

Fred's Dead

By Dave McGovern

By getting out the door and walking for 30 min. three to four times per week you're probably getting more exercise than 95% of your neighbors. That's a good thing. But if your goals extend beyond feeling superior to Joe Sixpack across the street—maybe you're planning to walk a marathon or half marathon for charity, or perhaps you've entered a 5K racewalk event—from time to time you'll have to raise the intensity of your training.

You may know that your body gets stronger by responding to physical stress. But here's some startling news: after every hard workout you do you're actually in worse shape than you were before. There's micro-damage to muscle fibers, you may be dehydrated and depleted of nutrients, and you've probably destroyed some red blood cells. But your body responds to the damage done by the hard training by bouncing back a little bit stronger—if you allow it to. By taking care of yourself in the form of getting enough sleep, eating and drinking the right things, stretching, thinking happy thoughts, hanging out in Michael Jackson's oxygen chamber or whatever, you allow your body to rebuild itself not just to where it was before the hard workout, it super compensates making itself even stronger than it was before.

For this training effect to occur you need to do two things: you need to work hard, and you need recover from that hard work. Accordingly, there are two ways to screw up your body's ability to super compensate to training stress. The first is to spend most of your time recovering without ever actually getting around to doing any work. Sounds ridiculous, but lots of people train this way. If every workout is easy there's really nothing for your body to recover from. Without the hard work there's no reason for your body to respond and make itself stronger.

The second mistake is training too hard all of the time and not allowing for recovery. Many of you may remember my good friend Fred Frietschze, "What doesn't kill us makes us stronger?" I have some bad news for you: He's dead. (I always thought he was maybe just a little bit too intense...) To some extent Fred was right. You do have to train hard sometimes, but you have to make sure you don't go over the edge into over-training lest you end up like Fred.

To improve your fitness over time you need to have some practical way of gauging the intensity of your training. So how do you gauge how hard you're working? Well, there are literally dozens of way to measure training intensity in a physiology lab. For example, "blood lactate" and "VO2 max" are two of the "gold standard" parameters that sport scientists love to measure. The problem is neither is very practical for you, the everyday walker, unless you carry a million dollar gas chromatograph machine or a blood lactate analyzer in your back pocket when you're out training.* But there are three practical tools any walker can use to gauge intensity with a minimum of equipment. These are perceived exertion, pace and heart rate. Perceived exertion is using physical cues to gauge how hard

you're walking. An easy recovery day should feel easy. Your cadence (steps per minute) should be relatively low, your breathing should be controlled, you shouldn't be sweating profusely and you shouldn't be straining at all. Long distance days should be more or less in the same range to slightly more difficult, especially at the end. If you do harder tempo workouts to get ready for a race, the effort should be greater. Your cadence will be faster, your breathing will be heavier and there will be more psychological stress. Tempo days for me are the days where about half way through the workout I'm not sure if I'll be able to finish the whole walk at the same pace or faster than my starting pace. If I think I may have to quit, but I don't, I've picked the right pace. If I'm really, really confident the whole way, maybe I went too slow, and if I can't complete the workout, I know I went too fast. Interval workouts which are often even faster than tempo workouts, are bouts of fast walking punctuated by rest breaks. Your cadence will be higher, breathing will be even more labored, but you should make every effort to maintain a relaxed technique.

Pace as a gauge of intensity requires a little bit more equipment. You'll need a stopwatch and a marked course, be it a 400-meter track, or a road course that you've measured yourself. Just about every place I've ever lived has orange paint marks all over town as I've measured kilometer and mile marks on my training courses with a surveyor's wheel. I've only been stopped by the police once or twice in 20 years of marking courses... By timing workouts on marked courses I know exactly how fast I'm going whenever I workout and I record this information in my training logs when I get home. My easy days are 2 or even 3 min. per mile slower than my 5K race pace. Distance days are usually about 1:30 to 2:00 per mile slower than 5K pace; tempo days are usually within 45 seconds per mile of whatever distance I'm training for, and interval days are usually at race pace or faster. I've had mixed results with GPS units, but many walkers find that they are a reliable way of tracking pace during their training walks.

The only problem with using pace as a gauge of intensity is that there are many external factors that will affect your walking pace. You'll go much slower at the same intensity if it's hot and humid outside; if you're training at altitude you'll be slower at any given intensity than you would be at sea level; if you're overtrained, the intensity of the workout may be relatively high even if the pace is not very fast. To equalize all of these factors, many athletes use **heart rate** as a gauge of intensity.

Heart rate is an attractive choice because it is precise, nonsubjective and easily measured—which explains why heart rate monitors have become so popular in recent years. But for heart rate to be effective as a training tool you must first know what constitutes a maximum effort. In other words, to know how hard a 75%, 80% or 90% effort is, you must first be able to quantify what a 100% effort is. So to use a heart rate monitor as a tool you need to find or estimate maximum heart rate—the highest number of beats per minute your heart can achieve at an all-out, gut-busting, maximum intensity effort. Since most people won't ever work this hard unless they're being chased by a hungry grizzly bear, finding true max heart rate can be tricky.

