

TOO MANY FLUIDS AS BAD AS TOO FEW

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For water and for sports drinks, the new message is to drink wisely. Too many fluids are at least as dangerous as too few, according to an editorial in the July 19 issue of the *BMJ*. But even though the USA Track & Field association changed its guidelines in April, the word hasn't reached everyone.

Most people still think you're supposed to drink as much as you can. But that advice is dead wrong, said Timothy David Noakes, MD, PhD, author of the editorial and chair of exercise and sports science at the University of Cape Town and the Sports Science Institute of South Africa. An authority on endurance sports, Dr. Noakes advises South Africa's national rugby and cricket teams. He's also the author of *Lore of Running*, for years a bible to many serious runners.

"People have been coached to think that dehydration is the worst thing that can happen during exercise, so now you have a dangerous situation," Dr. Noakes told Medscape. "A woman only needs to put on 2.5 kg of fluid to kill herself. It adds up real quickly — it is easy to get overloaded. It is frightening how easily it can happen."

Dr. Noakes explained that for a 70 kg man at rest, the kidney passes only about 1 liter of water per hour. If you combine that with a similar amount of sweat, that's 2 liters per hour of water loss. However, while walking or running, sweat rates go down to about 300 mL per hour and urine production also diminishes during exercise. The situation is worse for women.

It's often said that by the time you get thirsty, you've waited too long to take a drink. Nonsense, Dr. Noakes said.

"The idea that thirst comes too late is a marketing ploy of the sports drink industry," Dr. Noakes said. "They tell people their thirst is not giving them right information. There is absolutely no biological information that is correct. The answer is just drink what your thirst dictates."

The Beginning of Bad Advice

In his editorial, Dr. Noakes notes that from ancient times until 1969, people didn't drink during exercise. Then an influential — and, Noakes says, error-filled — scientific paper concluded that this led to dangerous overheating. Soon after, the first sports drinks hit the market, and advertising encouraged people to drink all the fluids they could.

That still wasn't a problem, until amateur running became popular. Elite athletes don't have time to drink too much. But it's a different story when people run/walk marathons over five hours.

"They are running so slowly they can drink all they want," Dr. Noakes said. "There is no place outside of a pub where fluids are so available as in a marathon in the U.S. And unlike a pub, you aren't limited by having to pay for it. It doesn't take much to get fluid overload."

Between the Rock of Fluid Overload and the Hard Place of Dehydration

Fluid overload leads to hyponatremia, which can result in brain swelling in extreme cases. The swollen brain can lead to seizures and eventually respiratory arrest. This is what killed a woman during the 2002 Boston Marathon.

"Humans are actually designed quite well for dehydration," Dr. Noakes said. "There is very little evidence it has any effect until one becomes very dehydrated — by which time your mouth is so dry, and you have such extreme thirst, that this would never happen.

You are going to find water or a sports drink. There is no way you will be seriously dehydrated when you start a race."

Not everyone goes quite so far. Other experts who spoke with Medscape agree that it's terribly dangerous to drink too much water or too many sports drinks. But they are uneasy about dehydration.

The U.S. Track & Field association Web site carries advice from both Dr. Noakes and Douglas J. Casa, PhD. Dr. Casa is director of athletic training education at the University of Connecticut.

"I'd bet many more people running Atlanta's Peachtree Road Race were dehydrated than overhydrated," Dr. Casa told WebMD. "I am not downplaying hyponatremia. But the advice of don't drink the water is not good advice for soccer and football players and runners who are out there sweating."

Dr. Casa stresses appropriate fluid replacement. So does Leslie Bonci, MPH, RD, director of sports nutrition at the University of Pittsburgh Medical Center. Bonci is the nutritional consultant for the Pittsburgh Steelers and Panthers as well as for the Pittsburgh Ballet Theatre.

"It is not one size fits all," Bonci told Medscape. "Each and every person doesn't need same amount of fluids. Not every body has the same sweat rate, the same sodium loss rate."

Safe Use of Water and Sports Drinks

So how much should people drink? "The solution is not to drown oneself," Bonci says. "Water alone is not going to be the best recommendation. You also need something with some carbohydrate and some electrolyte in it. So water alone during exercise, no. Drinking until you slosh or drown, no. The guidelines are 20 ounces of fluid before exercise, and over the course of every hour of exercise drink between 28 to 40 ounces of fluid. That is not enormous quantities."

Dr. Casa has a simple rule. The next time you set out to exercise, weigh yourself before going out. When you get back, step on the scale again. If you lost weight, you should drink more the next time. If you gained weight, you should drink less.

How much more or less? It's easy if you have a metric scale. For every kilogram you lose (or gain) during exercise, you need a liter more (or less) fluid. If you don't have a metric scale, it's one liter of fluid per 2.2 pounds.

And don't forget salt, Bonci notes. It's also a good idea to know your individual rate of salt loss. That can only be measured in a sports clinic. But there's an easy way to tell if you lose a lot of salt when you work out.

"Some people are truly greater salt losers than others," Bonci says. "Those whose sweat stings their eyes, those who get that crust on the skin, should not put all their faith in sports drinks. Their salt should be from food. Those who lose salt have to be more vigilant about adding maybe some extra soy sauce to their meal the night before. And they have to be careful about not overdoing it on fluids."

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