

Drink It In

The best ways to stay hydrated, even when you're deep in the backcountry. BY LISA MARSHALL



REFILLING THE TANKS

Dean Karnazes and Topher Gaylord take a water break midrun.

STAY HYDRATED. It's just about the oldest advice in running. But when it comes to running trails, the stakes are raised.

"You tend to be off the beaten path in more extreme terrain and weather conditions—all of which can influence your fluid needs," says Suzanne Girard Eberle, R.D., author of *Endurance Sports Nutrition*. "And there are no aid stations out there if you get in trouble."

In high humidity or on hilly, strenuous terrain, the body pumps out more sweat—and electrolytes. On cold runs, a lack of thirst and aversion to stripping down in the woods for a pit stop often lulls runners into under-drinking. And beginning around 8,200 feet, runners may tend to urinate and exhale more, losing fluid with every breath.

"If you lose even 2 percent of your body weight, that can affect your performance," says Vail, Colorado-based Katie Mazzia, R.D., co-winner of the 106-mile Gore-Tex TransRockies trail run in 2008. "You won't ever see me out running without a water bottle."

Carrying enough water, though, is not the only way to make sure your body is getting the hydration it needs. Here's a primer to slaking your body's thirst.

THE DAY BEFORE: Drink enough that your urine is the color of light lemonade (roughly 100 ounces daily for men, and 72 ounces for women). Note that this should be true of *every* day, not only the day prior to a big race.

PRE-RUN: Drink 12 to 16 ounces of fluid two hours before you run. This gives your kidneys time to process the liquid, allowing for one last pit stop before hitting the trail. If you run first thing in the morning, down at least 8 ounces 15 minutes before you head out. If you're a coffee drinker, don't skip it. Research shows little or no diuretic effect from caffeine. And there are few things worse than a withdrawal headache at high altitude. ➔



GOT WATER?
At altitude you need more fluid than you do at sea level.

your MP3 player. Shoot for 4 to 8 ounces per 15 minutes. (Men, larger people, and well-trained athletes tend to sweat more and need more fluid.) Consider your location too. If you're running at altitude, you may require more fluids than you would at sea level, Mazzia says. In hot or humid weather or for runs over 90 minutes, add in a gel or sports drink to replace electrolytes lost through sweat. Shoot for 250 to 350 mg sodium per 15 ounces of fluid.

AFTER: Drink 16 to 24 ounces within 30 minutes, along with 1 gram of carbohydrate per kilogram of your body weight to replenish your glycogen stores. Two of the best recovery drinks are chocolate milk and a fruit smoothie. If possible, weigh yourself. If you've lost more than 3 percent of your body weight, re-evaluate your hydration strategy because you're under-consuming. And that's not something you want to make a habit of. **I**

DURING: If you're running less than an hour, an occasional sip should do the trick. For longer runs, "drink early and often," Mazzia says. "Your body absorbs that better than if you take a big gulp all at once." Set your watch to beep every few minutes, or take a sip after each song on

chocolate milk and a fruit smoothie. If possible, weigh yourself. If you've lost more than 3 percent of your body weight, re-evaluate your hydration strategy because you're under-consuming. And that's not something you want to make a habit of. **I**

THE BURNING QUESTION

What's the best way to carry your water?

The single most effective way to ferry your own water supply is the over-the-back hydration pack, according to a study conducted at the High Altitude Performance Lab at Western State College of Colorado in Gunnison, and presented at the 2010 American College of Sports Medicine Confer-

ence. Runners were tested on a treadmill without carrying anything and then with three different types of hydration scenarios: a single 20- or 22-ounce handheld water bottle (1.5 to 2 pounds with a gel in the pocket); both handheld bottles with gels (3.5 pounds); and hydration backpack

with 2 liters of water, two gels, and some other trail accessories (6.5 pounds). (Tool belts, like the one on page 98, weren't tested.) Runners wearing a hydration pack fared better in terms of heart rate, ventilation rate (the ease of movement of the lungs) and perceived exertion. —Adam W. Chase

Small, Yet Potent

Dissolving electrolyte tablets into your water bottle or hydration pack is a simple way to replenish the nutrients you lose while sweating out on the trails. Available in numerous flavors from several brands, one tablet dissolved in 16 to 24 ounces of water yields a hearty supply of sodium, potassium, calcium, and magnesium but few, if any, carbohydrates to avoid delays in absorption. Plus, they're easy to stash on long runs or in races when you refill your liquids. Look for 10- to 16-tablet tubes (\$6-\$10) at your favorite running store or outdoor shop.



A MOVEABLE FEAST

Don't forget about food.



Water isn't the only necessity of a long trail run. You also need to consider food. "People who transition from road to trail running need to keep in mind that they are probably going to burn significantly more calories per mile on trail," says sports nutritionist Shawn Talbott, Ph.D. You won't typically need to eat anything on a run of one hour or less. For longer runs, pack these:

CARBOHYDRATES: After 60 to 90 minutes, your body will burn through your blood glucose and begin to dip into glycogen stored in your muscles, eventually slowing you down once those stores are depleted. Start replenishing carbohydrates after 30 minutes and eat every half-hour. Shoot for 25 to 50 grams per hour for runs of one to two hours and 75 grams per hour for longer runs. TRY: fig bars (two = 23 g carbs), raisins (1/4 cup = 29g carbs), or PowerBar Energy Blasts chews (45 g carbs).

ELECTROLYTES: If you plan on being out longer than two hours or are running at high altitude or in hot weather, replenishing electrolytes can save you from leg cramps and a bloated stomach. So bring snacks containing sodium or potassium. TRY: pretzels (1 oz = 385 mg sodium), Clif Shot Bloks (70 mg sodium, 20 mg potassium, 24 g organic carbohydrate blend, 100 calories), nuts, or banana chips.

PROTEIN AND FAT: The longer the run, the more likely you'll want to move beyond electrolytes and carbs. Fat can serve as a secondary fuel source, and the branch-chain amino acids in protein are believed to fend off "central fatigue" (a.k.a. brain fog), repair tissue damage, and hasten recovery. TRY: a PB&J, cheese and crackers, or GU Roc-tane Ultra Endurance Energy Gel. —L.M.