

# Powerhouses

COULD TEENY TINY CELLULAR STRUCTURES HOLD THE KEY TO BETTER HEALTH?

By Kristin Canning

Your mitochondria aren't exactly something you spend much time thinking about. Then again, neither was your microbiome just a few years ago. But emerging research suggests that the bean-shaped structures in your cells could be just as important as those microscopic gut bugs.

Quick eighth-grade-bio refresher: Mitochondria are your cells' power sources, converting food into ATP, a fuel that powers everything from nerves firing in your brain to the movement of your muscles, including the beating of your heart. Today, some experts—including *WH* advisory board member Frank Lipman, MD, founder of Eleven Eleven Wellness Center—believe mitochondria play an even larger role in wellness, and having healthy ones can help boost energy levels.

The flip side: When your mitochondria aren't in top shape, you won't be either. Mito sluggishness can leave you extra foggy and

tired—a condition Dr. Lipman calls FLC, or “feel like crap” syndrome, which may slow your metabolism.

We naturally produce fewer mitochondria as we age, and everyday stressors can cause irreparable damage to the ones we still have: Being in a nail-biting situation for just five minutes can cause mitochondria to eject DNA into the bloodstream, relaying stress to the rest of the body, according to recent research from Columbia University. This stress can cause body-wide inflammation that has been linked to neurodegenerative diseases like Alzheimer's.

Scientists are still discovering exactly how much mitochondria impact our well-being, but keeping them healthy is a must, says Marni Falk, MD, executive director of the Mitochondrial Medicine Frontier Program at Children's Hospital of Philadelphia. Luckily, the habits that keep *you* well make mito happy too. Here's how to charge your batteries.

## MANAGE YOUR MENU

Like your keto-following pal, mitochondria love healthy fats (think avocados, olives, and nuts), says Dr. Lipman. Add more salmon and mackerel to your diet; the omega-3s found in fatty fish may boost mitochondrial function. Along with omega-3s, getting enough vitamin C, zinc, B vitamins, and magnesium helps protect mitochondria from oxidative damage. (Nutritional deficiencies can impair mitochondrial production of ATP.)

## TAKE TIME TO CHILL

People who practiced relaxation training for just 20 minutes a day, including deep-breathing exercises and meditation, had more efficient and resilient mitochondria in just eight weeks, according to a study in *PLOS ONE*. Listen to a guided app, do some deep-breathing exercises during your commute, ease your way through a few calming yoga stretches. Or book a post-workout massage—therapeutic rubdowns have been shown to reduce inflammation and promote the growth of mitochondria after strenuous exercise.

## SWEAT IN INTERVALS

Mitochondria thrive on exercises that involve bursts of speed and recovery, like walking or cycling intervals. HIIT workouts are so beneficial because intense periods of activity spur an increase in ATP production and can reverse age-related decline in mitochondrial functioning. If possible, take your sweat sesh outside. Vitamin D from sun exposure can make mitochondria more efficient. Chilly weather has a similar effect. If it's hot where you live, turning your post-workout shower cool for a minute before you get out also does the trick, says Dr. Lipman.

