Sports Nutrition for Vegetarians

Good nutrition is vital for optimal exercise training and performance.
To train and perform optimally, athletes of all levels—from recreational to elite—should consume a diet comprised of wholesome foods high in carbohydrate (>50% of energy), low to moderate in fat (20-35%) and adequate in protein, vitamins, minerals, and fluid. A vegetarian diet easily meets these needs and offers additional health and performance advantages. The key is to consume a variety of vegetarian foods including whole-grains, fruits, vegetables, legumes, nuts, seeds, and if desired, dairy products and eggs.

Carbohydrate: The Fuel of Choice
Carbohydrate is the primary energy source for exercising muscle. The more vigorous the exercise, the more carbohydrate is required to fuel the activity. Both stored carbohydrate (muscle and liver glycogen) and recently absorbed carbohydrate from a pre-exercise meal (as blood glucose) supply energy during exercise. While fat is also an important fuel source during prolonged exercise, carbohydrate regenerates ATP more rapidly and efficiently. High carbohydrate diets, which are easy to achieve with a vegetarian diet, boost the amount of glycogen available for fuel during exercise and replenish these stores after exercise. Larger glycogen stores can delay the onset of fatigue and improve performance during endurance interval exercises (including team sports). Athletes should strive for a carbohydrate intake of 6-10 g/kg body weight. In general, females and less active athletes should aim for the lower end of the range (6-7 g/kg), while males and more active females should strive for the upper end (8-10 g/kg). Foods high in complex carbohydrates also contain fiber, protein, vitamins, and minerals and offer the best nutrients for enhanced performance.

Dietary Fat
In the past, athletes have adopted very low-fat diets with the belief that they can lose fat mass. Such diets, however, can impair performance and have negative health consequences such as amenorrhea, impaired immunity, and elevated serum triglycerides. Fat is a necessary component of the training diet, providing energy, essential fatty acids (alpha-linolenic and linoleic acid), and the associated fat-soluble vitamins A, E, and K. Fat also helps maintain intramuscular triglyceride stores which serve as a fuel source during prolonged exercise. The focus should be on monounsaturated and omega-3 fatty acids first, then polyunsaturated fats with limited intake of saturated and trans fats. Consuming 0.6 to 1.2% energy from omega-3 fatty acids may also aid in prevention of whole body inflammation and chronic disease. Conversely, high fat diets (>70% of energy) are not recommended and may impair performance by replacing carbohydrate in the diet.

Protein
Performing light or moderate exercise several times a week has little effect on protein requirements. Strenuous and prolonged endurance exercise, however, may increase protein needs.
as it is needed to repair microscopic tears in skeletal muscle which occur as a normal result of training. About 5 to 10% of energy from protein may be used as fuel during prolonged exercise if glycogen stores become depleted. Recommendations for endurance and strength-trained athletes range from 1.2-1.7 g/kg body weight per day. Some sources recommend 1.3-1.8 g/kg for vegetarian athletes due to lower digestibility of some plant-proteins. These protein recommendations, however, can easily be met on a vegetarian or vegan diet which provides adequate energy and contains a variety of protein foods including legumes, soy foods, nuts, seeds, whole-grains, and if desired, egg and/or dairy foods. Vegan athletes with high training regimens and/or low energy intakes, including weightlifters, wrestlers, and gymnasts, may need additional servings of protein-rich foods. Athletes attempting to lose weight by restricting energy intake may also need additional protein. Recovery from training may be facilitated by including protein- and carbohydrate-containing foods in post-exercise meals and snacks.

Other Nutrients

B vitamins. Due to their high energy needs, active individuals have increased requirements for thiamin, niacin, and riboflavin. These vitamins help convert carbohydrate, fat, and protein into fuel for energy. Generally, meeting the requirements for the B vitamins is achieved by selecting a diet that is adequate in calories, and contains legumes and whole- or enriched-grain products. Vegan athletes need to take a B12 supplement or eat B12-fortified foods such as soy or rice milk, meat analogs, and breakfast cereal.

Antioxidant vitamins. Antioxidants in foods, such as vitamins C, E, beta-carotene, and phytochemicals are more abundant in the vegetarian diet and may decrease exercise-induced oxidative damage. Antioxidants are obtained from a diet rich in whole-grains, fruits, vegetables, nuts, and seeds.

Calcium. Calcium is needed for maintenance and repair of bone tissue, and regulation of muscle contraction, nerve conduction, and normal blood clotting. All athletes need to include calcium-rich foods in their diet. Low calcium intake is linked to increased incidence of stress fractures, especially among female athletes with irregular menstrual cycles. Vegan calcium sources include fortified soy or rice milks, calcium-set tofu, fortified fruit juices, collards, broccoli, kale, mustard and turnip greens, dried figs, and blackstrap molasses. Additional vegetarian sources include milk, cheese, and yogurt. Excessive protein intake, often a result of consuming protein or amino acid supplements, promotes increased calcium losses. Increasing protein intake from legumes is less likely to have this effect since these foods are low in sulfur-containing amino acids.

Vitamin D. Vitamin D is required for adequate calcium absorption, optimal bone health, and regulation of immunity and inflammation. Athletes who live at northern latitudes or train primarily indoors are at risk for poor vitamin D status. Light-skinned athletes can maintain vitamin D status by spending a few minutes outside in their exercise shorts several times a week. In winter months, or year round for those with darker skin, vitamin D status can be achieved by consuming vitamin-D fortified foods and taking a vitamin-D supplement. Experts advocate 1000 to 2000 IU (more than the AI) of vitamin D3 or D2 (vegan vitamin D) daily for those with inadequate sunlight exposure or who regularly use sunscreen.

Iron. Iron is required for formation of the oxygen-carrying proteins hemoglobin and myoglobin, and for enzymes involved in energy production. Iron deficiency, with or without anemia, can compromise muscle function and athletic performance. In general, female athletes, long-distance runners, and vegetarian athletes with poor diets are susceptible to low iron stores. Inadequate intake of bioavailable iron is the most likely cause of poor iron status, although some athletes experience increased iron loss from impact hemolysis, intestinal blood loss and iron loss sweat.
Vegetarian athletes can prevent iron-deficiency (including anemia) by:

1. including several iron-rich foods such as legumes, dark green vegetables, prunes, blackstrap molasses, and enriched grain products in their daily diets;
2. eating iron-containing foods with a vitamin C source such as tomatoes, citrus fruit, melon, kiwifruit, broccoli, or peppers to enhance iron absorption;
3. avoiding large quantities of foods that interfere with iron absorption including tea and high phytate foods—such as whole wheat crackers and unleavened whole grain breads.

Cooking in iron skillets also increases the iron content of acidic foods such as tomato sauce.

Selected Resources


