

What You Need to Know About Runner Hydration

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For years, it seemed, runners couldn't get enough to drink. They carried fluids as they ran, stashed bottles along the road for long runs, and threw back multiple cups at every aid station during races. Then a few high-profile cases of hyponatremia (overhydration and a diluting of blood-sodium levels), including a young woman who died during the 2002 Boston Marathon, struck fear in the hearts of guzzlers. Suddenly, runners went from worrying about not drinking enough to worrying about drinking too much.

If you're confused, and maybe even a little afraid that erring to one extreme or the other could have dire consequences, join the club. The guys in the white lab coats don't even agree. The International Marathon Medical Directors Association (IMMDA) released its long-awaited hydration guidelines, which concluded that runners should, simply, drink when thirsty. "The new scientific evidence says that thirst will actually protect athletes from the hazards of both over- and underdrinking," says the IMMDA announcement. This shockingly easy prescription counters years of advice from organizations such as the American College of Sports Medicine (ACSM), and even the IMMDA itself. In fact, as this issue went to press, the ACSM and other groups were re-examining their hydration guidelines. So as the hottest, sweatiest, most humid days of summer approach, what's a runner supposed to do about the drinking issue? We talked to experts on both sides of the great hydration debate to bring you the most up-to-date thinking on how much fluid runners really need.

The Over and Under of Hydration

There's no denying that a serious shortage of fluids can cause problems. At the tail end of every marathon or ultra, there are always several runners staggering into the medical tents, suffering from nausea, diarrhea, and weakness caused by dehydration. "It's pretty common for athletes to hit at least one or two percent dehydration during endurance events," says Craig Horswill, Ph.D., senior research fellow at the Gatorade Sports Science Institute. "The body's temperature-regulating mechanism is affected even at one percent dehydration."

It is, therefore, Horswill's (and Gatorade's) opinion that even small amounts of dehydration should be avoided because it will affect performance. He, as well as the ACSM, recommends staying less than two percent dehydrated. For a 130-pound woman, that would mean losing no more than 2.6 pounds of fluid (and ideally, much less) during any run. But other experts point to the fact that most elite marathoners typically finish—and win—races significantly dehydrated because they don't take the time to drink much along the course. "Would they perform even better if they drank more? I doubt it," says Lewis Maharam, M.D., medical director of the [ING](#)

[New York City Marathon](#) and chairman of the board of governors for the IMMMDA. "There is no evidence that you have to replace 100 percent of lost fluid during a race."

At the other end of the spectrum, overhydrating can be even more dangerous than not drinking enough. Hyponatremia occurs when your fluid intake exceeds your rate of fluid loss from sweating, which results in low blood-sodium levels. Symptoms—nausea, disorientation, muscle weakness—can be similar to dehydration. Giving additional liquids to hyponatremic runners only exacerbates the problem by diluting their blood-salt levels even more, which can lead to coma and, in the worst cases, death.

Experts hypothesize that hyponatremia has become more of an issue in the past few years because so many beginning runners are attempting marathon and ultramarathon distances. This means people are on the course for five or six hours, or even more. "Slower, back of the pack runners who aren't sweating as much don't need to replace so much fluid," says William O. Roberts, M.D., past president of ACSM and long-time medical director of the Twin Cities Marathon. Women, smaller runners, slower runners, and those who are not as well trained face the greatest risk of hyponatremia. "Based on the lab data we have, women tend to overdrink and they typically have a lower sweat rate than men," says Horswill. The idea that every runner needs to down a cup at every aid station can be a dangerous one, warns Dr. Maharam, because such a rigid fluid-replacement strategy doesn't account for differences in body size, running pace, terrain, climate, metabolic rate, and sweat rate.

The Thirst Connection

The concept of drinking according to thirst may seem too simple to be an accurate barometer of fluid needs. In fact, for years runners have been urged to drink ahead of their thirst — the message being that by the time you feel thirsty, you're already on the road to dehydration. Despite the controversy, there is increasing scientific evidence to support the notion that thirst is actually the ideal way to gauge hydration needs.

Thirst is the basic physiological instinct that the body uses to maintain normal thickness of body fluids. "Humans evolved the thirst mechanism over millennia," says Timothy D. Noakes, M.D., a professor of exercise and sports science at the University of Cape Town, South Africa, and author of *The Lore of Running*. "It is the only system used by all other creatures on this earth. Why should it not also be ideal for humans?" Dr. Noakes and his colleagues recently completed a study looking at the connection between thirst and sports performance. They found that drinking less than what thirst dictated resulted in a two percent drop in cycling performance during an 80 kilometer time trial, and that drinking more than thirst dictated did nothing to enhance performance. "We concluded that if you drink according to the dictates of thirst, your performance will be optimized," says Dr. Noakes.

The IMMMDA has found the latest body of research on thirst so compelling that in May at a meeting in Barcelona, the group dismissed its own advice that runners stay ahead of dehydration by using an ounces-per-minute fluid-replacement strategy and instead strongly endorsed thirst in its groundbreaking new fluid recommendations. "We're used to hearing that thirst follows too far behind what you really need, but that doesn't hold true scientifically," says Dr. Maharam. "Your

body's thirst mechanism is giving you real-time feedback on your internal fluid balance."

This feedback can be especially important when running on steamy August days. According to Dr. Noakes's research, your body will respond to the heat by increasing your thirst. And on the flip side, when you aren't sweating as much or losing as much fluid, your thirst will guide you to drink less.

Dr. Maharam suggests listening to your instincts. "If you come up on a water station and you're ambivalent about downing a cup, you're not thirsty and you don't need to drink," he says. For instance, having a dry mouth—which can be the result of nerves or heavy breathing—doesn't necessarily mean you're thirsty. "But if you see the water at the station and crave it," says Dr. Maharam, "then you're truly thirsty and should have a drink."

Fears of hyponatremia have also fueled controversy over how much sodium runners need to replace along with fluids. According to Dr. Roberts, the need for salt is exaggerated, since the average runner actually loses very little salt during a one- or two-hour run. "As long as you have some salt in your diet, there is probably not a huge need to have salt in your fluids," he says.

The new IMMDA guidelines, however, still favor sports drinks over water when running longer than 30 minutes because they contain both carbohydrate (for energy) and electrolytes. A recent study done at the U.S. Army Research Institute of Environmental Medicine in Natick, Massachusetts, recommends using beverages containing electrolytes to help delay the development of hyponatremia, because the sodium in such drinks can assist in maintaining healthy blood sodium levels.

Last Call

When it comes to determining your own hydration needs, it's still important to remember that you are an experiment of one, since there is such individual variation in sweat rates among runners. "Thirst is simple and it's based on good, strong research," says Dr. Maharam. But he adds that if you feel you can't rely on thirst alone, you might want to determine your own sweat rate (see "Know Thy Sweat Rate"). This will give you an estimate of your fluid losses during a run so that you can calculate your own rate of fluid replacement.

Another way to assess your level of hydration is to pay attention to the color of your urine. If it's totally clear, you may be drinking too much. If it looks dark—like iced tea—you're definitely not drinking enough. Your bathroom scale can also help. If you gain any weight on a run, you're taking in too many fluids, but if you lose more than two percent of your body weight on a single outing, you probably need to drink more.

In the end, much of the hydration debate comes down to listening to your body—a concept quite familiar to runners. So when you're thirsty or sweating by the bucket-full on a long run, go ahead and drink. But when you're not sweating heavily or you just don't feel the urge to drink, pass by that next water stop.
