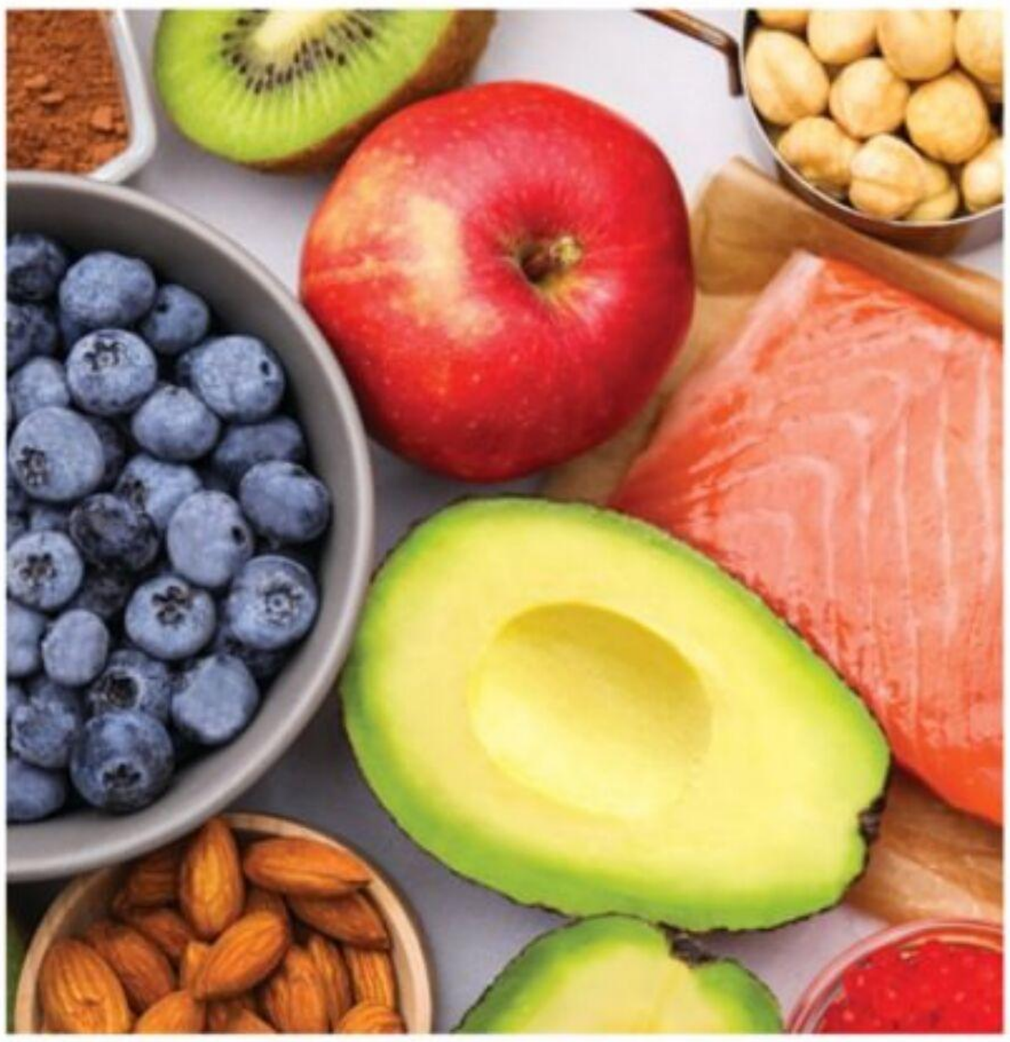
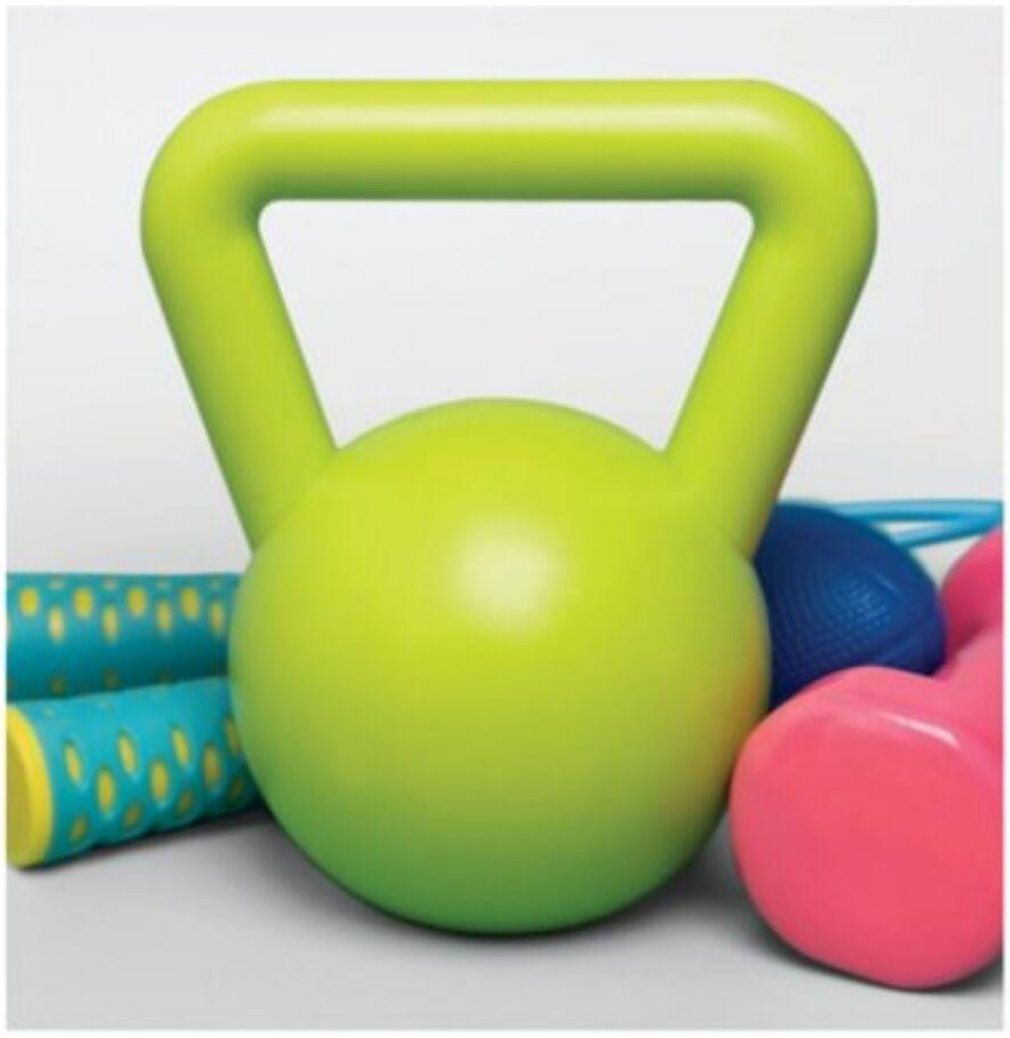
SPECIAL TIME EDITION

