

# About The Importance Of Your Central-Governor Training For Racing Performance

## A discussion of why brain training is essential for optimizing running races longer than 5K

Let's start with two simple questions. Why can't you run a marathon at your 10K pace? If someone offered you \$10,000 to run 42 miles tomorrow, would you take them up on it? You can't hold your breath and commit suicide; your hypothalamus won't let you. However, with training, you can double and quadruple your breath-holding time. The world record is 23minutes.

First, your VO2max is the predominant limit to running fast for any longer than about 6:00mins. VO2max is a measure of the maximum amount of oxygen your body can utilize during exercise at any running speed. Your hypothalamus uses this as one of it's determinants on your running speed limits.

Second, we have two basic muscle types. Aerobic, "with oxygen" exercise, your muscles have enough oxygen to produce the energy needed to perform. And, anaerobic "without oxygen" exercise means oxygen demand is greater than the oxygen supply, and you can't keep up with the energy your muscles are demanding. Sprinting for up to about 100m utilizes entirely anaerobic muscles. Aerobic muscles are your slow-twitch muscles and anaerobic muscles are your fast-twitch ones.

Now, look at this table. It depicts the approximate aerobic/anaerobic muscle use ratio versus distance. Addressing the question we started with, "Why can't you run a marathon at your 10K pace?" It's obvious that you are going to run marathons without any significant use of your anaerobic, fast-twitch muscles. And, your central-governor won't let you anyhow, without training it. Regarding the "...run 42 miles tomorrow" question: It's obvious. The answer is simple, just run so very slowly so you'll not use any significant anaerobic muscles; i.e, considerably slower than your marathon pace.

Distance	Aerobic/Anaerobic Ratio	Approx % vVO2max
Marathon	97/3	62%
10mile	90/10	85%
10K	85/15	92%
5K	80/20	96%
1mile	53/47	98%
800m	35/64	99%
400m	19/81	100%

The values in this table are not particularly precise; they are intended to illustrate the principles. If you research the subject, you'll find some small variations.

Key point: Based on this table, it should be obvious that we need to train our central-governor to **let us** run races evenly at the necessary Approx% vVO2max pace. Professional runners generally specialize in running 10Ks, marathons, etc. Though, elite marathoners are also elite 10Kers.

Bottom line: If you want to run for a 10K race, then train running 6 or 8 miles slightly slower than your intended 10K race pace. Why slightly slower? There is no point in effectively doing multiple 10K races to train for a 10K race. Plus, most runners run faster in an actual race because of the excitement, group-effect, and hopefully are fully rested. Thus, you've trained your central-governor to let you run at 92% of your vVO2max pace. The same principle holds for marathon training.

Suggestion: When training for race distances greater than 10Ks, increase your training run distances in large steps, not incrementally. And, run them slower than your vVO2max% for the intended race distance. For example: You typically run 10 miles most Sundays and plan to run a marathon. Don't increase your run by 1-mile increments every 2 weeks. Rather jump up in a large increment, e.g. 4 miles, running slowly, relative to the marathon vVO2max%. For example: Do 14 miles one weekend and go back to 11 miles. Then, 16 miles and then back to 12 miles. Finally, run a 28 or 30-mile training run, slowly. I've observed that most folks run 11 miles at their 10-mile pace. Then 12 at their 10-mile pace, etc. Then up into 16, 18, and 20 miles, while trying to keep up their 10-mile pace. This leads to injuries and an over-training syndrome state. By going from 10 miles to 14 miles, everyone automatically SLOWS down because they realize they are going to be running 40% more time.

Keep in mind, racing is essentially an attempt to run the shortest time between two points. This requires you to maintain the ideal VO2max% the whole distance. As in all sports, training must be sport specific; essentially this means your training long runs should be as close to the race-course's terrain as practical. Generally, most courses consist of relatively long, straight sections. Thus, you should not waste your valuable training time running convoluted courses.