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Drinking Too Much Water as Deadly as Too Little

Posted on March 17, 2016 by Ruth Kava



All athletes (and non-athletes) are warned repeatedly of the risks of dehydration, especially when exercising in hot, humid environments. The warning has become such a truism that seeing people on the street sipping from their bottles of water is commonplace. But there's a downside to all this sipping — water overload.

When that happens the blood actually becomes more dilute, and the concentration of essential electrolytes — especially sodium — becomes too low to function properly.

How low can you go? Well, the normal range for blood sodium is about 135-145 milliEquivalents per liter (mEq/L). Anything below that is considered hyponatremia, and if that concentration drops below 120 mEq/L, the situation is critical and death can result.

Symptoms of hyponatremia can include nausea and vomiting, headache and confusion, muscle weakness, or cramps, seizures and coma — depending on how severe the condition is.

Such situations have been reported in athletes completing marathon races, and even in [youngsters](#) urged to drink frequently during games and practices. A new [report](#) investigates the occurrence of hyponatremia in other extreme athletic events.

Probably the most grueling athletic competition is the Ironman Triathlon. First introduced in Hawaii in 1978, it consists of three separate races, performed without a break: a 2.4 mile swim, a 112-mile bike race, followed by a 26.2-mile marathon. Truly, a person who completes all three within the 17-hour time limit has earned the title of elite athlete.

Dr. Matthias Danz from St. Martinus Hospital in Olpe, Germany and colleagues studied 932 men and 157 women who completed an Ironman Triathlon between 2005 and 2013. Blood samples were taken within 20 minutes of each person's finishing a race, and analyzed for its sodium content. Their [report](#) was published in the *New England Journal of Medicine*.

The authors defined mild hyponatremia as a sodium level of 135 mEq/L or less; severe hyponatremia was defined as 130 or less, and critical hyponatremia as a level of 120 or less. Among all the athletes tested, about 11 percent had some level of hyponatremia — 9 percent were mild, 2 percent were severe, and 0.3 percent were critical.

Analysis of the results revealed that there was a significant association between gender or longer finishing times, and the risk of developing hyponatremia; women were more likely than men to develop the problem. The first cases seen were in participants who finished the race in nine hours, and the cases of critical hyponatremia were seen in those who finished between 12 and 14 hours.

While this report represents only a convenience sample of athletes — that is, there was no control for participants' characteristics — it does add to previous studies of marathon racers who have exhibited low blood sodium levels, sometimes with severe results. Thus, it provides another warning about taking the advice to avoid dehydration with just a small grain of salt.



About Ruth Kava

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