

OPTIMIZING PERFORMANCE BEFORE THE 'BIG EVENT': NUTRITION, HYDRATION AND TRAINING TIPS

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This is the first in a series of three articles, over the next few issues of Running Room Magazine, that is going to examine some of the basic human physiology behind many of the well-established recommendations in terms of nutrition, hydration and training “*before*” the big event. The next two-articles will examine these recommendations “*during*” the event and, finally, “*after*” the event. If you as a runner have a better appreciation of some of the why’s, instead of just the what’s, behind these well-established recommendations, you are probably much more likely to implement them in to your training and preparation.

So what is meant by the big event? In terms of this article, the big event means any race that you plan on peaking for that will take longer than 90 minutes to complete. Although many of your training runs will take longer than 90 minutes, many of these recommendations for carbohydrate loading and tapering are more applicable for the last several weeks before race day and not to everyday runs.

In terms of optimizing endurance and race performance before any big event there are two major items that every runner needs to consider: nutrition and training.

TRAINING: WHAT IS A TAPER AND HOW DOES IT WORK?

There have been many previous definitions of what exactly a “taper” is, but for the purpose of this article the best definition is as follows:

“The reduction in training volume and frequency while maintaining intensity in the final period or training before a major competition, to minimize fatigue and tiredness without losing fitness or endurance”¹.

So what does all this mean? A taper can be broken down into four main components that a runner needs to consider as they approach a big competition:

- I. Training Volume
- II. Training Frequency
- III. Training Intensity and
- IV. Duration of the Taper.

Most runners will reduce training and do a taper only a couple of times per year, right before their most major competitions (ie. at the end of training for 6 to 8 months for a marathon or ½ marathon).

I. Training Volume:

Volume refers to the amount (mileage or minutes) of running at which you are normally training. Most research shows that a reduction of 60-90% of normal training volume results in the optimal gains that you will experience¹. There is a famous distance coach’s quote referring to this, “Training is like putting money into the bank; slowly and steadily. The competition is when you take your big withdrawal.” Once you get close (within several weeks to days) to the competition, you won’t ‘train’ your body anymore; this takes weeks and months to accomplish. Instead, you want to back off your training and allow yourself to feel fresh, light and rested.

II. Training Frequency:

Frequency is the number of times per week that you normally run. Unlike training volume, most research shows that you should keep frequency up a little bit at about 70-80% of normal². Therefore back off a little bit on frequency, but still get in those short 15-20 minute runs the few weeks and days

before the big marathon. This will help you avoid ‘loss of feel’ or staleness and will help you maintain the normal running rhythm that you are used to.

III. Training Intensity:

Similar to training frequency, most studies say to keep the intensity of your workouts up during your taper². Your easy day runs should still be VERY easy before the event, but the last two to three workouts can be much shorter (decrease volume) than before, but still keep them at around goal race pace or even slightly quicker.

IV. Duration of a Taper:

This is where individuality plays a role. Some runners do very well off of a very short four-day taper while others tend to go with a more traditional two to three week taper. Generally, several weeks from your competition, you want to be back off of volume and a bit on frequency (taking more days off) but keeping the intensity up in your workouts (NOT your recovery/easy runs). Don’t do this all at once, but slowly over this taper period.

NUTRITION: WHY CARBOHYDRATE LOAD?

Most studies show that carbohydrate loading only results in a performance increase when the event last longer than 90-minutes³. You will get increases in performance by taking in carbohydrates, such as sports drinks, *during* an event that is shorter than 90-minutes, but this will be covered in the next issue. Carbohydrate (CHO) loading involves taking in approximately 60-70% of your total dietary intake as carbohydrates. Most normal North American’s eat approximately 50% carbohydrates, 30% fat and 20% protein. Therefore most people do need to make a concerted effort to increase the carbohydrates that they intake the two to three days before the big race.

Physiologically, carbohydrate loading is very important to an endurance athlete. Your body stores carbohydrate in your muscles and your liver in the form of glycogen. Liver glycogen maintains blood sugar levels while you exercise and muscle glycogen allows you to make energy at a fast rate to maintain your desired speed in a race. Unfortunately, your body’s glycogen stores are very small. In contrast, even very lean individuals have enormous fat stores (adipose tissue) that are also used during exercise, but fat can only generally provide enough energy when the running pace is slower, like below anaerobic threshold. Therefore, making sure that your body’s initial pre-race glycogen stores are totally topped up, or ‘loaded’ up, are vitally important to race success⁴.

In a classic study⁵, using muscle biopsies of the quadriceps, the effect of three different types of diets can be seen in Figure 1. For the three-days prior to each experiment, the subjects either ate a high fat and protein diet, a normal mixed diet of carbohydrates, fats and protein, or a high carbohydrate diet. Then these subjects cycled on a bike at 75% of max until they reached total exhaustion. Shown in the graph, the high carbohydrate diet drastically increased the initial stored level of muscle glycogen (carbohydrate), which resulted in these subjects lasting 33% and 69% longer on the bike over the mixed diet and high fat and high protein diet, respectively⁵. So obviously taking in a CHO rich diet the three-days before a big event can really pay off!

