Nutrition in Extreme Conditions

When you exercise in extreme environmental conditions, this affects your food and fluid needs. Here are some tips to help you cope.

High Altitudes

- Athletes need to pay special attention to what they eat and drink when they participate in sports performed at high altitudes, such as alpine and cross country skiing, hockey, snow shoeing, mountain climbing, mountain biking, distance running, and ice skating . Athletes in these sports may find themselves competing at moderately high sites (those with altitudes of 7,500 to 9,500 feet), high-altitude spots (such as Pikes Peak, Colorado, at 14,110 feet), or extremely high–altitude locations (such as Mount McKinley, Alaska, at 20,320 feet).

Altitude Sickness

- Even the most fit athlete can experience altitude sickness, with symptoms of nausea, vomiting, anorexia, and weakness.
- Altitude sickness can range from the mild acute mountain sickness (AMS) to the life-threatening high altitude cerebral edema (HACE). In all cases, the preferred (and often the only) treatment is to move to a lower altitude.
- You cannot predict whether you will get altitude sickness. Different individuals respond differently to high altitudes. Also, an individual may respond differently at different times to the same conditions.

Nutrition Tips for Athletes Training and Competing at High Altitudes

- You may lose your appetite at high altitudes, but you need energy to train and compete. Choose high-calorie foods when your appetite is poor.
- Try to eat small, frequent meals instead of less-frequent, large meals.
- Choose soft foods. Good choices include oatmeal, mashed potatoes, rice, pasta, noodles, canned fruit, bread, crackers, yogurt, cottage cheese, hard-boiled or scrambled eggs, broth-based soups, fruit juices, and baked or broiled chicken, turkey, or fish.
- For calories and fluids, choose gelatins, puddings, instant breakfast drinks, liquid meal replacements, and soups.
- As you get used to the altitude and work harder, eat more calories to keep muscles strong and prevent the loss of body fat.
- Choose nutritional packaged meals that can be packed in a small space.
- When planning meals, remember that foods take longer to cook at high altitudes. Cooking time doubles for every 5,000-foot increase in elevation. It also takes longer to melt snow for water.
- Eat nutritious high-calorie snacks when you're active. Good choices include string cheese, energy bars, dried fruit, trail mix, toaster pastries, fruit cookie bars, and granola bars.

Fluid Tips for Athletes Training and Competing at High Altitudes

- At high altitudes, your body needs more fluids. Drink at least 4 liters (about 4 quarts) per day.
- Check the color of your urine. If it is a light straw color, you are drinking enough.
- Choose sport drinks containing 6% to 8% carbohydrate (14 to 19 grams of carbohydrates per 8 ounces).

Heat and Humidity

Heat puts more stress on an athlete's body than any other environmental factor. Any time that you exercise, your body temperature can go up. Sweat normally cools your body. However, in high heat and humidity, sweat does not quickly evaporate from your skin, so you don't cool down as fast as you would in other conditions. At these times, your body temperature can rise to dangerously high levels.

Nutrition Tips for Athletes Training and Competing in Heat and Humidity

- To prevent heat illness, plan ahead.
- Before you compete in hot, humid conditions, you need to train in a hot, humid environment. This training will allow your body to acclimatize to the heat by increasing blood volume, making you sweat faster and at an increased sweating rate, and decreasing the sodium content of your sweat. All of these changes will help your body work better in the heat. Before the 1996 Olympic Games held in Atlanta, Georgia, in July, athletes from cool-weather countries trained for months in the southeastern United States.
- You need more fluids when you exercise in the heat. In hot conditions, your body may lose as much as 3 liters (about 3 quarts) of fluid per hour.
- Use sport drinks containing 6% to 8% carbohydrate (14 to 19 grams of carbohydrate per 8 ounces) before, during, and after exercise.
- If you are a child or an older adult, you need to be especially careful to get enough fluids. You are at greater risk than other people for heat illness. Compared with adults, children have lower sweating rates, lower cardiac output, slower acclimatization rates, and a faster rise in core temperature when dehydrated. Older adults may not be as fit as younger people, and they have a less sensitive thirst mechanism.

Cold Weather

The biggest concern for athletes exercising in cold weather is hypothermia. Hypothermia is the inability to keep your body temperature at 98.6 degrees Fahrenheit. When your body temperature drops, your body may respond by sending less blood to the outer parts of your body, like your arms and legs, because the blood is needed in the core to keep your vital organs warm. Mild hypothermia can affect your performance, and extreme cases can cause death. We do not know as much about how to prepare your body for the cold as we do about preparing for competition in hot weather.

Nutrition Tips for Athletes Training and Competing in Cold Weather

- Carbohydrate is the most important fuel for athletes active in cold weather. Be sure to eat adequate amounts of carbohydrate to fuel your sport.
- Stay hydrated. You need about the same amount of fluid in cold weather that you need when the weather is mild.
- Choose warm beverages. They may increase blood flow. Also, warm beverages just make you feel good on a very cold day.