



## Some athletes run risk of low blood sodium

With all of the new hype about pre-hypertension, promoting salt intake seems strictly taboo. However, some athletes (and those who are very physically active) may be at risk for low blood sodium, or hyponatremia.

**Question:** What causes hyponatremia to develop during endurance exercise?

**Answer:** The most common cause of low blood sodium in athletes is the combination of excessive fluid intake, large amounts of sodium loss in sweat and inadequate sodium intake. This combination can dilute body fluids excessively, resulting in a dangerous drop in blood sodium. This type of hyponatremia is also called "water intoxication."

**Q:** What problems are associated with hyponatremia?

**A:** Initially, hyponatremia may cause intestinal discomfort, nausea, headache and/or swollen hands and feet. Those affected may find that fluids seem to "drain right through them." When blood sodium

drops too low, excessive water can enter the brain, causing brain swelling and associated symptoms such as confusion, seizure, coma and even death. This generally occurs only in events longer than three hours.

Recent USA Track and Field hydration guidelines for endurance athletes emphasize preventing hyponatremia to the extreme of suggesting that runners not drink until thirsty. This may reduce the risk of hyponatremia but greatly increases the risk of dehydration -- especially in hot weather!

**Q:** Who is most at risk?

**A:** First, slower runners and walkers who spend too much time drinking during long endurance events. Second, those who are poorly trained or not acclimated to hot weather. Third, people who consume low-salt diets prior to a long endurance event and those who do not have adequate salt intake along with fluid during a long event.

**Q:** Can drinking too much water without exercising cause hyponatremia?

**A:** Although uncommon, some people have developed hyponatremia by drinking more than three quarts of water in an hour in attempts to dilute their urine and avoid detection of drug use. One death due to this practice was recently reported in a medical journal.

**Q:** How much salt is lost in sweat during exercise?

**A:** The average rate of salt loss is about a half a teaspoon per hour of exercise. Some people, however, lose much more.

People training heavily for endurance sports require more salt in their diet than the average person. Exactly how much depends on the hours and intensity of daily training and the amount of salt lost in their sweat. A "salty sweater" can lose more than two teaspoons of salt in two hours of exercise -- about twice the amount typically recommended as an upper limit for the average person.

For more on hyponatremia, visit the Web site [www.gssiweb.com](http://www.gssiweb.com).

---

Alan Titchenal, Ph.D., C.N.S. and Joannie Dobbs, Ph.D., C.N.S.  
are nutritionists in the Department of Human Nutrition, Food and Animal Sciences,  
College of Tropical Agriculture and Human Resources, UH-Manoa.  
Dr. Dobbs also works with the University Health Service

---