Newsletter

May 2004

Distilling the Water Myth

Richard Laliberte (Health Update / Shape May 2004)

Experts now say that eight-glassed-a-day rule is wrong. Here, new guidelines to determine how much you *really* should be drinking.

Dehydration was K.C. Guevara's main concern when she started the 2003 Boston Marathon. The weather was in the low 70's and sunny- easily 20 degrees hotter than usual for April. To keep hydrated, the then 26-year-old drank about 3 liters of water before the race and, from miles 5-22, started tossing back 3-ounce cups of water at hydration stations set up along the course. But Guevara was worrying about the wrong thing.

Through most of the race, she felt unusually tired. By the time she crossed the finish line, "I knew something was wrong," she says. "I felt dizzy and light-headed, and it was difficult to think straight." Guevara made a beeline for the medical tent, where she found her mouth wouldn't cooperate with her brain. "I babbled like a 5-year-old," she says. Though she was still on her feet, a blood test revealed she was entering a state known as hyponatremia, the result of way too much water and way too little sodium.

Unchecked, hyponatremia can cause brain cells to become swollen with water, potentially leading to confusion, seizures, coma- and even death. (In fact, a participant in the previous year's marathon did die of the condition.) Fortunately for Guevara, doctors were ready with doses of intensely salty bouillon, and after two hours she was fine. "It changed my mind about my fluid needs," Guevara says. "During the summer I used to drink 2 gallons a day. I just thought that's what my body needed."

The new water recommendations

Obviously, Guevara overdid it. She drank the equivalent of about 19 cups of water over a six-hour period!

Drinking yourself to death with water used to be considered virtually impossible; hyponatremia is certainly still rare in healthy people, and far less common than dehydration. But stories like Guevara's have caused race directors, researchers, coaches, everyday exercisers and the Institute of Medicine (IOM) of the National Academies of Sciences to look more seriously at how much fluid the body really needs. In February the IOM published the first-ever Dietary Reference Intakes for water and for electrolytes such as sodium and potassium chloride (which control the movement of water in and out of cells of your muscles and organs.) "[The guidelines are] part of an ongoing effort to emphasize nutrition, not just for preventing disease, but for making people optimally healthy," says Stella L. Volpe, Ph.D., R.D., a member of the IOM panel and the Miriam Stirl Term Endowed Chair in Nutrition at the University of Pennsylvania School of Nursing in Philadelphia.

To establish the new water-intake recommendations, the IOM panel spent two years examining hundreds of studies from peer-reviewed scientific journals on everything from normal fluid balance and kidney function to fluid needs for those who are ill. The panel concluded that healthy, sedentary women ages 19-50 who live in a temperate climate are adequately hydrated when they get:

- 2.7 liters, or 91 ounces, of water a day (for men its 3.7 liters). Divided into 8-ounce portions, that's the equivalent of 11.4 glasses a day.

- 81 percent of hydration from drinking water and other beverages, including coffee and tea (that's about nine 8-ounce glasses a day) and the remaining 19 percent from foods, especially fruits and vegetables. A Diet that includes plenty of produce also helps maintain a healthy electrolyte balance by adding potassium.

You may be thinking, "So what else is new?" After all, these guidelines come pretty close to matching the 8-ounce glasses of water a day "rule" that we've accepted- and tried to comply with- for the past 30 years. The so called "8x8" guideline directed us to drink eight glasses of water *on top* of everything else we drank. So it was actually more difficult to follow than these new recommendations. For example: Let's say you drink two cups of coffee and one cup of juice every morning. That's already 24-ounces; one-third of your 74-ounce liquid needs under the new guidelines- before you've even left the house! The best thing about these new Dietary Reference Intakes is that you can meet your hydration needs through a variety of sources.

And, for the first time, there is a scientific basis for the recommendation that we require about nine glasses of liquid a day.

Perhaps just as important is the IOM's finding that all beverages count toward the nine-glass goal (coffee and tea included) and that we can get part of our hydration needs met from *food*. "Every food you eat contains water- including dry foods like bread," explains Leslie Bonci, R.D., director of the sports nutrition program at the University of Pittsburgh Medical Center. In fact, most fruits and vegetables are 80-99 percent water, but even cake, bread and cheese are more than 20 percent water each.