Weight Loss Breakthroughs

What Really Works • New Answers and Benefits
Medical Experts' Advice • Ozempic, Wegovy, and More





SPECIAL TIME EDITION

WEIGHT LOSS BREAKTHROUGHS

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A NEW FUTURE FOR WEIGHT LOSS

The Ozempic revolution is changing the narrative about why some of us are overweight. It was never about willpower.

BY JENNIFER TZESES

Weight loss is at a tipping point. For the millions of Americans struggling to lose weight and keep it off and the estimated 40 percent of U.S. adults who are clinically obese, a class of medications largely known as glucagon-like peptide 1 (GLP-1) agonists is changing the landscape and making it easier to lose weight for good.

GLP-1 agonists are not new. They've long been used to control type 2 diabetes by mimicking a gut hormone known as glucagon-like peptide 1, which helps lower blood sugar after eating by prompting the body to produce more insulin. The real breakthrough for weight loss is that these medications curb hunger by delaying stomach emptying and eliciting a faster, longer-lasting feeling of satiety.

The majority of people on these drugs lose 15 percent or more of their total body weight—"enough to improve serious conditions like heart disease, sleep apnea, fatty liver disease, and kidney disease," says Susan Yanovski, MD, co-director of the office of obesity research and senior scientific adviser for clinical obesity research at the National Institute of Diabetes and Digestive and Kidney Diseases.

Those who've long battled the bulge report that these meds turn off the food noise, allowing them to make healthy choices. "I have patients who never really knew what fullness felt like before," says Andrew Kraftson, MD, director of the Weight Navigation Program and the Post-Bariatric Endocrinology Clinic at University of Michigan Health. "The fact that they're not thinking about food all the time, they're satisfied with less, and they can eat a meal and not feel hungry an hour later is a revelation."

The drugs "also have a powerful action in the brain that enhances satiation [how satisfied you are with your food] as well as satiety [how satisfied you are in between meals]," Kraftson says.

But one of the most important impacts of this medication revolution is how it's changing the narrative around obesity. For too long, there has been a misperception that obesity stems from a lack self-control. But the drugs' success confirms that obesity has physiological causes. "People think it's a matter of willpower—if they would only push food away from the table, they should be able to lose weight and keep it off," Yanovski says. "But we know there's a biological basis for obesity."

That is a key reason why lifestyle changes alone don't work for many obese people. "Those who struggle with excess weight navigate hunger cravings and portions differently, biologically, hormonally, and metabolically," Kraftson says. "For those people who respond well to medication, we can now see there was a problem in their circuitry."

New findings are bolstering the gut-brain connection. "We now have science that shows injury [visible on MRI scans] to neurons in the brain when people are exposed to certain foods, like saturated fats and refined carbohydrates," says Jamy Ard, MD, president of the Obesity Society and co-director of the Wake Forest Baptist Health Weight Management Center. "That injury leads to a persistent change in how the body handles calories and knowing when it's full. It could be a prime event for the development of obesity." While GLP-1 agonists are offering new hope, there's a limit to the amount of weight loss that can be achieved on them. So bariatric surgery can be crucial to the long-term management of obesity.

Bariatric surgery is still the gold standard for attaining the most weight loss—upwards of 30 percent—and keeping it off. Interestingly, stomach reduction isn't the main reason surgery leads to significant weight loss. "It changes the secretion of multiple hormones, including GLP1, that go from the gut to the brain," says Caroline Apovian, MD, co-director of the Center for Weight Management and Wellness at Brigham and Women's Hospital in Boston. Adds Krafton, "It flips a metabolic switch in the brain so that your hormones tell you to feel less hungry and fuller."

Healthy eating is still a big part of the equation, even for people on weight-loss meds. The National Institutes of Health (NIH) recently launched the Nutrition for Precision Health Study to help determine which characteristics (genetics, microbiome, lifestyle) predict why some ways of eating are better for some people than others. The aim, says Holly L. Nicastro, PhD, scientific lead and coordinator for the Nutrition for Precision Health study at the NIH, is to "help us build better diet and nutrition recommendations tailored to individual biology, lifestyle, and goal."

While there isn't a one-size-fits-all prescription for weight loss, there are better tools than ever. Medication is important, "but so is nutrition, physical activity, stress management, sleep—all of these other things that go into what we ultimately think of as a healthy lifestyle," says Ard. ◻

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THE FOUNDATION

Science is revealing how to approach weight management now—including the key question of how to eat to feel satisfied and keep off unwanted pounds.

NO ONE KNOWS HOW TO TALK ABOUT WEIGHT LOSS ANYMORE

As body positivity collides with Ozempic, it's trickier than ever to figure out where you stand on weight management.

