for the Compleat Idiot
By John L. Parker, Jr.

Estimating Your Max Heart Rate

There are a number of ways to estimate your maximum heart rate. The best way is to get on a treadmill and slowly increase the speed or the incline until your heart rate is maxed out.

Recovery Ceiling and Threshold Floor

Once you have an approximate or actual Max Heart Rate, there are really two numbers you need to calculate to be able to use a heart monitor for effective training. These two numbers are the secret key to heart monitor training:

1. Your 70% level, or Recovery Ceiling (by far the most important one) and,

2. Your 85% level, or Threshold Floor

These two numbers, your Recovery Ceiling and your Threshold Floor (and knowing how to use them) constitute 95% of heart monitor training. The rest is just icing on the cake.

Here's the formula for figuring your Recovery Ceiling (70% of your Max):

(Max HR – Resting HR) x .70 + (Resting HR)

For example, an individual has a maximum heart rate of 182 bpm (beats per minute) and a resting heart rate of 50 bpm. His Recovery Ceiling is:

(182 – 50) x .70 + 50 = 142

This means that if he is scheduled for a recovery day, he should attempt to keep his pulse close to, but below 142.
His Threshold Floor is:

(182 – 50) x .85 + 50 = 162

This means that if he scheduled for a hard day, say a tempo run, he should attempt to keep his pulse at 162 or a little above it. If he is doing interval training or speed work, most of the time his heart rate will be even higher.

The Hard/Easy Principle

Now all you need to do is apply these numbers to something you already know: Alternate hard days with easy days, better known as the hard/easy

method. So all you need do before you head out the door is ask yourself: "Did I run hard or easy yesterday?"

Most people will initially find their true 70% Recovery Ceiling pace to be ridiculously easy. But you won't have to go at this tortoise pace forever, even on your recovery days. After several weeks, a miracle begins to happen! You get to go faster, but without violating your sacred Recovery Ceiling.

This very pleasant phenomenon is the reward that all runners receive if they listen to their heart monitors and stick with the program.

Measure Your Morning Resting Heart Rate

You should take your morning resting heart rate at frequent intervals to alert you to:

❖ A higher than usual pulse can give you advanced warning of over training or of an oncoming bug/cold, and thus to back off on training and/or to spend more time in bed.

❖ A lower than usual pulse can announce the very pleasant news that you are in better shape than you thought you were!

Training: An Overall Approach

The foundation of the training system in this book, stated as simply as possible is this: Many runners could vastly improve their training efficiency by running easier and probably longer on their easy days and harder and probably shorter on their hard days.

A heart monitor does something even the most perceptive coach can't do for a runner. It tells the runner the precise moment he starts to go off his program. That's the moment it starts beeping as he bumps up against his 70% Recovery Ceiling.

The "hard/easy" approach doesn't have to be a lock step kind of thing. Some athletes, particularly as they age, may need two or even three recovery days between harder efforts. Each runner responds and recovers at a different rate from the stress of hard training. Some may only be able to handle one hard workout per week. The crucial point is all non-hard running should be done at below 70% of maximum heart rate, which will allow true recovery.

The Hard Day

What's the hard work out? I'll let you in on a little secret: I really don't much care what you do on your hard days. If you're doing a tempo run, you

should be around 85%. If you're doing intervals, you might be hitting 90-95% toward the middle and end of each repetition.

Reaping the Rewards

If you follow this training approach, you'll discover the joys of training with plenty of glycogen in your system. Your slow recovery days are actually accomplishing a very important goal of distance training: they are teaching your muscles to burn fat rather than glycogen.

Why It Works: The Science of Training

Imagine a picture of an outdoor barbecue grill with a big pile of charcoal in it. Also imagine a can of fire-starter liquid.

The Barbecue Metaphor
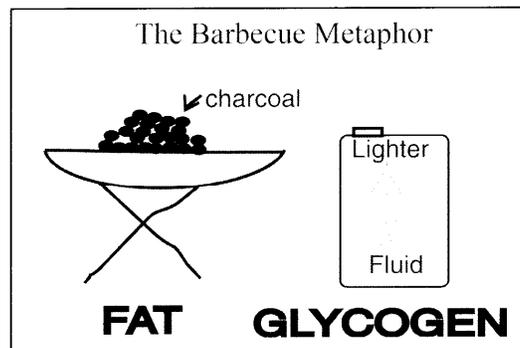
You have to have the more volatile starter fluid to get the slow burning charcoal going. Your body is the same way. Glycogen is a hot-burning starter fuel that also allows you to burn fat. Your first goal as a distance runner is to learn to rely as much on fat as possible, thus preserving the glycogen. When you run out of glycogen, it doesn't make any difference how much fat you have left. That situation is known as "hitting the wall."