Follow your thirst

Under normal circumstances, however, hydration isn't something we need to think about. "The minute you drink too much fluid, the kidney's want to pee it out," says kidney expert Heinz Valtin, M.D., a retired professor of physiology at Dartmouth Medical School in Hanover, N.H. (Valtim tried to find scientific studies to support the widely cited 8x8 water guideline, but his 2002 published report came up empty.) "When you don't have enough fluid, the kidneys retain it. The system that regulates the body's fluid balance is accurate, sensitive and fast. On it's own, it's remarkably efficient," he says.

The new water-intake report backs up Valtin's observation that our bodies know what they're doing: Most people meet their daily hydration needs simply by drinking when they're thirsty- and that includes beverages other than water, since they've almost entirely H20. That means your day's tally should factor in soft drinks, coffee and tea, which will come as a great relief to anyone who remembers the old hydration adage to drink an extra cup of water for every cup of caffeinated beverage consumed. That too is passé, it turns out: A study at the University of Nebraska published in 2000 found no significant differences in hydration when subjects drank caffeinated beverages and when they drank the same beverages without caffeine.

One Size *Doesn't* Fit All

Helpful though they are, however, the new guidelines are just averages and wouldn't have helped marathoner K.C. Guevara, since they don't account for activity or weather. In its report, the I0M panel grants that "higher intakes of total water will be required for those who are physically active or are exposed to a hot environment." Yet it doesn't say what those amounts are.

So if you're running in the heat, for example, it's tricky to figure your needs down to the ounce because each person's body handles fluid and electrolytes differently. "You can have two identical runners next to each other-same height, weight and conditioning- and one will lose more fluid than the other," says Douglas Casa, Ph.D., A.T.C., director of athletic training education at the University of Connecticut in Storrs. "You can't apply one-size-fits-all standards to hydration and exercise."

The conventional wisdom that you're already dehydrated by the time you're thirsty is an exaggeration that borders on being a myth in itself. When a lack of fluids makes minerals and other components in your blood more concentrated by about 2 percent, you naturally become thirsty. But you're not actually considered dehydrated until your blood concentrates by 5 percent. These numbers sound small, but 'that's a large amount of leeway," says Valtin. "If you're healthy, you could do nothing but follow your thirst and probably be OK."

Still, Casa says that when doing an aerobic activity for extended periods of time (as with long bike rides, hikes and runs) be careful not to consume too much fluid. Extended exercise, he says makes the kidneys less efficient at eliminating excess fluid because blood is shunted away from organs to working muscles - a problem that may have affected Guevara during her marathon.

On top of that, some people are more prone to sodium loss when they exercise heavily. "I'm a significant sodium loser," says University of Pittsburgh's Bonci. "I get a gritty feeling on my skin and I notice white caking around my waistband, sports bra - anyplace I sweat more." If you notice such signs after an extended workout, it's an indication your body is excreting a lot of sodium, so go ahead and down a sports drink to be safe.

Such drinks can help replace electrolytes and sodium, but Casa recommends that vigorous athletes ensure proper fluid balance by taking another step: Weigh yourself before and after your workouts and drink what you think is best while you exercise. "If you're lighter when you're done, you've lost fluid and you need to drink more. If you're heavier, you need to drink less," he explains. "With practice and training, you'll see how your fluid needs change with intensity and heat."

What to drink for a hot-weather workout

Summer is the time to move your exercise outside. But when the temperature is hotter and/or more humid than you're accustomed to, you'll need to pay special attention to your fluid intake to replace what you sweat out (and to prevent heat cramps, heat exhaustion or heatstroke). The American College of Sports Medicine offers these general recommendations for working out on a hot day:

- Down 20 ounces of water (about 2 1/2 cups) or a sports drink two or three hours before exercising.
- Consume another 10 ounces of water or a sports drink about 15 minutes before starting.
- During your workout, swig 10 ounces about every 15 minutes.
- After exercising, drink 20 ounces for every pound you lose working out. (to calculate your needs weigh yourself before and after workouts.)