BY JAMIE DUCHARME

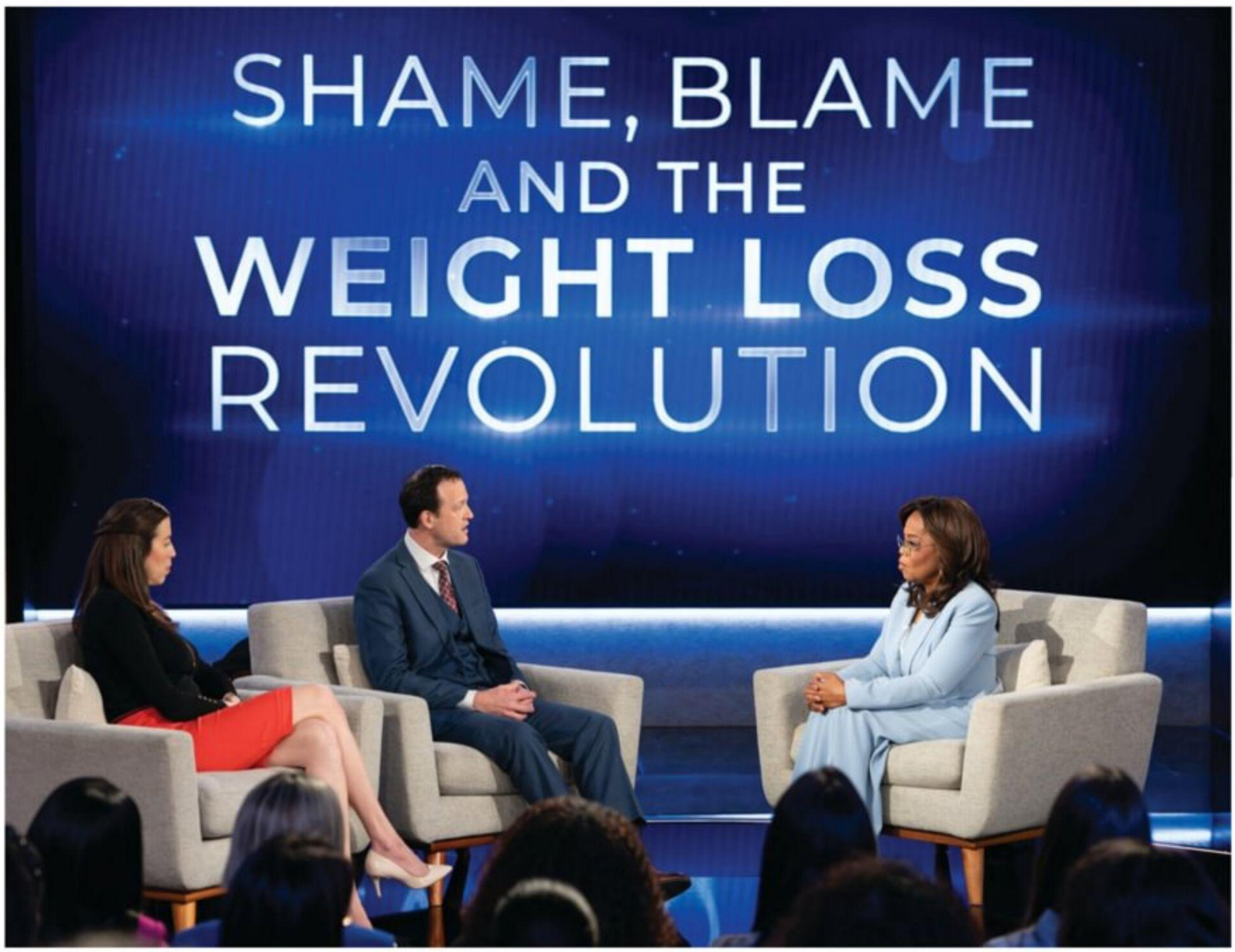
JESS, 38, HAS LOST 75 POUNDS SINCE SHE started taking Wegovy last year. She is thrilled with the results—in addition to the weight she's lost, her blood work and sleep apnea have improved—but the changes to her life and body feel too fraught to talk about with her friends, who want nothing to do with her weight loss.

Years ago, Jess (who asked that only her first name be used) and her friends embraced the principles of the Health at Every Size movement, which fights against anti-fat bias and argues that weight is not an accurate indicator of health. But last summer, despite her support for that school of thought, Jess decided that she wanted to lose weight to feel better in her body. When she mentioned the decision to her friends, "they told me, 'We have no interest in this conversation. We do not want to discuss this with you. We don't agree with your choice,'" she remembers. "I respect their boundaries, but it's been difficult not to share certain milestones with them or even talk about day-to-day things. It's been kind of sad and lonely." These days, she only discusses her weight loss with her doctor and her husband.

Weight loss has always been a fraught topic. But it's especially complex to talk about in 2024, as body-positivity movements collide with the popularity of drugs such as Ozempic, Wegovy, and Zepbound. Largely because of these medications, weight loss is all over the news and social media—and nobody, it seems, knows exactly how to feel or talk about it.

"It's such a sensitive topic because we can hide so much about our lives," says Rachel Goldman, a New York City–based clinical psychologist who specializes in weight management and has consulted for a health care company that prescribes anti-obesity medications. "But if you're gaining weight or losing weight, somebody's going to see it."

Even many health care providers, who talk about sensitive topics all day long, find weight loss a uniquely challenging subject, says Charlotte Albury, a medical anthropologist at the University



On a 2024 ABC special, Oprah Winfrey sat down with medical experts and ordinary people to explore the impact of weight-loss drugs.

of Oxford in the U.K. who studies communication in health care settings. That's in part because there's so much "shame and blame and stigma that society perpetuates around obesity," she says, and in part because "lots of clinicians feel very undertrained in talking about obesity."

If clinicians feel undertrained, where does that leave the rest of us?

When it comes to societal opinions about weight loss, the pendulum has swung far in just a few decades. Not too long ago, nearly all of mainstream culture treated weight loss as aspirational. Now, although weight stigma is still a significant issue in the U.S., the weight-loss discussion includes far more dissenting voices than it once did.