"The Bear" versus "The Wall"

There are two distinct kinds of fatigue that will slow or stop a runner. They are so different that runners have evolved separate terms for each. "The bear," is a debilitating buildup of lactic acid in the muscles. The term can be heard in the following context: "Coming out of the last turn I thought I had him all the way. Then the bear jumped on my back."

The "bear" jumps on a distance runner when he has invaded his anaerobic (i.e. non-oxygen efficient) energy system by running faster than his aerobic (i.e. oxygen efficient) system can supply energy for. He finishes the race with plenty of glycogen (a sugar deposited in muscles) left in his system but with his legs moving painfully through the mire of his own muscle lactates.

"The wall" is the point at which the runner has depleted his glycogen supplies and must either stop or slow down to the point at which remaining trace energy supplies can handle the demand.

Three Sources of Energy

1. Anaerobic Energy - For the first few seconds of any strenuous activity, the body gets energy from the anaerobic breakdown of muscle glycogen and blood glucose. The oxygen-less system will operate until the slower starting aerobic system gets warmed up. This is what is commonly referred to as the "second wind."

2. Aerobic Energy with Glycogen - The aerobic system works by converting muscle and liver glycogen (carbohydrates) into energy by burning them in the presence of oxygen. This produces an efficient level of energy without the debilitating lactic acid. Instead water and carbon dioxide are by-products and both are easily carried off by the bloodstream.

The anaerobic pathway does not shut down during this phase, but remains available to contribute energy whenever the aerobic pathways cannot handle the demand, such as when the runner encounters a hill. The price one pays for that instant emergency energy however is lactic acid, which will take several minutes to remove. This is often referred to as going into "oxygen debt." It is the feeling which makes the legs painful and heavy but after a few moments the heaviness goes away and one can resume a normal pace again.

3. Aerobic Energy with Fat - Stage Three comes fully into play after about 30 minutes of activity when the body begins to utilize fully yet another fuel in the aerobic system: fat. Fat requires a bit more oxygen to burn than do carbohydrates but the process creates no lactic acid. This fat-burning final stage is very important for racing distances between six and twenty-six miles.

Glycogen depletion will bring a runner to an ignominious halt even though he still has fat reserves. It seems that burning glycogen is necessary even when the body is using mostly fat as fuel. The more the body can be trained to burn fat, the longer it can forestall the depletion of glycogen.

The General Effort Level for Racing

Wear you monitor in all phases of training. Get to know your heart monitor numbers like you know your telephone number. You will soon be able to determine precisely what your most efficient effort level is for most racing distances. Once you know these numbers, simply wear your monitor in races and use enough discipline to keep your head when all about you are losing theirs.

As a rule of thumb you should be able to run a half-marathon at 80% of your maximum heart rate and a marathon at 75% of your maximum heart rate. However I advise first-time marathoners to stay under 70% for the first 20 miles. That's conservative, but it almost assures a completed race and a happy first-timer rather than one of those Death Marches we've all heard about.

Build Your Own Training Program

Start building some yin and yang into your training. First, build a hard day or two into your training program by running at 85% of your max. Then the next day, your recovery day, make sure you stay below 70%. Do at least two recovery days in a row before trying another hard day.

After a week or so, as you get stronger, instead of staying with the same mileage, add a mile or two to your recovery run. The general idea is: a little shorter and faster on hard days, a little longer and slower on easy days.

Five Steps to Get Started

1. Get your doctor to check you out and give you an OK to start an exercise program.
2. Take a treadmill stress test to determine your maximum heart rate.
3. Determine your resting heart rate.
4. Calculate your Recovery Ceiling and your Threshold Floor heart rates using the formula shown on page 1 above.
5. Develop a training program that has both easy and hard runs included in it.

Have fun!