Nutrition Periodization for Endurance Athletes

As an endurance athlete, you’ll often devote a few solid months or more to training for an endurance event such as marathon, half marathon, triathlon, century ride, or something equally as challenging. Your training and training goals over that period of time may vary from week to week and sometimes from workout to workout. For example, early in your training, you may want to drop a few lbs. Or you may have periods when your training volume and intensity are low and other times when you’re really pushing the intensity and/or duration of your workouts.

What will you do nutritionally when your training varies?

Nutrition recommendations for the day of the event are extremely helpful, but they don’t effectively address the full range of training needs in the months leading up to the event, or those thereafter if you plan to continue to train and enter other events.

Nutrition Periodization

Physical periodization is a term that describes a method of training where the emphasis is on varying the type, intensity, and duration of training in preparation for an event or a season of competition. As shown in the following, conceptually the training period is divided into three general phases — the preparation phase, the competition phase, and the transition phase. The preparation phase can be further divided into general preparation and specific preparation, while the competition phase can be further divided into pre-event and event. Athletes cycle through these phases over the course of a year; i.e., they have a preparation phase, followed by a competition phase, followed by a transition phase. The cycle then repeats itself.

## Training for Your Event

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Nutrition periodization is the concept of having a nutrition plan that begins on your very first day of training, and flexes with you as your training varies from week to week and workout to workout. You don’t need to be an expert on periodization terminology to grasp the nutrition periodization concept. The idea is actually pretty simple: When your training and nutrition are in synch, you maximize the performance gains from all the hard work you are putting in. But if your training and nutrition are out
of synch, you not only fall short of achieving your full athletic potential, you can increase the chance of getting colds and injuries as a result of your workouts. Nutrition is the most commonly overlooked element of the training program for most athletes. In fact, for many, nutrition only shows up on the radar screen a day or two before and the day of the competition. That approach can help you survive a marathon or triathlon, but it doesn't allow you to achieve the full performance benefits of your training. Nutrition periodization works hand in hand with your training to help keep you healthy, meet the demands of your workouts, and achieve your very best performance.

**General Preparation Phase**
The general preparation phase is the early portion of your training cycle. Here you're building endurance by gradually ramping up your training volume and intensity. The goal is to increase cardiovascular endurance, without causing injury. This will prepare you for the more intense training phase that is coming up. If you have some weight to lose, and you didn’t lose it during the transition phase or in the off-season that precedes the start of training, do it early in the general preparation phase, when the intensity and volume of your training are comparatively low. Attempting to lose weight during heavy training or in the midst of the competitive season can impair both your workouts and performance. It can also wear down your immune system and make you more susceptible to colds. For most individuals interested in weight loss, a goal of about 1 lb (0.45 kg) a week is appropriate, and you can achieve that goal by consuming about 500 fewer calories than you need each day. Remember, it’s better to cut calories by reducing calorie intake than by upping the length or intensity of your training.

As an endurance athlete, you rely primarily on carbohydrates and fat as muscle fuel sources when training. We all have plenty of fat stores, but carbohydrate reserves are in much shorter supply. Early on in the general preparation phase, when your training volume is moderate and intensity is low, consume about 3 grams of carbs daily for every 1 lb (5–7 grams/kg) of body weight. You also need adequate protein for the repair and building of muscle tissue in response to your training. Protein intake should be roughly in the range of 0.6–0.8 grams of protein for every 1 lb (1.2–1.7 grams/kg) of body weight. In a 150-lb (68-kg) athlete, that equates to about 450 grams of carbs and 90–120 grams of protein daily.

Early in the preparation phase is also the time to lay the foundation for the type of diet that will support you throughout your training:

- Eat plenty of fruits and vegetables every day, along with beans and whole grains and cereals such as oats. These are the foods that provide muscle-fueling carbs. They’re also rich in essential vitamins and minerals, and many provide beneficial dietary fiber.

- Include lean protein sources daily such as low-fat dairy products, lean meat or meat substitutes, poultry, and fish to provide the essential amino acids your body requires for training.

- Drink adequate fluids throughout the day to remain hydrated, and adjust your fluid intake according to temperature and humidity conditions.

- Start experimenting with sports drinks, bars, energy gels, and energy chews early in training. The goal is to identify which products and flavors you prefer, and then to gauge your physical response to these products during exercise. This knowledge and experience will come in very handy on the day of your event.

**Specific Preparation Phase**
As the weeks progress, you’ll continue to build or maintain your endurance base while incorporating more intensity into your workouts. This pre-race period is the specific preparation phase. With training sessions that are just as long but more intense, you’ll be burning more calories every day. Again, this is not the time to attempt weight loss. You’ll need to meet that extra need for calories in order to keep up with the demands of your training.

As the intensity of your workouts increases, you’ll rely less on plentiful fat reserves and even more on your very limited stores of carbohydrate fuel. Running out of carbohydrate fuel reserves is not a good idea. If this occurs, you will be forced to slow or even stop due to fatigue, and your training will suffer. To keep up with the demands of moderate to heavy training, consume about 4 grams of carbs for
every 1 lb (7–12 grams/kg) of body weight daily. If you find yourself venturing into workouts of 4 hours or more, carbohydrate intake needs to be up around 5 grams for every 1 lb (10–12 grams/kg) of body weight every day. More intense training will increase your needs for protein a bit also. Consume about 0.6–0.9 grams of protein daily for every 1 lb (1.4–2.0 grams/kg) of body weight. For a 150-lb (68-kg) athlete, these recommendations amount to about 600–750 grams of carbs and about 90–135 grams of protein daily.