In March 2024, when Oprah Winfrey aired a (mostly positive) television special about GLP-1 agonists—the technical name for medications like Ozempic and Wegovy—she alluded to the myriad opinions about modern weight loss. "For people who feel happy and healthy celebrating life in a bigger body and don't want the medications, I say 'Bless you,'" Winfrey said. "For all the people who believe diet and exercise is the best and only way to lose excess weight, bless you, too, if that works for you. And for the people who think that this could be the relief and support and freedom . . . that you've been looking for your whole life, bless you, because there is space for all points of view."

Often, though, those points of view butt up against one another. Some people trying to lose weight, like Jess, feel conflicted, both glad that society is taking a hard look at diet culture and also hesitant to say anything positive about weight loss for fear of being accused of fatphobia. (A recent *New York Times* article highlighted the tricky situation some body-positivity influencers face when they get smaller, with their followers sometimes viewing

weight loss as a betrayal.) Margit Berman, a psychologist based in Minnesota who fights against diet culture in her practice, says some of her clients also hide that they're using GLP-1 drugs for diabetes, the condition for which Ozempic and Mounjaro are approved, because they're afraid of being blamed for being sick because of their weight.

Other people apparently don't feel as conflicted. Demand for GLP-1 medications is booming, with some projections estimating that around 10 percent of the U.S. population will be using one of the drugs by 2030. And while many people use these medications based on the advice and prescription of a physician, some are so eager to drop pounds that they're willing to buy drugs like Ozempic from compounding pharmacies, med spas, internet companies, and other questionable sources.

Then there are those who are open about wanting to lose weight, but only the old-fashioned way—that is, with diet and exercise, rather than "cheating" by using medications. In a 2024 Pew Research Center poll, about half of U.S. adults said drugs such as Ozempic are good weight-loss options for people with obesity, while roughly as many either said they're not good options or that they weren't sure what to think.

Similar trends are playing out among physicians. Some doctors talk about GLP-1s as revolutionary treatments for the chronic disease of obesity, lauding not only their ability to help people shed roughly 20 percent of their body weight but also their benefits for cardiovascular health. Goldman adds that anti-obesity medications may help reduce weight stigma, because they may help people see obesity as a disease requiring treatment.

Other doctors, meanwhile, argue that GLP-1 drugs come with significant drawbacks—side effects include GI issues and, possibly, increased risk of thyroid tumors, and most people gain back the weight they lost if they stop taking them—and help perpetuate the harmful belief that smaller bodies are automatically better and healthier. Berman thinks GLP-1 drugs contribute to "magical thinking" rooted in anti-fat bias: that weight loss is the easiest way to a good life.

Silvana Pannain, MD, director of the University of Chicago Medicine's weight-loss program and an adviser to companies that make GLP-1 drugs, thinks that disagreement has probably always been there, but social media and the buzz about GLP-1 drugs are now amplifying it. "It's not necessarily a different way of thinking, but that more people feel the right to voice their opinion about obesity," Pannain says.

> **"FOR PEOPLE WHO FEEL HAPPY AND HEALTHY CELEBRATING LIFE IN A BIGGER BODY AND DON'T WANT THE MEDICATIONS, I SAY 'BLESS YOU.' FOR ALL THE PEOPLE WHO BELIEVE DIET AND EXERCISE IS THE BEST WAY TO LOSE EXCESS WEIGHT, BLESS YOU, TOO."**
>
> —OPRAH WINFREY

Berman, however, has noticed a change. When she started speaking out against weight-loss culture in the early 2000s, "People looked at me like I had three heads," she remembers. "The culture was that fat hatred was acceptable and everyone should be trying to lose weight. There wasn't the same [weight-positive] countercultural stream that there is now."

Still, thin preference remains dominant in the U.S. Even as more people outwardly embrace body positivity and acknowledge that weight loss is a complex topic, a significant percentage of U.S. adults say they want to slim down—as of 2023, about 55 percent of women and 47 percent of men, roughly the same numbers as a decade ago. Almost 30 percent of U.S. adults in a 2023 study said that their worry about having obesity had increased since the COVID-19 pandemic, with about 6 million saying they'd considered surgery or medication in recent years. Americans still want to lose weight. They just may not feel comfortable announcing that intention proudly anymore.

Jess, the woman using Wegovy, says all she wants is to land on a middle ground, somewhere between rabid diet culture and feeling shunned by her friends because of her GLP-1 prescription. "We need to somehow neutralize" the idea of weight loss, removing the moral baggage attached to either deciding to drop pounds or choosing not to, she says: "In a world where a lot of us believe that our body is our choice, this is another one of those things that should go into that category." ◻

WHY DIETS FAIL— AND WHAT WORKS

"Eat less and exercise more" doesn't always lead to lasting weight loss. Scientists are slowly unraveling the mystery of what makes some dieters successful in the long haul. That's good news for everyone.

BY ALEXANDRA SIFFERLIN

LIKE MOST PEOPLE, KEVIN HALL USED to think the reason people get fat was simple.

"Why don't they just eat less and exercise more?" he remembers thinking. Trained as a physicist, the calories-in-versus-calories-burned equation for weight loss always made sense to him. But then his own research—and the contestants on a smash reality-TV show—proved him wrong.

Hall, a scientist at the National Institutes of Health (NIH), started watching *The Biggest Loser* on the recommendation of a friend. "I saw these folks stepping on scales, and they lost 20 pounds in a week," he says. On the one hand, it tracked with widespread beliefs about weight loss: The workouts were punishing and the diets restrictive, so it stood to reason the men and women on the show would slim down. Still, 20 pounds in a week was a lot. To understand how they were doing it, Hall decided to study 14 of the contestants for a scientific paper.

He quickly learned that in the land of reality TV, a week doesn't always translate into a precise seven days. But no matter: The weight being lost was real, speedy, and huge. Over the course of the season, the contestants each lost an average of 127 pounds and about 64 percent of their body fat. If Hall's study could uncover what was happening in their bodies on a physiological level, he thought, maybe he'd be able to help the staggering 71 percent of American adults who are overweight.

