

Food Power for Athletes

PHYSICIANS COMMITTEE FOR RESPONSIBLE MEDICINE

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Both competitive and recreational athletes are often in search of a nutrition program to provide that winning edge. Many individuals are prone to experiment with vitamins and other supplements, protein powders, and pills, at the cost of a simple, yet important, performance factor—diet. While genetic, physical, and psychological factors all play important roles in determining athletic abilities, poor eating habits and nutritional deficiencies can impair performance. An appropriate sports diet will help support both athletic training and competition.

The Nutrition Game Plan

Due to the heavy demands of exercise and physical activity, athletes need extra nutrition. There are three basic fuels the body relies on while exercising—carbohydrate, fat, and protein—and more calories from these fuels are required to sustain energy levels and maintain lean body mass.¹ In particular, a balanced diet that is high in carbohydrate, low in fat, and adequate in protein, is the recommended diet for athletes.^{1,2} Due to its high carbohydrate and low fat content, a vegetarian diet is an optimal sports diet.³ It is also rich in vitamins, minerals, and antioxidants—important nutrients that help the body utilize energy and protect it from the stress of exercise.

Fueling Your Body: Carbohydrate Gets the Gold

Your body is always burning a mixture of carbohydrate, fat, and protein. The duration of exercise, intensity of exercise, level of physical conditioning, and initial muscle glycogen levels will determine which primary fuel your body will use.⁴ In general, carbohydrate is the primary fuel utilized during high intensity exercise. In fact, about 55 to 75 percent of calories in the diet should come from carbohydrate, and even more in individuals who compete in endurance or ultra-endurance events.¹ Whole grains, fruits, and vegetables are excellent sources of carbohydrate.

With prolonged exercise, at lower intensities, fat (in the form of fatty acids) becomes the primary fuel source. The shift to fatty acids during exercise helps spare the carbohydrate (glycogen) stores in your body and allows for prolonged exercise. However, while high carbohydrate intake is recommended for performance, there is no need to increase fat in the diet beyond the commonly recommended 10 to 30 percent of calories, as it is taken from storage sites in the muscles when needed. Increasing fat in the diet is not recommended for improving performance.⁵

Compared to carbohydrate and fat, protein is used only minimally for fuel,⁴ as its primary function is for building and

maintaining the tissues of the body. Overall, a high-carbohydrate diet is most important in ensuring optimal storage of carbohydrate in the body, fueling the body for exercise, and supporting performance in both the endurance⁶ and strength athlete.^{7,8} A vegetarian diet, which emphasizes whole grains, fruits, vegetables, and legumes, provides the high carbohydrate content to fuel your body through training sessions and competition.

Power for Protein

Strength and endurance athletes both have increased protein needs.¹ 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 body can make only 11 of them. The 9 essential amino acids which 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.⁹ Concentrated protein sources include tofu, soymilk, tempeh, seitan, and various meat analogues which can be purchased in any health food store or the vegetarian section of your grocery store.

Protein requirements are very individualized and are primarily dependent upon 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.¹⁰ 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.^{5,11} Tips for meeting your protein needs are included in the table below.

It is important to keep in mind that while some protein will be broken down into amino acids for fuel during exercise, the primary role of protein is for structure and support. While protein needs are increased in the diet of athletes, adequate (10 to 15 percent of calories or enough to meet your calculated requirements), but not excess, protein should be consumed. Protein should come from plant sources, rather than meat, dairy products, and eggs, which are devoid of fiber and complex carbohydrates. Emphasis should be placed on a diet that is high carbohydrate to ensure that protein is spared for those activities it does best: the building and repairing of body tissues, including muscle.

Tips for Meeting Protein Needs

- **Top salads with a variety of beans**, including chick peas, 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 non-dairy frozen desserts or soft tofu with your favorite fresh or frozen fruits with soy or rice milk 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?** Sports bars and soy powder shakes are quick and convenient supplements that can help increase the protein content of any well-balanced vegetarian diet.

Staying Hydrated

Maintaining optimal hydration status is important in promoting peak performance and preventing injury. Dehydration, defined as body weight loss of 1 percent or more due to fluid loss, results in a number of symptoms including headache, fatigue, heat intolerance, and dark urine with a strong odor. More serious effects include heat cramps, heat exhaustion, and heat stroke.¹² By maintaining a 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, endorsed by the American College of Sports Medicine, can help you stay hydrated:¹³

- **Two hours before exercise:** Drink 17 ounces (or about 2 cups) of fluid.
- **During exercise:** Drink 4 to 8 ounces (or about 1/2 to 1 cup) of fluid every 15 to 20 minutes.
- **After exercise:** Drink 16 to 20 ounces (or about 2 to 2½ 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 carbohydrate or electrolytes may be useful both during and following exercise.^{13,14} Electrolytes and carbohydrate can also be easily ingested through food, in addition to water, following a training session or event.

Ready, Set, Go!

The sports diet must be as carefully planned as the training regimen. A well-balanced vegetarian diet, emphasizing consumption of a variety of foods from the new four food groups—grains, legumes, fruits, and vegetables—is an optimal sports

diet for both performance and health. By choosing generous servings of these foods with a focus on variety and wholesomeness, your body will reap the benefits.

- **Whole grains:** Choose whole wheat or enriched 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 soymilk, 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 carbohydrate, fiber, iron, calcium, and B vitamins.
- **Fruits:** Choose a variety of fruits and fruit juices for extra vitamins, especially vitamin C.
- **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 Kellogg's Cornflakes, Product 19, and Total Cereal, or fortified soy and rice milks, may also contain the active form of vitamin B₁₂, cyanocobalamin.

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