

A Female Runner's Guide to Eating for Energy

Reach your full potential every day with the right diet.

BY ASHLEY MATEO

There are two key rules to a diet that will properly fuel your running goals. Rule no. 1: You have energy stored in your body. Rule no. 2: You replace that energy once you use it.

When you have enough energy, running should feel effortless. You'll notice, though, when you're lacking in that department. "Your legs may feel heavy, it may take a little longer to get going, or you can't tap into that turnover or next level you're reaching for," says Katie Kissane, a registered dietitian at UC Health and owner of Fuel 2 Run.

Energy, measured in calories, comes from food. After you eat, your body digests and breaks down the nutrients in your food so the mitochondria in your cells can produce something called adenosine triphosphate (ATP), the molecule that's responsible for storing and releasing energy in the body.

The absolute best thing you can do when it comes to fueling properly? Make sure you're getting enough calories, says Lauren Antonucci, a registered dietitian nutritionist and board-certified specialist in sports dietetics based in New York. That number is going to look different for every runner, but the Dietary Guidelines for Americans range from about 1,800 calories a day for sedentary women to 2,400 for active women (the more intense

your training, the more calories you're going to need—and it's important to stress that too many women are operating at a calorie deficit, Antonucci says).

But those are just numbers. What does that look on your plate, and how, exactly, will it fuel your runs? Let's break it down.

The Basic Building Blocks of Energy

Just like there are fundamental elements of any good training plan (think: speed work, strength training, recovery), a healthy runner's diet starts with three basic nutrients: carbohydrates, fat, and protein.

Your body actually burns a mix of carbs and fat when you run, Kissane says. But "carbs contain the kind of energy that your body can tap into the fastest," she explains. Carbs are broken down into glucose, which is released into the bloodstream. When that glucose isn't immediately needed, it's stored in the liver and muscles as glycogen (when it's time to tap into those reserves, your body converts the glycogen back into glucose). During higher-intensity efforts, you'll use a higher percentage of carbs than fat—that's because "carbs are the only fuel that we can access quickly enough to facilitate enough energy to keep us moving quickly," Antonucci says.

“Carbs are really going to be the most variable macronutrient.”

To start burning fat, your body needs carbs and oxygen, says Stacy Sims, an exercise physiologist and a nutrition scientist at the University of Waikato New Zealand, author of *Roar: How to Match Your Food and Fitness*. Because it needs oxygen to convert fat into energy, your body burns a higher percentage of fat during lower-intensity workouts, when you're breathing easier than during a sprint or at the end of a long-distance run. But fat takes longer to digest (which is why you don't use it to fuel up right before a run), Antonucci says, and the process of converting fat from where it's stored in your body's adipose tissue to energy takes longer than that with carbs. When oxygen is readily available, fat burns slowly and steadily to provide you with fuel throughout not just your run, but your entire day.

Your body can break down protein into fuel—but “it's a last resort your body reserves for when it thinks it's in starvation mode,” Kissane says. Instead, protein is necessary for muscle growth, repair, and maintenance, which ensures you're headed into each workout firing on all cylinders.

But not all macronutrients were created equally. The Food and Nutrition Board of the Institutes of Medicine (IOM) recommends people get 45 to 65 percent of their daily calories from carbohydrates, 10 to 35 percent from protein, and 20 to 35 percent from fat. Those ranges are really meant to serve as guidelines; your individual macronutrient ratio is going to depend on your body, your goals, and your training.

“Carbs are really going to be the most variable macronutrient,” says Kissane. “During high-volume training weeks, you're going to need more. But during a lighter week or in the off-season, you might scale back and up your fat and protein intake.”

Just as important as the macros are micronutrients, from vitamins A through K to calcium, potassium, copper, and zinc. These vitamins and minerals are necessary for energy production, fluid balance, bone health, and a many other essential functions.

A few standout micros? Iron, which two-thirds of women are deficient in, is one. The repetition of eccentric muscle contractions, which happen when running, triggers a heightened inflammatory response, and “when you have systemic inflammation, your body just can not absorb iron,” Sims says. Intentionally consuming iron can keep you from feeling the most common symptoms of a deficiency: fatigue and low muscle function, aka “like you're dragging all the time,” Kissane says. Vitamin D and calcium are two other standout micronutrients, considering that simply being female puts you at risk of developing osteoporosis and broken bones. “Vitamin D and calcium are crucial due to the pounding running puts on your body,” Antonucci says.

WHAT'S THE DEAL WITH SUPPLEMENTS?