What he didn't expect to learn was that even when the conditions for weight loss are TV-perfect—with a tough but motivating trainer, telegenic doctors, strict meal plans and killer workouts—the body will, in the long run, fight like hell to get that fat back. Over time, 13 of the 14 contestants Hall studied regained, on average, 66 percent of the weight they'd lost on the show, and four were heavier than they had been before the competition.

That may be depressing enough to make even the most motivated dieter give up. "There's this notion of why bother trying," says Hall. But finding an-

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swers to the weight-loss puzzle has never been more critical. The vast majority of American adults are overweight; nearly 40 percent are clinically obese. And doctors now know that excess body fat dramatically increases the risk of serious health problems, including type 2 diabetes, heart disease, depression, respiratory problems, major cancers, and even fertility issues. A 2017 study found that obesity now drives more early preventable deaths in the U.S. than smoking. This has fueled an industry worth $66.3 billion, selling everything from diet pills to meal plans to fancy gym memberships.

It's also fueled a rise in research. In 2016, the NIH provided an estimated $931 million in funding for obesity studies, including Hall's, and that research is giving scientists a new understanding of why dieting is so hard, why keeping the weight off over time is even harder, and why the prevailing wisdom about weight loss seems to work only sometimes—for some people.

What scientists are uncovering should bring fresh hope to the 155 million Americans who are overweight, according to the U.S. Centers for Disease Control and Prevention. Leading researchers finally agree, for instance, that exercise, while critical to good health, is not an especially reliable way to keep off body fat over the long term. And the overly simplistic arithmetic of calories in versus calories out has given way to the more nuanced understanding that it's the composition of a person's diet rather than how much of it they burn off working out that sustains weight loss.

They also know that the best diet for you is likely not the best diet for your next-door neighbor. Individual responses to different plans—from low-fat and vegan to low-carb and paleo—vary enormously. "Some people on a diet program lose 60 pounds and keep it off for two years, and other people follow the same program religiously and gain 5 pounds," says Frank Sacks, MD, a weight-loss researcher and professor of cardiovascular disease prevention at the Harvard T.H. Chan School of Public Health. "If we can figure out why, the potential to help people will be huge."

Hall, Sacks and other scientists are showing that the key to weight loss appears to be highly personalized rather than based on trends. And while weight loss will never be easy, the evidence is mounting that it is possible for anyone to reach a healthy weight. People just need to find their best way there.

Dieting has been an preoccupation in America since long before the current obesity epidemic took off in the 1980s. In the 1830s, Presbyterian minister Sylvester Graham touted a vegetarian diet that excluded spices, condiments, and alcohol. At the turn of the 20th century, it was fashionable to chew food until it liquefied, sometimes up to 722 times before swallowing, thanks to the advice of a popular nutrition expert named Horace Fletcher. Lore has it that at about the same time, President William Howard Taft adopted a fairly contemporary plan—low-fat, low-calorie, with a daily food log—after he got stuck in a White House bathtub.

The concept of the calorie as a unit of energy had been studied and shared in scientific circles throughout Europe for some time, but it wasn't until World War I that calorie counting became de rigueur in the U.S. Amid global food shortages, the American government needed a way to encourage people to cut back on their food intake, so it issued its first ever "scientific diet" for Americans, which had calorie counting at its core.

In the following decades, when being rail-thin became ever more desirable, nearly all dieting advice stressed meals that were low-calorie. There was the grapefruit diet of the 1930s (in which people ate half a grapefruit with every meal out of a belief that the fruit contained fat-burning enzymes) and the cabbage soup diet of the 1950s (a flatulence-inducing plan in which people ate cabbage soup every day for a week alongside low-calorie meals).

The 1960s saw the beginning of the massive commercialization of dieting in the U.S. That's when a New York housewife named Jean Nidetch began hosting friends at her home to talk about their issues with weight and dieting. Nidetch was a self-proclaimed cookie lover who had struggled for years to slim down. Her weekly meetings helped her so much—she lost 72 pounds in about a year—that she ultimately turned those living-room gatherings into a company called Weight Watchers. When it went public in 1968, she and her cofounders became millionaires overnight.

What most of these diets had in common was an idea that is still popular today: Eat fewer calories and you will lose weight. Even the low-fat craze that kicked off in the late 1970s—which was based on the intuitively appealing but incorrect notion that eating fat will make you fat—depended on the calorie-

counting model of weight loss. Since fatty foods are more calorie-dense than, say, plants, logic suggests that if you eat less of them, you will consume fewer calories overall and lose weight.

That's not what happened when people went low-fat, though. The diet trend coincided with weight gain. In 1990, adults with obesity made up less than 15 percent of the U.S. population. By 2010, most states were reporting obesity in 25 percent or more of their population. Today that has swelled to 40 percent of the adult population. For kids and teens, it's 17 percent.

Research like Hall's is beginning to explain why. As demoralizing as his initial findings were, they weren't altogether surprising: More than 80 percent of people with obesity who lose weight gain it back. That's because when you lose weight, your resting metabolism (how much energy your body uses when at rest) slows down—possibly an evolutionary holdover from the days when food scarcity was common.

What Hall discovered, however—and what frankly startled him—was that even when the *Biggest Loser* contestants gained back some of the weight, their resting metabolism didn't speed up along with it. Instead, in a cruel twist, it remained low, burning about 700 fewer calories per day than it had before they started losing weight in the first place. "When people see the slowing metabolism numbers," Hall says, "their eyes bulge, like, 'How is that even possible?'"

The contestants would lose a lot of weight in a relatively short period of time—admittedly not how most doctors recommend you lose weight—but research shows that the same slowing metabolism Hall observed tends to happen to regular Joes, too. Most people who lose weight gain back what they lost at a rate of 2 to 4 pounds per year.

For the 2.2 billion people around the world who are overweight, Hall's findings can seem like a formula for failure—and, at the same time, scientific vindication. They show that it's indeed biology, not simply a lack of willpower, that makes it so hard to lose weight. The findings also make it seem as if the body itself will sabotage any effort to keep weight off in the long term.