One way is to racewalk (or run, if your current technique won't allow you to go fast enough) a series of three 400-meter intervals with 1 min. rest breaks, the first at a very hard, but not all-out effort, and the third all-out. Another way is to get up to a sub-maximum effort and extrapolate. Most people will get to about 90% to 92% of maximum heart rate during a hard 30 min. effort, so for a lot of racewalkers, a 5K race can be used as a test. Average heart rate during the race, or a spot check of heart rate at about the 2 mile mark should come pretty close to 90% of maximum. Dividing by 0.9 will give a pretty reliable estimate of maximum heart rate.

Once you have an actual or estimated maximum heart rate value, you can go about determining heart rate intensity zones for different types of workouts. These are as follows:

Recovery: One of the most common training errors is overdoing it on easy days. Your body actually gets weaker and less fit after hard workouts; the adaptation to training takes place after recovery from the hard efforts. Pushing too hard on the easy days doesn't allow for full recovery from the hard efforts, so the quality of your training will suffer on subsequent hard days. Heart rate should be 60% to 75% of maximum on recovery days.

General endurance: The long day is designed to improve cardiovascular endurance. Endurance sports are all about getting as much oxygen to the working muscles as possible and these workouts are the best sessions for improving your "plumbing." They increase the number of capillaries (tiny blood vessels) that supply each working muscle fiber with oxygenated blood and they increase the number of red blood cells and the amount of oxygen-carrying hemoglobin in the blood. Muscle and joint strength is also improved. General endurance workouts should be done at about 65% to 75% of maximum heart rate.

Long sub-threshold training: These workouts are the most race-specific workouts. They are hard efforts that approach race distance, approaching race intensity. For 5K to 10K training these are the traditional 20- to 30-minute tempo workouts approaching 5K race pace or heart rate. When training for longer races (half marathon and marathon) these are long (9 to 15 mile) workouts at anywhere from 15 to 30 seconds per mile slower than race pace all the way up to race pace and faster if the distance is significantly shorter than race distance (e.g., when running a hard 15 miler at marathon race pace.) Heart rates will range from 80% to 90% of maximum.

Lactate threshold intervals: These are long (800 m to 5K) intervals at or very near 5K to 10K race pace, which corresponds closely to lactate threshold pace. Threshold training causes the metabolic enzymes in the muscles to get more "bang" out of the oxygen and fuel (fats and carbohydrates) that is supplied to them. High intra-muscular levels of lactic acid (which is really just incompletely burned carbohydrate) foul up the enzymes, causing the muscles to contract more slowly. (If you've ever started out too fast in a 5K and felt like you were slogging through mud after that first 3 to 4 min. of sprinting, you know very well the feeling of high lactate levels. Lactate threshold training allows you to go faster without producing high levels of lactate, and allows you to keep going fast even if you do wind up with relatively high lactate levels. For 5K to

half marathon training, intervals should be done at current race pace. The total volume of the intervals should add up to close to the race duration, broken down into three to eight intervals. Examples include 6 x 800 m for 5K training, 5 x 1 mile for 10K training, and 6 x 3K for 20K/half marathon training. Heart rates should range from 85% to 92% of maximum.

VO2 max intervals: A high VO2 max means a higher volume (V) of precious oxygen (O2) gets to the working muscles. Since VO2 max is measured in milliliters of oxygen per kilogram of body mass per minute, it can be increased by losing body fat through regular endurance training. But quicker gains can be achieved through high-end interval training. 400 m to 1 mile intervals with long recoveries (rest intervals should equal the duration of the work interval) at 95% to 98% of maximum heart rate are typical VO2 max interval workouts. Volume should be low, for example, 3 x 1 mile or 10 x 400 m.

Economy intervals: Economy intervals are very short, very fast intervals designed to improve the body's ability to use oxygen efficiently by improving your high-speed racing technique. Since the intervals are so short (in general, 15 to 45 seconds in duration) the heart rate doesn't have a chance to rise much. Accordingly, heart rate isn't used to gauge the intensity of economy intervals. They should simply be walked at a very fast pace, but with perfect, relaxed technique.

Of course the devil is in the details.. Deciding the appropriate mix of hard and recovery workouts for your level and your race distance takes some work, but knowing that you're training at the right intensity each day will go a long way towards helping you to achieve your goals. ♦

*Full disclosure: OK, so I actually do have a portable blood lactate analyzer that I use in training, but I'm much more of a geek than you'll ever be.

Dave McGovern is a member of the U.S. National Racewalking Team and the author of **The Complete Guide to Racewalking** and **The Complete Guide to Marathon Walking**. Visit his web site at www.racewalking.org.

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