The Perfect Marathon Part II

In the first of this two part article I pointed out three important considerations to running a successful marathon. The first was ***strength to weight ratio***. I spoke on how often we overlook the obvious; carrying an extra 15-20 pounds of body fat and how it will certainly slow you down. Then we touched on ***mileage*** and how too few miles during the week can cause potential harm to the longer weekend runs and disrupt future training due to overuse injuries. The last part I touched on was ***economy of movement*** and I further spun off into the importance of intervals.

In this article I hope to expand on the topic of intervals because I feel that intervals are what will "separate the wheat from the chafe" so to speak.
Marathon training reduced to its simplest terms is really a matter of two types of running, steady pacing or intervals. In the scheme of things implementing intervals correctly will have more influence over the race outcome than low intensity steady pacing. Chalking up progressively longer easy pace runs over time has its benefits; it helps to train the ligaments, tendons and bones to adapt to the stress of prolonged efforts. It also trains the muscles to store more energy and to spare the precious sugar stores while drawing more effectively from your fat for fuel.

What long easy runs <u>don't do</u> is encourage efficiency and speed. To do this you'll need to push your pace and the most effective way to do this is to incorporate intervals with the use of a heart rate monitor. I suggest that you incorporate intervals in the early stage of training and vary the duration, intensity and recovery based on training responses throughout your training program. Avoid using distance and time exclusively to dictate your training; it is far less effective than using heart rate response as your guide.

Here's why; let's say you go to the track and your goal is to run ¼ mile repeats at a brisk pace, say 120% of your race pace followed by walking or lightly jogging half of a lap to recover. The first time you do this you are pretty fresh and the recovery time is more than adequate to prepare for the next repeat but over time you'll find that your speed for each lap will be progressively slower and your recovery will begin to seem too short. The flaw in this approach is that you have no effective means to govern the pace or the recovery. With heart rate you can target a specific intensity based on heart rate response over a pre-determined amount of time along with a specific heart rate to govern the amount of recovery needed. This way, each repeat will be constructed with the appropriate amount of recovery and a managed amount of intensity.

Your heart rate provides a clear indication as to how your body is responding to work rather than how much time has passed. Where speed development is concerned, it is important that the muscles are fresh each time you attempt a near maximal effort. Otherwise your speed will suffer with each successive attempt, which changes the outcome intended for the session. Instead you are teaching resistance to fatigue rather than speed.

Interval training provides a greater volume of stress on the blood pumping capacity of the heart. By generating more force and recruiting more muscle mass, we maximize stroke volume *(the amount of blood ejected from the heart into the working body).* The outcome of more intense efforts is high heart rate. The periodic highs and lows in intensity cause special loading stresses on the heart that are adaptive. For example, during an interval, heart rate climbs high, then as soon as back off, heart rate immediately starts to drop, but "venous return" *(blood volume leaving the working muscles on their way back to the heart)* remains high. The result is additional ventricular stretching that can trigger ventricular remodeling *(bigger ventricle volume).* What this

means is that your holding chamber of the heart, the left ventricle can increase in size which makes nutrient and oxygen rich blood available and ready to be transported the working muscles. One of the most detrimental mistakes novice runners make in preparation for a marathon is not varying workout intensity.

Marathon training is a compilation of four essential types of training;

- **Aerobic Base** steady pace runs enhance endurance by developing the bodies' ability to mechanize fats for fuels while sparing precious sugar stores.
- **Skill Based Intervals** are brief intense efforts *(90% of max heart rate followed by ample recovery as low as 110 bpm)* that encourage economy and speed and develop the hearts storage and delivery of oxygen rich blood to the working muscles.
- **Race Pace** *(Lactate Tolerance)* **Intervals** are moderate in intensity *(no greater than 80% of max heart rate)* and held for progressive lengths of time with shorter recovery periods *(an average of 20 bpm)* to enhance steady state race pace.
- **Active Recovery** is typically an easy pace run *(around 60% of max heart rate)* or some other relative short duration activity that helps to rejuvenate the working muscles. Research has shown that low intensity recovery work aides in recovery and gets you back to training faster than total rest.

Ideally, the goal is to generate an economical running pace, one that you can hold on to for the entire length of the race. Progressive intervals will enhance economy and allow you to eventually hold a quicker pace by training the body to become more efficient in releasing heat, oxidizing fats for fuel, sparing sugar and resisting fatigue.

As you start to notice that your time to recovery during the interval sessions requires notably less time and your ability to support a given pace takes less effort, you can move to the next progression. As an example, with the skill based intervals, holding the peak heart rate for a bit longer, possibly 45 as apposed to 30 seconds and or increasing the heart rate limiter on the recovery *(instead of 110 bpm, you shorten to 125 bpm)* is an appropriate progression. The decision to alter changes in intensity or recovery should be conducted based on the notable trends in improvements over consecutive workouts, not to be determined by just one workout but consistent improvements over time.
What you hope to accomplish is a progressive adaptation that will result in a paradigm shift from skill based intervals to race pace/lactate tolerance intervals that will ultimately result in running steady at a race pace that can be economical and assertive for the entire race.

All of these decisions; how much heart rate at the peak of each interval, and how much recovery to allow over the aggregate training process should be initiated based on some initial bench marks such as maximal heart rate and anaerobic threshold. Otherwise, it becomes difficult to determine what intensity is actually providing you with the shift point between energy systems.

Finding maximum heart rate is not all that difficult, you simply warm up and then push until you are feeling well taxed, take a brief break and repeat the process a few times to obtain the highest heart rate possible. Finding an accurate anaerobic threshold requires a lab assessment which will provide you with the elements necessary to plot your entire training program. As is the case with any sound system of training, it is wise to identify your state of fitness and ability at the beginning so that you're able to quantify improvements over the training process.
If you take these bits of advice to heart, you should have a good handle on setting your next personal record.