But a slower metabolism is not the full story. Despite the biological odds, there are many people who succeed in losing weight and keeping it off—without medications or surgery. Hall has seen it happen

WHEN PEOPLE SEE THE SLOWING METABOLISM NUMBERS, THEIR EYES BULGE, LIKE, 'HOW IS THAT EVEN POSSIBLE?'"

—KEVIN HALL, NIH RESEARCHER

more times than he can count. The catch is that some people appear to succeed with almost every diet approach—it just varies from person to person.

"You take a bunch of people and randomly assign them to follow a low-carb diet or a low-fat diet," Hall says. "You follow them for a couple of years, and what you tend to see is that average weight loss is almost no different between the two groups as a whole. But within each group, there are people who are very successful, people who don't lose any weight, and people who gain weight."

Understanding what it is about a given diet that works for a given person remains the holy grail of weight-loss science. But experts are getting closer.

For the past 23 years, Rena Wing, PhD, a professor of psychiatry and human behavior at Brown University, has run the National Weight Control Registry (NWCR) as a way to track people who successfully lose weight and keep it off. "When we started it, the perspective was that almost no one succeeded at losing weight and keeping it off," says James O. Hill, PhD, Wing's collaborator and an obesity researcher at the University of Colorado. "We didn't believe that was the case, but we didn't know for sure because we didn't have the data."

To qualify for initial inclusion in the registry, a person must have lost at least 30 pounds and maintained that weight loss for a year or longer. Today the registry includes more than 10,000 people from across all 50 states with an average weight loss of 66 pounds per person. On average, people on the current list have kept off the weight they lost for more than five years.

The most revealing detail about the registry: Everyone on the list has lost significant amounts of weight—but in different ways. About 45 percent of them say they lost weight following various diets on their own, for instance, and 55 percent say they used a structured weight-loss program. And most of them had to try more than one diet before

the weight loss stuck. The researchers have identified some similarities among them: 98 percent of the people in the study say they modified their diet in some way, with most cutting back on how much they ate in a given day. Another through line: 94 percent increased their physical activity, and the most popular form of exercise was walking.

"There's nothing magical about what they do," Wing points out. "Some people emphasize exercise more than others, some follow low-carb diets, and some follow low-fat diets. The one commonality is that they had to make changes in their everyday behaviors."

When asked how they've been able to keep the weight off, the vast majority of people in the study say they eat breakfast every day, weigh themselves at least once a week, watch fewer than 10 hours of television per week, and exercise for about an hour a day, on average.

THE RESEARCHERS FOUND THAT PEOPLE WHO KEPT THE WEIGHT OFF TENDED TO BE MOTIVATED BY SOMETHING OTHER THAN A SLIMMER WAIST, LIKE A HEALTH SCARE OR THE DESIRE TO LIVE A LONGER LIFE.

The researchers have also looked at people's attitudes and behavior. They found that most of the participants do not consider themselves to be type A, dispelling the idea that only obsessive superplanners can stick to a diet. They learned that many successful dieters were self-described morning people. (Other research supports the anecdotal: For some reason, night owls tend to weigh more than larks.) The researchers also noticed that people with long-term weight loss tended to be motivated by something other than a slimmer waist, like a health scare or the desire to live a longer life, to be able to spend more time with loved ones.

The researchers at the NWCR say it's unlikely that the people they study are somehow genetically endowed or blessed with a personality that makes weight loss easy for them. After all, most people in the study say they had failed several times before when they had tried to lose weight. Instead, they were highly motivated, and they kept trying different things until they found something that worked for them.

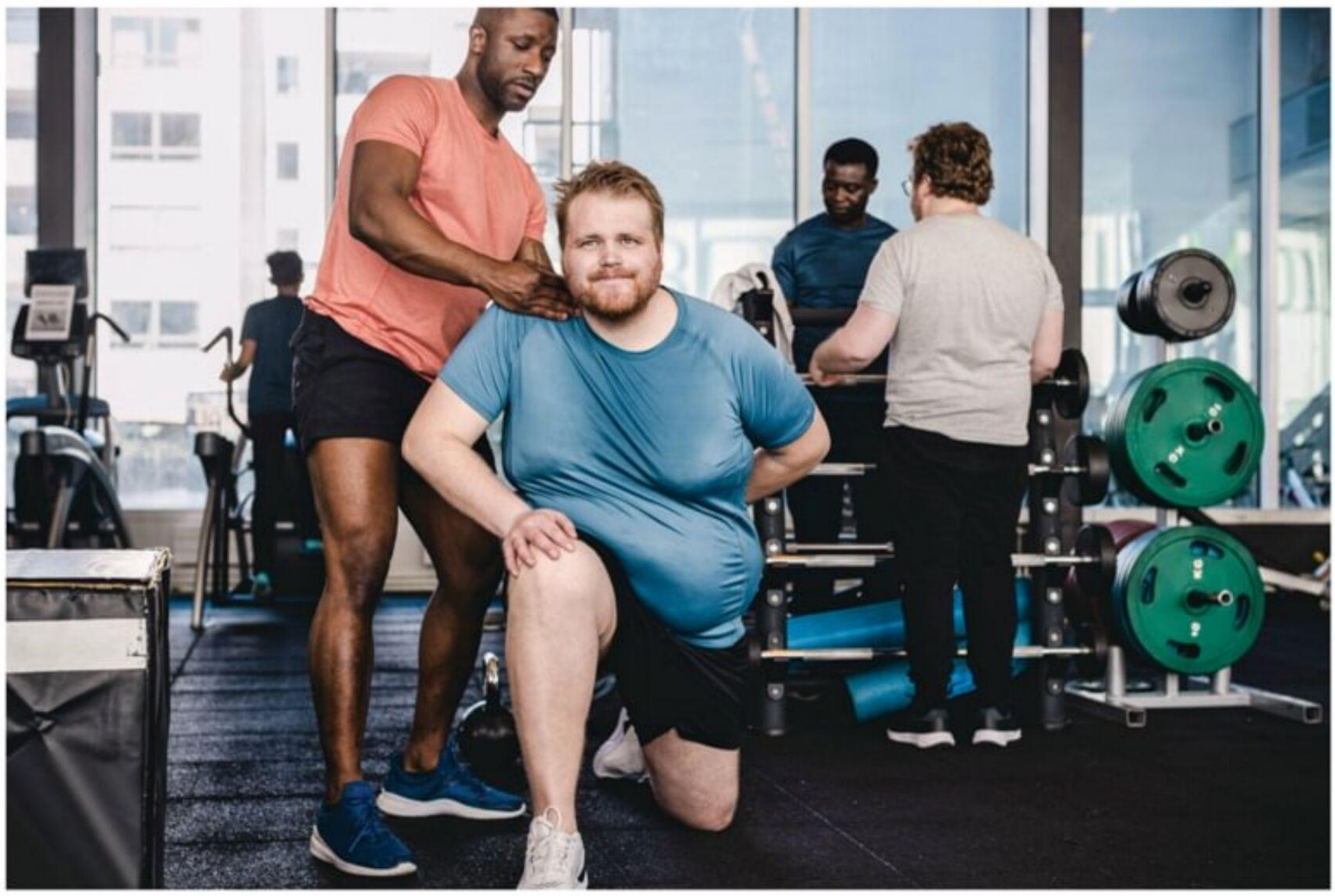
"Losing weight and keeping it off is hard, and if anyone tells you it's easy, run the other way," says Hill. "But it is absolutely possible, and when people do it, their lives are changed for the better." (Hill came under fire in 2015 for his role as president of an obesity think tank funded by Coca-Cola. During his tenure there, the NWCR published one paper with partial funding from Coca-Cola, but the researchers say their study, which Hill was involved in, was not influenced by the soda giant's financial support.)