So if you are a runner who desires to optimize your race day performance, use these tapering and carbohydrate loading recommendations. And, not only can you now use them, but you can also have a much better appreciation of ‘why’ you are using them. Watch the next issue for Optimizing Performance *DURING* the ‘Big Event’: Nutrition, Hydration and Training Tips.

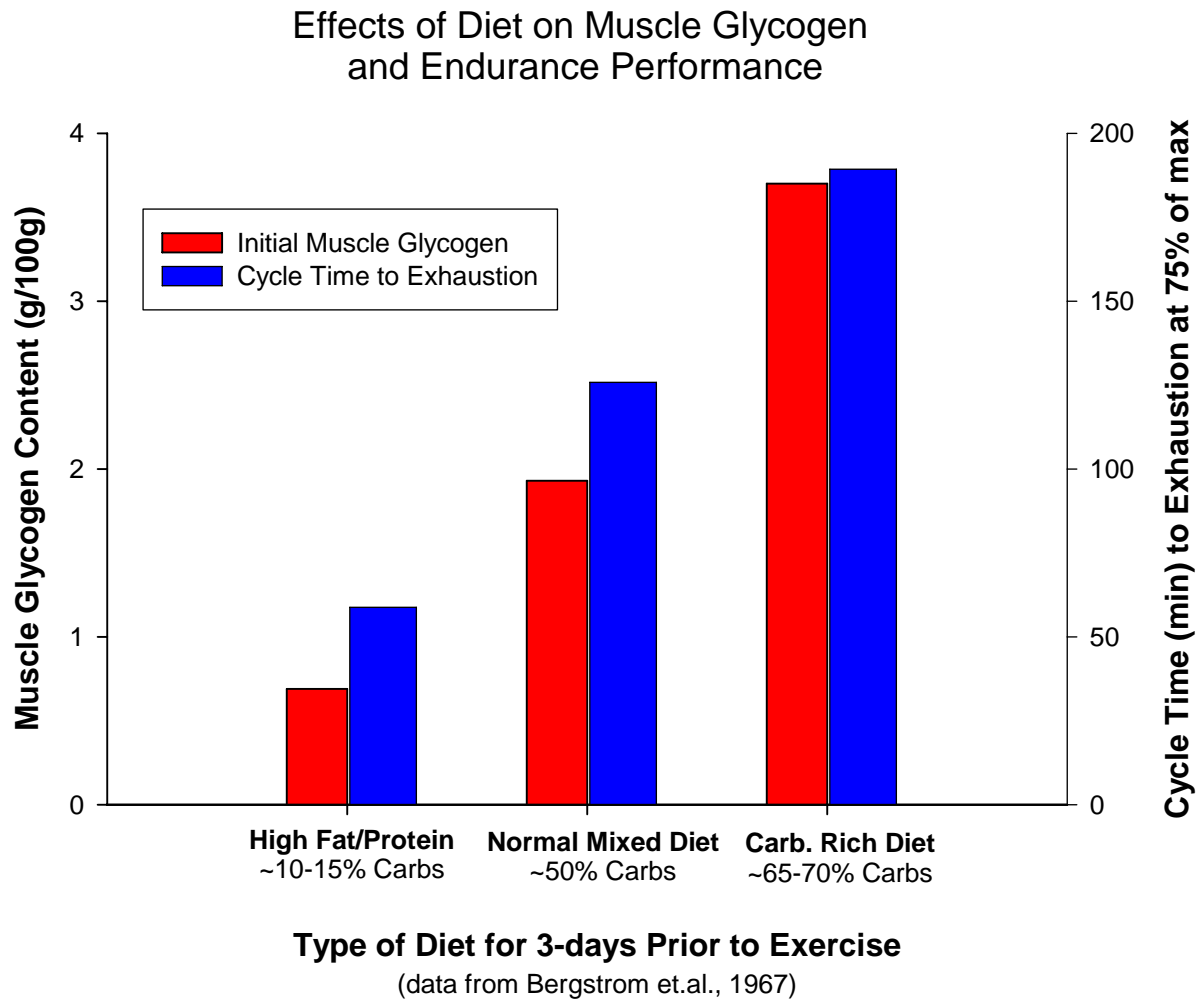
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Figure 1



GOALS OF THE PRE-EVENT TAPER

(adapted from Mujika et. al., 2003)

- Minimize fatigue and tiredness without compromising fitness •
- Maintain training intensity (speed) •
- Reduce training volume (mileage) by 60-90% of normal •
- Maintain some training frequency (# of times per week) at 70-80% of normal •
- Individualize taper for running from between 4 to approx. 14 days •
- Expect performance increases from between 3 to 6% improvement •