Food Power for Athletes

The Nutrition Game Plan

Due to the heavy demands of exercise and physical activity, the nutritional needs of athletes are increased. 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. In particular, a balanced diet that is high in carbohydrate, low in fat, and adequate in protein, is the recommended diet for athletes. Due to its high carbohydrate and low fat content, a vegetarian diet is an optimal sports diet. 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 stored carbohydrate levels will determine which primary fuel your body will use. In general, carbohydrate is the primary fuel utilized during high intensity exercise. In fact, about 55-60% of calories in the diet should come from carbohydrate, and even more in individuals who compete in endurance or ultra-endurance events. Whole grains, fruits, and vegetables are excellent sources of carbohydrate.

With prolonged exercise, typically performed at a lower intensity, fat in the form of fatty acids becomes the primary fuel source. The shift to fatty acids during exercise of increased duration helps to spare the carbohydrate stores in your body and allow for prolonged exercise. However, while high carbohydrate intake is recommended for performance, increasing fat in the diet is not recommended for improving performance or substrate utilization.

Protein for Power

Strength and endurance athletes both have increased protein needs. Protein, composed of tiny structures 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 the body requires. It was once thought that various plant foods had to be eaten together to get their full protein value, otherwise known as protein combining or complementing. We now know that intentional combining is not necessary to obtain all of the essential amino acids. Other high-protein sources include tofu, soy milk, 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 level of activity. The Recommended Dietary Allowance (RDA) for the average, sedentary adult is 0.8 gm/kg body weight per day. However, some authorities believe that protein needs for athletes may range from 1.2–1.7 gm/kg body weight per day for the healthy adult athlete. 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, but not excess, protein should be consumed, and 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 Your Protein Needs

- **Top salads with a variety of beans** including chickpeas, kidney beans, great northern beans, and black beans. These legumes have as much as 7-10 g of protein per serving.
- **Shake it up!** Blend soft tofu with your favorite frozen fruits and soy or rice milk for a thick, delicious, creamy, high-protein shake.
- **Marinated tempeh**, grilled on a bun or added to salad, is an easy way to boost protein at 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% or greater 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 including heat cramps, heat exhaustion, and heat stroke can occur. By maintaining a regular fluid schedule of at least eight 8-oz glasses of water per day, these symptoms are easily prevented.

Fluid needs increase with exercise. Additionally, participating in activity at high altitudes, low humidity, and high temperatures can also increase fluid needs. The following guidelines, endorsed by the American College of Sports Medicine, can help you stay hydrated.

- **Two hours before exercise**: drink 17 oz (or about 2 cups) of fluid.
- **During exercise**: drink 4-8 oz (or about ½-1 cup) of fluid every 15-20 minutes.
- **After exercise**: drink 16-20 oz (or about 2-3 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 greater than 60 to 90 minutes, sports drinks containing carbohydrate or electrolytes may be indicated both during and following exercise, though tolerance is highly individual. Electrolytes and carbohydrates 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 carbohydrates, fiber, zinc, and B vitamins, the latter of which help your body make energy. A single serving also provides about 2-3 g 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 g 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 high in protein (about 6-10 g 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.
- **Vitamin B<sub>6</sub> supplement**: A multivitamin/mineral supplement or vitamin B<sub>6</sub> 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 B<sub>12</sub>, cyanocobalamin.

### References


**Famous Vegan Athletes**: Carl Lewis, John Salley, Desmond Howard, Ruth Heidrich, Mike Tyson, Keith Holmes, Scott Jurek, Mike Mahler, Martyn Moxon, Patrick Neshek, Fiona Oakes, Pat Reeves, Ed Templeton, Mary Stabinsky.