Pre- and post-workout supplements are often billed as quick nutritional fixes, but any dietitian will tell you that the majority of your nutrients should come from—surprise—real food. In some circumstances, though, supplemental nutrition can serve as an insurance policy when it comes to hitting your recommended daily intakes. (Just remember, dietary supplements are not regulated by the FDA and you should always consult with your doctor before taking any.)

PROTEIN POWDERS: “Women break down more muscle tissue than men during endurance exercise,” says Sims, “and research shows that female athletes need more protein intake—not the general 0.8 grams per kilogram of body weight, but closer to 1.5 grams.” If that's tough to get from your diet, adding a powder to a drink can help you hit your quota, says Kissane.

VITAMINS: “A multivitamin—even a prenatal one, with folic acid, iron, and B12—can be a way of covering your bases,” says Kissane. Vegans and vegetarians may need vitamin B12 and D, which tend to come from animal-based products. And D3 can help maintain lean muscle mass, strengthen your immune system, improve bone health, and help your body better absorb iron, says Sims.

SUPERFOOD OR GREEN POWDERS: These blends contain broken down elements of superfoods, vitamins, minerals, and probiotics, and are designed to help you reach your Recommended Dietary Allowances for certain nutrients. “For those who aren't eating enough fruits and vegetables, these can be amazing products,” Antonucci says.

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Carbs are Key for High-Intensity Efforts
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The Right Way Get Your Buzz On

Consuming caffeine helped regular runners finish 1 percent faster during a 5K time trial, a study published in the *Journal of Science and Medicine in Sport* found. It also reduces the perception of fatigue in athletes and allows them to maintain their optimal intensity for longer, according to the Academy of Nutrition and Dietetics.

What Affects Your Energy Level?

It's not just what's on your plate that plays into how energetic you feel. Consider these six factors that can change things up in a big way.

HYDRATION

Losing as little as 1 to 2 percent of your body mass through sweat loss can decrease your alertness and ability to concentrate as well as increase fatigue, research published in the *European Journal of Clinical Nutrition* found. Sixty percent of your body is comprised of water, which means it plays a role in nearly every bodily function. Without it, your body has to work harder just to function, let alone fuel your activity.

SUGAR

You need the sugar you get from healthy carbs to fuel your runs. But relying on sugary foods and drinks for a "rush" or energy boost is a bad idea—they can actually make you feel less energetic (especially an hour after consuming them), a scientific review in *Neuroscience & Biobehavioral Reviews* found. That's because eating too many refined carbs—white breads, flour and rice, sweets, breakfast cereals, and added sugars—can lead to insulin resistance, which prevents your body from using glucose for energy.

ALCOHOL

A cold beer after a run might seem like a great way to wind down, and the sedative effect it has on your central nervous system will make you fall asleep faster, a scientific review in *Alcoholism: Clinical and Experimental Research* says. But after that, it messes with your sleep quality and quantity, research in the journal *Alcohol* reports, and negatively alters normal immunoendocrine function, blood flow, and protein synthesis, which is likely to impair your recovery and your performance, according to a study published in the journal *Sports Medicine*.

SLEEP

The less sleep you get, the more fatigue and less energy you're likely to experience during your workout. In fact, research published in *Sports Medicine* showed a reduction in sleep quality and quantity could simulate symptoms of overtraining syndrome, like depression and heart rate problems. Plus, "chronic sleep deprivation may impact our ability to metabolize carbs for fuel," Kissane says. The less sleep we get, the less sensitive we are to insulin, the hormone that controls blood sugar, she explains. That leaves people craving sweets, which can make you feel sluggish. (Get a full guide to sleeping better in 2021 on p. 48.)

STRESS

Running increases your body's release of cortisol, the stress hormone, says Sims. That's a good thing in the short-term, because it triggers the release of glucose, (that immediate energy source). But chronic stress (like the kind you might be experiencing from the state of the world right now) actually decreases your mitochondria's capacity for energy production, research from the journal *Psychosomatic Medicine* shows, which inhibits ATP production—making it harder for your body to generate the energy it needs to exercise.

WEATHER

Here's one you can't control. "Your body works on a yearly circadian rhythm, so your internal temperature changes with the seasons," says Sims. When that temp is lower (hello, winter running), you'll feel a little more sluggish and take a little longer to find your groove than when it's warmer out. "You're also going to burn more calories on a cold run than during the same distance in moderate conditions, because your body has to work harder not just to keep itself warm, but to warm up the air you're breathing in so you don't damage your lungs," she says.

60%

of your body is comprised of water, which means it plays a role in nearly every bodily function.

TROUBLESHOOTING YOUR ENERGY DIPS

If you feel like something's off, ask yourself these questions to see if your diet is to blame.

"Am I dehydrated?"

