

Food Power for Athletes

PHYSICIANS COMMITTEE FOR RESPONSIBLE MEDICINE

5100 WISCONSIN AVE., N.W., SUITE 400 • WASHINGTON, DC 20016
PHONE (202) 686-2210 • FAX (202) 686-2216 • PCRM@PCRM.ORG • WWW.PCRM.ORG

Exercise is important for health, and healthful food helps you get the most from exercise. Poor eating habits and nutritional deficiencies can impair performance. Some general guidelines that each athlete, recreational or competitive, should follow when trying to maintain a favorable level of fitness are described below.

Dietary Balance

For body weight maintenance, energy in must equal energy out. Therefore, athletes who burn fuel to perform have to consume more calories. Low energy (calorie) intake for high-intensity exercise can result in loss of muscle mass, menstrual dysfunction, and loss of bone density.¹ Calories should come from a healthful selection of foods high in carbohydrates, low in fat, and adequate in protein.¹ Because of its high carbohydrate and low-fat content, a plant-based diet is an optimal sports diet.² It is also rich in vitamins, minerals, and antioxidants—important nutrients that help the body use energy and protect it from the stress of exercise.

Carbohydrates

In general, carbohydrates are the primary fuel utilized during high-intensity exercise. On a per-calorie basis, carbohydrate needs for athletes are similar to those for anyone else (at least 55 percent of total daily intake of calories). Specific recommendations for athletes are based on weight and range from 6 to 10 grams per kilogram of body weight per day.¹ An abundance of evidence shows that carbohydrate availability boosts endurance and performance.³ Whole grains, fruits, and vegetables are excellent sources of carbohydrates.

Depending on how strenuous the exercise, carbohydrates should be consumed during recovery, between 30 minutes and two hours post activity, when carbohydrate (glycogen) synthesis is at its maximum. Carbohydrate-rich foods with a moderate to high glycemic index provide a readily available source for glycogen production.⁴

Overall, a high-carbohydrate diet is most important in ensuring optimal storage of carbohydrates in the

body, which fuel the body for exercise and support performance in both the endurance⁵ and strength athlete.^{6,7} A plant-based diet, which emphasizes whole grains, fruits, vegetables, and legumes, provides the high-carbohydrate content to fuel the body through training sessions and competition.

Fat

The key point about fats is that animal fats are high in saturated fat and should be avoided. High-fat diets are not recommended for athletes.

Protein

Protein, composed of chains of molecules called amino acids, plays an important role in the building, maintenance, and repair of the tissues of the body, including muscle. There are 20 different amino acids in the foods we eat, but our bodies can make only 11 of them. The nine essential amino acids that cannot be produced by the body must be obtained from the diet. A diet based on a variety of grains, legumes, and vegetables easily provides all of the essential amino acids. It was once thought that various plant foods had to be eaten together to get their full protein value, a method known



as “protein combining,” or “complementing.” We now know that intentional combining is not necessary to obtain all of the essential amino acids.⁸

Plant-based protein sources are best because, unlike animal sources, they can contain fiber (a blood sugar balancer and intestinal scrub brush) and complex carbohydrates. Concentrated protein sources are not needed. However, abundant protein is found in tofu, soy milk, tempeh, seitan, and various meat analogues.

Protein requirements are very individualized and are primarily dependent on body size. The recommended dietary allowance (RDA) for the average, sedentary or lightly active adult is 0.8 grams per kilogram of body weight per day.⁹ For most people, this is more than enough. However, some authorities believe that protein needs for athletes may range from 1.2 to 1.7 grams per kilogram of body weight per day for the highly active adult athlete.¹

Compared with carbohydrate and fat, protein is used only minimally for fuel,¹⁰ as its primary function is building and maintaining the tissues of the body.

Since meat has no fiber, it can make an athlete feel constipated, “weighed down,” and sluggish, making it a less-than-ideal source for fuel.