As your workouts become more demanding, your ability to continue to meet your fueling and hydration needs becomes more critical. So it’s important to implement the following practical sports nutrition strategies before, during, and after your training sessions:

**Before Exercise**
- Make up for any previously incurred fluid deficits by consuming 14–20 fl oz (400–600 ml) of water or sports drink 2–3 hours before exercise.
- Consume a high-carb meal about 2–4 hours before training if possible, or at least a high-carb snack about 1 hour before. The goal is to start exercise fueled but also feeling comfortable. Choose familiar high-carbohydrate foods and avoid slow-to-digest fatty and high-fiber foods just prior to exercise. Experiment to find the right foods and meal timing that work best for you. And if a meal before exercise isn’t realistic, consume a high-carb snack about 1 hour beforehand. Examples include a meal replacement drink and energy bars, gels, and chews.
- Consume another 10 fl oz of fluid 10–20 minutes before training.

**During Exercise**
- Hydrate according to your sweat rate. If you don’t know your sweat rate yet, plan to consume about 13–26 fl oz (400–800 ml) every hour of exercise, preferably in smaller amounts taken frequently, such as 3–7 fl oz (100–200 ml) every 15 minutes during exercise. A sports drink with carbs and sodium is a far better option than plain water, especially in high heat or humidity. Adjust your fluid intake to the temperature/humidity conditions. Remember that fluid needs can vary considerably, so the best approach is to calculate your sweat rate for the various conditions in which you train.
- For workouts lasting more than 60–90 minutes, consume 30–60 grams of carbs every hour during exercise using sports nutrition products such as sports drinks, energy gels, and energy bars.

**After Exercise**
- Consume some carbs as soon as possible after exercise (within 30 minutes or so) to start rebuilding your fuel stores. Also, eating your fair share of carbs over the next 24 hours will generally fully replenish your fuel stores.
- Consume 10–20 grams of protein as soon as possible after exercise to help with the repair and building of muscle tissue in response to training.
- Gradually consume 23 fl oz (690 ml) of a sports drink, recovery beverage, or water for every 1 lb (1,500 ml per kg) of weight lost.
- Consume sodium sources along with fluids to help restore sodium lost through sweating.
- A recovery beverage is a fast and convenient option for getting carbs, protein, sodium, and fluids to jump-start the recovery process.

**Competition Phase (Pre-Event)**
The focus during the pre-event portion of the competition phase is on tapering your training while loading up on carbohydrates appropriate for the duration and intensity of your event. It’s best to carbohydrate-load with a regimen you followed during training. Carbohydrate loading is not the meal you eat the night before the competition. Also, be sure to take into account any traveling you’ll need to do to get to the event, as well as your access to foods and beverages. Implement a tested plan for
how to get yourself, your bags, any equipment you will need, and your hydration and fuel sources to their intended locations.

**Competition Phase (Event)**
The day of your event is your opportunity to put into action everything you’ve been practicing during these months of training. That includes your pre-exercise hydration and fueling strategies, hydrating and fueling on the course, and promoting recovery afterwards. Remember to use those foods, beverages, and sports nutrition products that you are familiar and comfortable with. Avoid the temptation to make any last-minute changes to your pre- or during-race hydration and fueling protocols.

Nerves might be an especially disruptive factor just before the event itself. Don’t let this throw you. You can still start the competition fully hydrated and fueled. Smaller, more frequent meals may be easier to tolerate, and liquid carb sources often go down easier than solid forms.

“Graze” the day before the event on high-carb, low-fiber snacks, and consume sodium sources as well. Continue to select from foods and beverages that you are familiar with.

Get a read on the race-day temperature/humidity conditions and formulate a hydration plan based on your sweat rate in those conditions. Make mental adjustments as conditions change.

Finally, as you approach that starting line, know that you’ve done everything training-wise and nutritionally to be the best athlete you can be. Congratulations on all that you’ve accomplished — have a great time!

**Transition Phase**
Okay, you’ve successfully run your marathon or other event and you may want to compete in more events. If you do, continue to put into practice all you’ve learned about sports nutrition. But at some point, the competition season will end, and you will enter the transition phase. This will be the time for you to enjoy some much-needed rest from the rigors of structured training. Take this opportunity to rest, but apply the appropriate nutrition periodization thinking. A concern during this phase is unwanted weight gain. If you cut back on your training, you will also need to cut back on calories in order to avoid gaining weight. So if you’ve gotten into the habit of eating 5 or 6 meals a day during training, you’ll probably need to break that habit, or cut back on portion sizes, in order to maintain your weight. And if losing weight is still a goal, the transition phase is an ideal time to pursue that goal.

In summary, make sure that the nutrition you are providing is in synch with the demands of your workouts. If you do, your training will be more effective and you’ll have a better shot at achieving your best on event day.

**References:**