Even mild dehydration can affect your energy levels, mood, and ability to think clearly, according to studies conducted at the University of Connecticut's Human Performance Laboratory.

"How long has it been since my last meal?"

How often we eat is a personal preference. Some people prefer three meals a day, others six, and others more or less. You should have either a well-balanced meal at least two hours before a run or a healthy snack that combines protein and carbs 30 minutes beforehand.

"Am I depriving myself of certain foods?"

Restrictive diets that rely on cutting or limiting certain nutrients can throw a major roadblock in the way of your training. "You can't just decide to do a juice cleanse and still do 50 miles a week," says Kissane. "That's like expecting a car to go without putting fuel in the engine."

"Did I recently step up my mileage or speed?"

As your training volume or intensity increases, so do your energy needs. "Runners have to adjust their caloric intake to meet those new needs," says Antonucci. Your body won't be able to sustain that new mileage or speed if it's operating on a calorie deficit.

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Fuel Smart, Run Strong

When you eat is almost as important as what you eat. Not many runners want to hit the road (or trail!) on a full stomach, but running fasted—i.e. after a night's sleep or at least four hours after your last meal—“prolongs a state of low energy by creating a cascading scenario in which your resting metabolic rate decreases and then so do your fitness adaptations,” says Sims.

If you're a first-thing-in-the-morning runner, you should try to eat something within the 30 minutes before you head out the door. “It's not necessarily about fueling, but about bringing your glucose levels up,” says Sims. That could be a banana or half a piece of toast, or even a cold brew with almond milk and a scoop of protein powder—the key is getting 100 to 150 calories of protein and carbs, says Sims.

Those who prefer later runs should be fine as long as they eat a well-balanced meal (remember those macronutrients) within three hours of their workout, but a snack of protein and carbs 30 minutes beforehand won't hurt, either.

Keep in mind, the intensity of your run will affect what you eat, too—no one wants to do a track workout or any other heart rate-spiking run on a full stomach. You'll need more energy for long or high-intensity runs, so you're better off eating a full, balanced meal up to four hours before. A pre-run drink, whether that's four ounces of coffee with almond milk or a smoothie, can help you get some additional fluid and nutrients on board without making you feel full, says Sims. On the flip side, you probably don't need food before an easy run (up to 60 minutes); slower paces don't require quite as much fuel.

No matter the intensity, when you're clocking more than 90 minutes, you should carry fuel on you—that allows you to keep those glucose levels topped off so you're not solely relying on glycogen storage (and risking bonking). General guidelines suggest runners take in 30 to 60 grams of carbohydrates per hour in the form of gels, chews, or sports drink.

Speaking of drinks, that old “eight cups a day” rule is a myth, says Sims. “An easy, more individualized rule of thumb is to drink half your body weight in fluid ounces,” says Antonucci. Then, account for how much you sweat. “You can lose 24 to 32 ounces of fluid an hour while exercising,” says Antonucci, “and afterwards, you need to replace that.”

When it comes to hydrating before a run, “sip on no more than 16 ounces—maybe with a little salt in or an electrolyte tablet—about an hour or 90 minutes ahead of time so your body can absorb it,” says Sims.

Those electrolytes come into play especially during longer runs. Electrolytes are minerals (like sodium and potassium) that help regulate muscle function. If you start running low, your muscles aren't going to fire the way you want them to. To figure out how much fluid you should carry with you on a long run, you can weigh yourself before and after you've trained for an hour—the difference in your weight translates to how much fluid you need per hour, says Sims.

You don't need an expert to tell you endurance exercise is depleting, but on a physiological level, “your body goes into a breakdown state,” says Sims. “If you don't get a trigger to stop that breakdown, it stays in that state, which makes you slow, it makes you tired, it breaks down lean muscle mass, and it puts on body fat.” (All of which will slow you down during your next run.)

That's why the longer and more intense your run, the more crucial that post-exercise refueling period is. “If you're going out for a 30- to 40-minute easy run, just use your breakfast for recovery, or your lunch if you're going for a lunchtime run,” she says. Otherwise, use that 30-minute post-run window to kick-start your recovery process. Try to follow up a run with a mix of carbs and protein that will replenish your glycogen stores and give your muscles the nutrients they need to rebuild—so you can kick off your next run feeling stronger than ever. ♦

Let's Talk About Bonking

You've probably heard runners talk about bonking or hitting the wall (or maybe you've experienced it yourself). Here's what happens: Your body can only store a finite amount (about two hour's worth) of glycogen. The lower those levels get, the less energy you'll have—and the less likely you'll be able to go as hard or far as you planned. If those levels get totally depleted, your body has to rely solely on fat for energy (reminder: that conversion process takes a lot longer).



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