Nutrition for Physical Activity

PROTEIN

Protein is important to an athlete’s diet for the growth and repair of body tissue, including muscle. Protein is not a good source of energy. Even though muscle is twenty percent protein, it doesn’t mean that eating a lot of protein will give you more muscle mass. About twelve to twenty percent of total calories should come from protein. This means that endurance and strength training athletes should get 0.5 to 0.9 grams of protein per pound of body weight or 75 to 135 grams per day for a 150 pound athlete. Normally athletes get enough protein in their regular diet and don’t need supplements. A diet too high in protein makes the kidneys work harder than they need to and won’t improve athletic performance. Good sources of protein are low fat dairy foods, lean meats and fish, soy products and mixtures of grain.

CARBOHYDRATES

Carbohydrates are the main source of fuel for working muscles. Fifty to seventy percent of calories should come from carbohydrates for athletes. This translates to 2.3 to 5 grams of carbohydrates per pound of body weight. Carbohydrates are stored in the muscles and liver as glycogen. Glycogen is converted to energy quickly without the need of oxygen. This is important for short bursts of energy required in football, baseball, volleyball and many track and field events. Good sources of carbohydrates are pasta, rice, fruit, vegetables, whole grain breads, and cereals.

FAT

Fat is the primary fuel source used during aerobic activity. Dietary fat is also important for the absorption of fat soluble vitamins A, D, E and K. A good diet for athletes consists of twenty to thirty-five percent of total calories from fat. It is important to choose healthy fats that come from vegetable oils, nuts, and fish over saturated fats found in meats, full-fat dairy products, fried foods, and solid shortenings.

OTHER IMPORTANT NUTRIENTS

Iron: Iron has an essential role in the body because it delivers oxygen to cells. This is especially important for athletes. Good sources of iron include meat and fortified breads and cereals.

Calcium: Calcium builds strong bones and helps muscles contract. Good sources of calcium are low fat dairy products, calcium-fortified orange juice and those soy milks which are fortified.

Zinc: Zinc is important both for muscle tissue growth and repair and energy production. Good sources of zinc include meat, whole grains and fortified foods.

Vitamin D: Vitamin D is needed for calcium absorption. Vitamin D is found in most dairy products and is made by the skin when exposed to sunlight.

B Vitamins: These vitamins are involved in energy production during exercise. B vitamins are found in meat, whole grains, vegetables, dairy products and fortified foods.

Vitamins A, C and E: These vitamins protect cell membranes from oxidative damage from the increase in oxygen consumption. Good sources of vitamins A, C and E include dairy products, vegetables, fruits and vegetable oils (vitamin E).

By Beth H. Olson, Ph.D., MSU Extension Nutrition Specialist, Department of Food Science and Human Nutrition, 1/12
KEEPING HYDRATED

<table>
<thead>
<tr>
<th>DAY BEFORE</th>
<th>Drink fluids frequently</th>
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</thead>
<tbody>
<tr>
<td>PRE-EVENT MEAL</td>
<td>2-3 cups water with meal</td>
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<tr>
<td>2 HOURS BEFORE</td>
<td>At least 2 cups water</td>
</tr>
<tr>
<td>DURING EVENT</td>
<td>1/2 cup water every 15 minutes</td>
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<tr>
<td>AFTER EVENT</td>
<td>2-3 cups fluid for each pound lost</td>
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<tr>
<td>NEXT DAY</td>
<td>Drink fluids frequently (it may take 36 hours to rehydrate completely)</td>
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</tbody>
</table>

CARBOHYDRATE LOADING

Carbohydrate loading is a technique used by endurance athletes, such as marathon runners and triathletes, to perform longer. Three days prior to competition increase carbohydrate calories to about 65% of energy intake and 535-550 grams of carbohydrates per day, whichever is greater. This enhances glycogen storage in the trained athlete and provides more glycogen for extended activity. Intakes greater than this amount do not significantly increase glycogen storage or increase athletic performance. This type of diet does not hold benefits for athletes who compete or train for less than ninety continuous minutes.

FURTHER INFORMATION

Physical Activity Guidelines for Americans
www.health.gov/paguidelines
Go to: Be Active Your Way: A Guide for Adults (Spanish and English available)

President’s Council on Physical Fitness and Sports
Exercise and Weight Control
www.fitness.gov/exerciseweight.htm

Gatorade Sports Science Institute
www.gssiweb.com

U.S. National Library of Medicine and National Institutes of Health
MedlinePlus: Sports Fitness