Hill, Wing, and their colleagues agree that perhaps the most encouraging lesson to be gleaned from their registry is the simplest: In a group of 10,000 real-life biggest losers, no two people lost weight in quite the same way.

The Bariatric Medical Institute in Ottawa is founded on that thinking. When people enroll in its weight-loss program, they all start on the same six-month diet and exercise plan—but they are encouraged to diverge from the program, with the help of a physician, whenever they want to in order to figure out what works best for them. The program takes a whole-person approach to weight loss, which means that behavior, psychology, and budget—not just biology—inform each person's plan.

"We have a plan that involves getting enough calories and protein and so forth, but we are not married to it," says Yoni Freedhoff, MD, an obesity expert and the medical director of the clinic. "We try to understand where people are struggling, and then we adjust. Everyone here is doing things slightly differently."

In most cases, people try a few different plans before they get it right. Jody Jeans, an IT project manager in Ottawa who's in her 50s, had been overweight since she was a child. When she came to the clinic in 2007, she was 5-foot-4 and weighed 240 pounds. Though she had lost weight in her 20s by doing Weight Watchers, she gained it back after she lost a job and the stress led her to overeat. Jeans would wake up on a Monday and decide she was starting a diet or never eating dessert again, only to scrap the plan a couple of days—if not hours—later. "Unless you've had a lot of weight to lose, you don't



While there is no one-size-fits-all formula for weight loss, most medical weight-loss programs include both cardio and strength training.

understand what it's like," she says. "It's overwhelming, and people look at you like it's your fault."

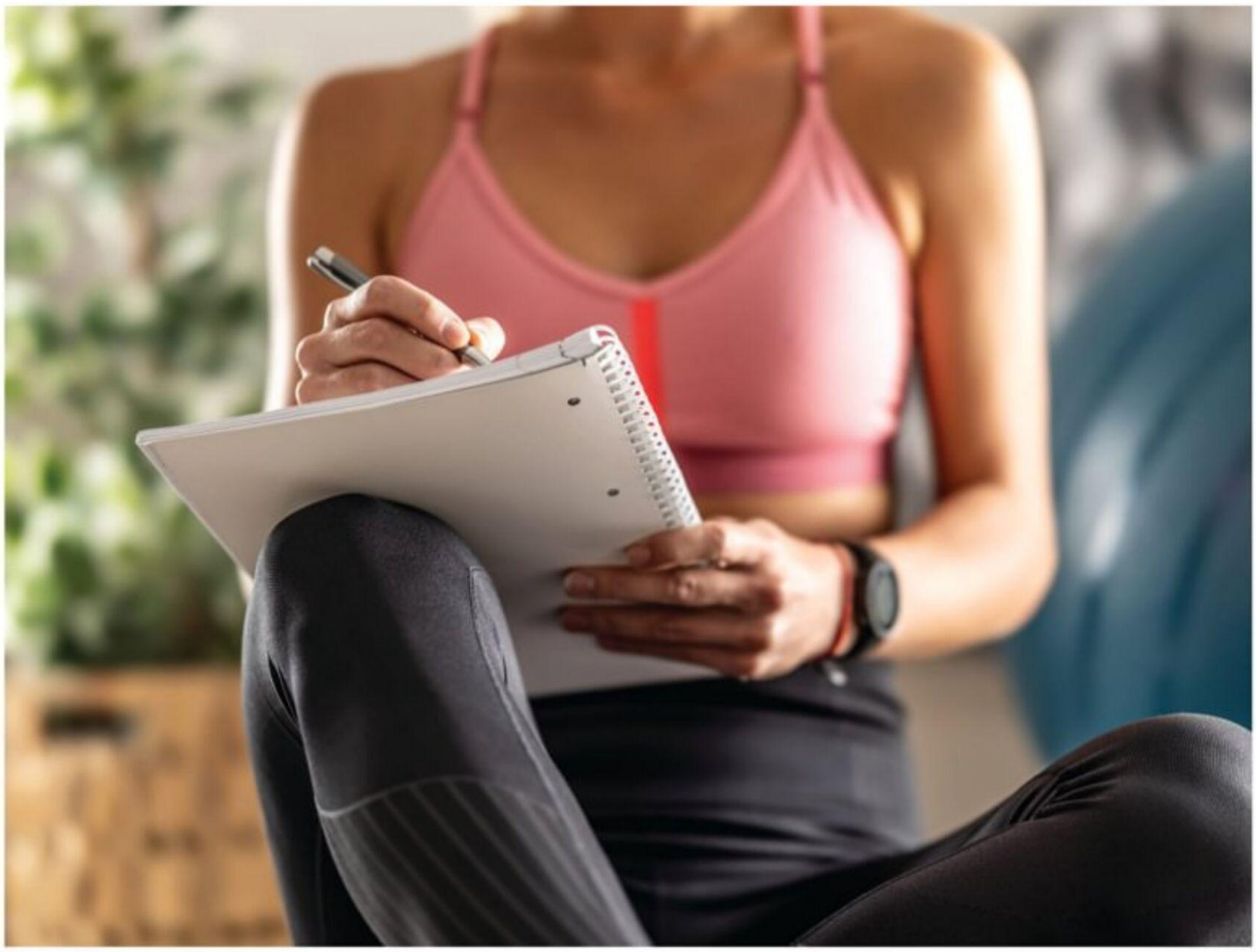
A March 2017 study found that people who internalize weight stigma have a harder time maintaining weight loss. That's why most experts argue that pushing people toward health goals rather than a number on the scale can yield better results. "When you solely focus on weight, you may give up on changes in your life that would have positive benefits," says Hall.

