

Nutrition for the Endurance Athlete

The Marathoner's Diet for Optimal Performance by Allegra Burton, RD, MPH

You've run hundreds of miles and, in the process, burned countless calories training for a marathon. Our bodies are like cars that cannot run on empty and will perform at their best when properly fueled. So how will you fuel your body so that you can ask it to run and run well? Read on... Foods are made up of carbohydrates, protein, and fat and all three are necessary to proper functioning and peak performance. Marathon runners and athletes in general should eat a diet high in carbohydrates, moderate in protein, and low in fat. You should know why these nutrients are important, as well as how much of them you should eat. MarathonGuide.com's Caloric Needs Calculator can help you decide how much of each of these you need. Below is a discussion of the importance of each and some additional guidelines.

Carbohydrates and muscle glycogen: Why are carbohydrates important?

The body's preferred fuel for running (or any endurance sport) is muscle glycogen. Glycogen is the body's storage form of carbohydrate. If muscle glycogen breakdown exceeds its replacement, glycogen stores become depleted. The result is fatigue and inability to maintain training and racing intensity. In order to replenish and maintain glycogen stores, the marathoner's diet needs to be carbohydrate-rich.

How much carbohydrate should I eat?

Carbohydrates should provide six of total calories. To figure out the amount that's right for you, multiply your weight in kilograms by 7, or multiply your weight in pounds by 3.2 - to give you the number of grams of carbohydrates you should consume per day.

The best sources of carbohydrate are grain products (preferably whole grains) such as bread, rice, cereal and pasta, as well as fruits, vegetables and low-fat dairy foods. Food labels tell you how many grams of total carbohydrate are in a serving of that food. Each day, the endurance athlete should try to eat at least 15 servings of grain products, at least 6 servings of fruits and 6 servings of vegetables, and at least 5 servings of low-fat dairy foods.

In general,

- a serving of a grain product, such as a slice of bread or 1/2 cup cooked rice or pasta, and a serving of fruit, such as a piece of fruit or 3/4 cup fruit juice, each provides 15 grams carbohydrate
- a serving of dairy, such as 1 cup of low-fat milk or yogurt or 1.5 ounces of cheese provides 12 grams carbohydrate
- a serving of vegetables, such as 1 cup of leafy raw vegetables, 1/2 cup chopped vegetables, or 3/4 cup vegetable juice provides 5 grams carbohydrate.

NOTE: starchy vegetables such as peas and corn, as well as dried beans such as lentils or garbanzo beans provide greater amounts of carbohydrates, about 15-20 grams per 1/2 cup serving.

Protein

Why is protein important?

Protein is needed for muscle growth and repair. Regular physical training tends to reduce muscle protein breakdown and protein loss from the body. While some protein breakdown may occur during exercise, protein build-up is enhanced during the recovery and the effectiveness of protein synthesis is increased. When muscle glycogen stores are high, protein contributes no more than 5% of the energy needed. However, when muscle glycogen stores are low, due to inadequate calorie and carbohydrate intake, protein is used for energy rather than for muscle growth and repair and may contribute as much as 10% of the energy needed for exercise. Such use of protein for fuel is expensive and inefficient.

How much protein do I need to eat?

Endurance athletes need up to 50% more protein than sedentary adults. Protein should contribute 12-15% of total calories per day. To figure out the amount for you, multiply your weight in kilograms by 1.3, or multiply your weight in pounds by 0.6 to calculate the number of grams of protein you should consume per day.

Good sources of protein include lean meat, poultry, fish, eggs and dairy products which contain all of the essential amino acids and thus are complete proteins. Other good protein sources are tofu, nuts and dried beans. As with carbohydrates, food labels tell you how many grams of protein are in a serving. An endurance athlete should consume 3-5 servings per day. One serving of lean meat, fish or poultry is 3 ounces, roughly the size of a deck of playing cards.

In general,

- a 3 ounce serving of lean meat, poultry or fish, e.g. 1 medium pork chop, 1 small hamburger, 1/2 of a whole chicken breast, or a small fish fillet provides 21 grams of protein
- a 1/2 cup of cooked beans, 1 ounce of cheese, 1 egg, 2 egg whites, 4 ounces of tofu or 2 tablespoons of peanut butter each provides 7 grams of protein
- one cup of low-fat milk or yogurt provides 8 grams of protein
- one serving of grain products (preferably whole grain) such as a slice of whole wheat bread provides 3 grams of protein

What are the consequences of eating a high protein diet?

When an athlete eats more protein than he needs, he either burns it for energy, or stores it as fat.

Carbohydrates are a more efficient and less expensive source of energy. In addition, consuming too much protein increases the body's water requirement and may contribute to dehydration, because the kidneys require more water to eliminate the excess nitrogen load of a high protein intake. Also, a high protein, high fat diet after heavy training will cause incomplete replacement of muscle glycogen and impair performance. Such a diet is hard to digest and may lead to feeling sluggish. A high carbohydrate diet, on the other hand, is easy to digest and quickly restores muscle glycogen.

Fat

Exercise does not completely eliminate the health dangers associated with eating a high-fat diet, such as increased risk of heart disease, stroke and certain cancers.

How much fat can I eat?

Endurance athletes as well as all people should consume less than 30% of total calories from fat and less than 10% from saturated fat. If, as an athlete, you eat 3000 calories per day, less than 1000 of those calories should be from fat.

High-fat foods include chocolate, fried foods, ice cream, bacon, hot dogs, and cookies. Food labels tell you grams of fat and percentage of calories from fat per serving. Choose foods with less than 30% of calories from fat.

Will a high-fat diet impair my performance as an athlete?

Muscle glycogen is preferred over fat for fuel for high intensity exercise of long duration because fat breakdown cannot supply energy fast enough. In addition, fat takes longer to digest than carbohydrates and thus should be limited in pre-exercise meals.

Remember to send out your request letters and e-mail your web pages to friends and family to support you in NACoA's *Run for the Children*®. Their support will benefit the 1 in 4 children affected by alcohol abuse in the family. Call us if you need any additional supplies or help with your web page.

