

Sports Nutrition

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The Athlete's Kitchen

If you are a serious athlete who works up a good sweat, you might have wondered how much you should drink before, during and after a hard workout. According to the American College of Sports Medicine's latest update on fluid needs for athletes (Med Sci Sports Exerc, Feb 2007), only *you* can determine that answer because fluid needs vary greatly from person to person. Here's what ACSM has to say—

- Sweat rates commonly range between 1 to 4 pounds (0.5 to 2 quarts) per hour, depending on your sport and environmental conditions. Sweat rates for a 110-lb slow runner might be 1 pound (16 oz) of sweat per hour, while a 200-lb fast runner might lose 4 pounds (a half-gallon) per hour. Even fast swimmers sweat—almost a pound per hour!

- Few athletes actually make the effort to learn their sweat rates; they simply drink according to thirst throughout their workout. This can be OK if you exercising gently for less than an hour. But if you will be sweating bullets for extended exercise, you really should know your sweat rate. Otherwise, you are likely to repeatedly underhydrate, become chronically dehydrated & hurt your performance.

- To determine if you are adequately hydrating on a daily basis, weigh yourself nude each morning after having emptied your bladder. Your weight should be stable, assuming:
 - 1) you are not restricting calories to lose fat-weight.
 - 2) you have not eaten abnormally high amounts of sodium the night before, such as a water-retaining Chinese dinner.
 - 3) you are not experiencing 2 to 4 lbs pre-menstrual bloat.

- There's no need to try to *overhydrate* pre-exercise; your body can absorb just so much fluid. If you *overdrink*, you then may have to (inconveniently) urinate during exercise.

- Some athletes can tolerate exercising while dehydrated better than others. But most athletes who lose >2% of their body weight in sweat losses hurt both their mental and physical performance, especially if the weather is hot. Yet during cold weather, you are less likely to experience poor performance even at 3% dehydration (4.5 lbs sweat loss for a 150 lb athlete). Dehydration (3-5%) does not seem to impact either muscle strength or anaerobic performance. Yet, loss of 9% to 12% body weight can lead to death.

- If you become significantly dehydrated and have to exercise again within 12 hours, such as during a tennis tournament or triathlon training, you need to aggressively rehydrate. This means drinking 50% more fluid than your sweat losses. (This accounts for the water you lose via urine.) Sipping fluids for several hours post-exercise maximizes fluid retention and is preferable to gulping one big drink.

- Sweat contains more than just water. The average sodium content of sweat is about 800 mg/liter (range 200-1600 mg). Other electrolytes include small amounts of potassium, calcium, magnesium and chloride, easily replaced via food.

Fluid Facts for Athletes

- Dehydration is more common than *overhydration*, but overhydration to the point of hyponatremia (low blood sodium) is very dangerous and can escalate into seizures, coma and death. The symptoms (that become increasingly severe), include headache, vomiting, swollen hands and feet, undue fatigue, confusion (due to progressive swelling of water in the brain) and wheezing (due to water in the lungs).

- In general, hyponatremia that occurs in events that last for *less* than 4 hours is from overdrinking water before, during and even after the event. Do not overhydrate!

- Hyponatremia that occurs in events that last for more than four hours generally relates to extreme sodium losses. Hence, with extended exercise, be sure to replace sodium losses with more than just sports drinks. (Sports drinks contain too little sodium to balance sweat loss.) Choose *endurance* sports drinks and salty snacks, such as pretzels, V-8 juice, soup, olives, salt sprinkled on foods, or salt tablets.

- You are likely to maintain better hydration if you have easy access to good tasting beverages before, during and after exercise. "Good tasting" means:

- a cool temperature (most people prefer between 60-70° F),
- a little sodium and an appealing flavor. (What makes a flavor "appealing" varies greatly between people, cultures).

- Muscle cramps are believed to be associated with dehydration, electrolyte deficits and muscle fatigue. If you sweat profusely, are left caked with salt, and experience cramps, take extra care to drink plenty of sodium-containing fluids while exercising. Because of the high salt content of the standard American diet, you can likely replace sodium losses during meals without sodium supplements. But consuming a little extra salt on your food if you had high sweat losses can be a smart way to enhance recovery.

- If you like a caffeine-boost pre-exercise to enhance your performance, caffeine (in small doses; <180 mg/day, a 12-oz mug) is unlikely to increase your daily urine output nor cause you to become dehydrated. Enjoy it, if desired!

- Alcohol, on the other hand, does have a diuretic effect, particularly in large amounts. After exercise, consume alcohol (if desired) only in moderation, with lots of extra water.

- When you are exercising hard for more than an one hour (or even gently for a few hours), adding 120 to 240 calories of carbohydrates (30-60 g) per hour to your water help maintain normal blood glucose levels so you are able to perform better and enjoy sustained energy. Sports drinks are an easy way to get carbs + water. For example, 16 oz. Gatorade offers 100 calories, 25 g carb; 16 oz. PowerAde: 140 cal, 35 g carb.

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