

# The Importance of Fluids

Fluids are probably the most neglected aspect of the athlete's diet. It is not uncommon for recreational athletes to report that they consume on an average day an intake something like this: several cups of coffee, 2 colas and a few beers. That kind of fluid intake is not sufficient for several reasons, and physical performance will suffer as a result.

Heat is inevitably produced in the body during exercise. Our most effective way of removing heat is through sweating. For each 1 gram of sweat EVAPORATED from the skin, approximately 0.6 kcal of heat are removed. Fluid losses during exercise due to sweating can exceed 2 quarts or 4 pounds per hour. This is especially true in humid environments or in sports where padding is used since the sweat is not evaporated effectively. As dehydration progresses, performance becomes impaired. A loss of 2-3% in body weight due to sweating can reduce aerobic ability by more than 10%, while losses of 5% or more in body weight can result in heat stroke. Clearly, even relatively mild dehydration will significantly hamper competitive possibilities.

**Type and timing of fluid ingestion** How much liquid should you take and when? The amount of fluid required is dependent upon how much sweat will be lost during your game. Exercise in hot, humid environments will require more liquid intake to maintain performance. Two hours prior to exercise drink 2 cups of water, juice diluted by half with **water**, or a **sports drink**. To speed absorption the beverage should probably not contain more than 6-8% carbohydrate. Half an hour prior to exercise drink 1 cup of sports drink, or water. At this point fruit juice should probably be avoided since it contains fructose, a sugar known to increase complaints of stomach upset. During exercise most people can tolerate 1/2 to 3/4 cup of beverage each 20 minutes. Again, avoid fructose, and choose either water or a quickly absorbed sports drink, or a dilute carbohydrate-containing beverage.

To **enhance rehydration**, weigh yourself prior to and after your workout. By doing so you can determine how much fluid you have lost as sweat. For each pound you have lost during exercise, drink 2 cups of noncaffeinated, nonalcoholic liquid within a few hours of exercise to restore hydration. A 3 pound weight loss during the exercise session, for example, would necessitate drinking 6 cups of fluid.

As discussed above, the period immediately post exercise is not only a good time to restore fluid losses, but is also an optimal time to restore carbohydrate. For that reason, a **beverage which contains carbohydrate** should be considered during the rehydration period. Alternatively, the athlete may want to eat a solid food containing carbohydrates while drinking plain water.

**Type of beverages** Recreational athletes are probably best served by drinking **plain water**. For example, someone who is playing an hour three times a week may not be at any significant risk of either dehydration or of carbohydrate depletion. However, for those who train at high intensities, or for prolonged periods of time, water may not be the

best choice. The more serious athlete should be aware that the concentration of the beverage may significantly impact upon its rate of absorption and upon the likelihood of abdominal cramping, bloating or diarrhea when drunk during exercise.

The **optimal carbohydrate beverage composition** during exercise is probably one which provides a small amount of salt [sodium] and sugar [glucose, a glucose polymer or sucrose]. Beverages containing less than 6% carbohydrate are unlikely to extend performance, while those that contain greater than 8% are associated with intestinal upset. So look for a beverage which provides about 15-20 grams of carbohydrate, or 60-80 calories, per 8 ounces.