For Athletes Looking for Extra Protein

- Top salads with a variety of beans, including chickpeas, kidney beans, great northern beans, and black beans. These legumes have as much as 7 to 10 grams of protein per serving.
- Shake it up! Blend nondairy milks or soft tofu with your favorite fresh or frozen fruits for a thick, delicious, creamy high-protein shake.
- Marinated tempeh or veggie burgers, grilled on a bun or added to pasta sauce, offer a quick protein boost to any meal.
- On the go? Nutrition bars and soy powder shakes are quick and convenient supplements that can help increase the protein content of any well-balanced vegetarian diet.

Water

Maintaining optimal hydration status is important in promoting peak performance and preventing injuries. Dehydration, defined as body weight loss of 1 percent or more because of fluid loss, results in a number of symptoms, including headache, fatigue, heat intolerance, and dark urine with a strong odor. More serious effects include neuromuscular fatigue,¹¹ heat cramps, heat exhaustion, and heat stroke.¹² By maintaining a



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regular fluid schedule of at least eight 8-ounce glasses of water per day, these symptoms are easily prevented.¹² Fluid needs increase with exercise. Additionally, participating in activity at high altitudes, low humidity, and high temperatures can also increase fluid needs.¹²

The following guidelines can help you stay hydrated:^{1,13}

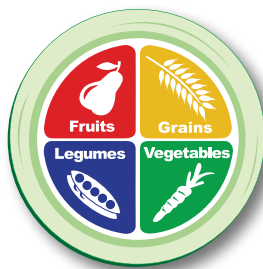
- Two hours before exercise: Drink 14 to 20 ounces (or about 2 cups) of fluid.
- During exercise: Drink 5 to 12 ounces (or about 1 to 1 1/2 cups) of fluid every 15 to 20 minutes.
- After exercise: Drink 16 to 24 ounces (or about 2 to 3 cups) of fluid for every pound lost during exercise; weighing yourself before and after exercise can help you determine your fluid loss.

Water is ideal as a fluid replacer, particularly for activities lasting less than one hour. For those activities lasting more than 60 to 90 minutes, sports drinks containing carbohydrates or electrolytes may be useful both during and following exercise.^{13,14} Electrolytes and carbohydrates can also be easily ingested through food, in addition to water, following a training session or event.

Putting It All Together

A plant-based diet, which emphasizes whole grains, fruits, vegetables, and legumes, provides the high-carbohydrate content balanced with the protein and fat the body needs for training sessions and competition. When these three nutrients are consumed from plant-based sources and in the recommended ratios, an athlete will get all the vitamins and minerals he or she needs to best perform, recover, and perform again.

An optimal sports diet for performance, recovery, and health is found in the Power Plate—grains, vegetables, legumes, and fruits. By choosing generous servings of these nutrient-dense foods with a focus on variety and wholesomeness, your body will reap the benefits.



- **Whole grains:** Choose whole-grain breads, cereals, rice, and pastas. They are rich in complex carbohydrate, fiber, zinc, and B vitamins. A single serving also provides about 2 to 3 grams of protein.
- **Vegetables:** Choose a variety of colorful red, orange, and yellow vegetables in addition to leafy greens for vitamin C, beta-carotene, and other antioxidants that will protect your body from the stress of exercise.

These foods also provide iron, calcium, fiber, and a modest 2 grams of protein per serving.

- **Legumes:** Choose a variety of beans (chickpeas, black beans, kidney beans, great northern beans), as well as soy milk, tofu, tempeh, and textured vegetable protein. They are not only high in protein (about 7 to 10 grams per serving), but also rich in complex carbohydrates, fiber, iron, calcium, and B vitamins.
- **Fruits:** Choose a variety of fruits and fruit juices for extra vitamins, especially vitamin C. By choosing fruits of different colors, you can ensure a variety of vitamins and minerals.
- **Vitamin B12 supplement:** A multivitamin/mineral supplement or vitamin B12 supplement can be taken daily or every other day to cover nutritional needs. Fortified foods, such as fortified breakfast cereals or fortified soy and rice milks, may also contain the active form of vitamin B12, cyanocobalamin.

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