It took Jeans five years to lose 75 pounds while on a program at Freedhoff's institute, but by paying attention to portion sizes, writing down all her meals, and eating more frequent, smaller meals throughout the day, she's kept the weight off for an additional five years. She credits the slow, steady pace for her success. Though she's never been especially motivated to exercise, she found it helpful to track her food each day, as well as make sure she ate enough filling protein and fiber—without having to rely on bland diet staples like grilled chicken over greens (hold the dressing). "I'm a foodie," Jeans says. "If you told me I had to eat the same things every day, it would be torture."

Natalie Casagrande, who's in her 30s, was on the same program that Jeans was on, but Freedhoff and his colleagues used a different approach with her. Casagrande's weight had fluctuated throughout her life, and she had attempted dangerous diets like starving herself and exercising constantly for quick weight loss. One time, she even dropped from a size 14 to a size zero in just a few months. When she signed up for the program, Casagrande weighed 173 pounds. At 4-foot-11, that meant she was clinically obese, which means having a body mass index of 30 or more.

Once she started working with the team at the Bariatric Medical Institute, Casagrande also tracked her food, but unlike Jeans, she never enjoyed the process. What she did love was exercise. She found her workouts easy to fit into her schedule, and she found them motivating. By meeting with the clinic's psychologist, she also learned that she had generalized anxiety, which helped explain her bouts of emotional eating.

It took Casagrande three tries over three years before she finally lost substantial weight. During one of her relapse periods, she gained 10 pounds. She tweaked her plan to focus more on cooking and managing her mental health and then tried again. Today she weighs 116 pounds and has maintained that weight for about a year. "It takes a lot of trial



Some people find that writing down everything they eat keeps them on track. You can do it in a notebook or on an app.

and error to figure out what works," she says. "Not every day is going to be perfect, but I'm here because I pushed through the bad days."

Freedhoff says that learning what variables are most important for each person—be they psychological, logistical, or food-based—matters more to him than identifying a single diet that works for everyone. "So long as we continue to pigeonhole people into certain diets without considering the individuals, the more likely we are to run into problems," he says.

That's why a significant portion of his meetings with patients are spent talking through the person's everyday responsibilities, their socioeconomic status, their mental health, and their comfort in the kitchen.

"Unfortunately," he says, "that's not the norm. The amount of effort needed to understand your patients is more than many doctors put in."

In an op-ed published in the journal *The Lancet*, Freedhoff and Hall jointly called on the scientific community to spend more time figuring out how doctors can help people sustain a healthy lifestyle and less on what diet is best for weight loss. "Crowning a diet king because it delivers a clinically meaningless difference in body weight fuels diet hype, not diet help," they wrote. "It's high time we start helping."

Exactly why weight loss can vary so much for people on the same diet plan still eludes scientists. "It's the biggest open question in the field," says Hall. "I wish I knew the answer."

Some speculate it's people's genetics. Over the past several years, researchers have identified nearly 100 genetic markers that appear to be linked to being obese or being overweight, and there's no doubt that genes play an important role in how some people break down calories and store fat. But experts estimate that obesity-related genes account for just 3 percent of the differences between people's sizes—and those same genes that predispose people to weight gain existed 30 years ago and 100 years ago, suggesting that genes alone cannot explain the rapid rise in obesity.

What's more, a study of 9,000 people found that whether a person carried a gene variation associ-

ated with weight gain had no influence on his or her ability to lose weight. "We think this is good news," says study author John Mathers, a professor of human nutrition at Newcastle University. "Carrying the high-risk form of the gene makes you more likely to be a bit heavier, but it shouldn't prevent you from losing weight."

Another area that has some scientists excited is the question of how weight gain is linked to chemicals we are exposed to every day—things like the bisphenol A (BPA) found in linings of canned-food containers and cash-register receipts, the flame retardants in sofas and mattresses, the pesticide residues on our food, and the phthalates found in plastics and cosmetics. What these chemicals have in common is their ability to mimic human hormones, and some scientists worry they may be wreaking havoc on the delicate endocrine system, driving fat storage.

"The old paradigm was that poor diet and lack of exercise are underpinning obesity, but now we understand that chemical exposures are an important third factor in the origin of the obesity epidemic," says Leonardo Trasande, MD, an associate professor of pediatrics, environmental medicine, and population health at New York University's School of Medicine. "Chemicals can disrupt hormones and metabolism, which can contribute to disease and disability."

Another frontier scientists are exploring is how the microbiome—the trillions of bacteria that live inside and on the surface of the human body—may be influencing how the body metabolizes certain foods. Eran Elinav, MD, and Eran Segal, PhD, researchers for the Personalized Nutrition Project at the Weizmann Institute of Science in Israel, believe the variation in diet success may lie in the way people's microbiomes react to different foods.

In a 2015 study, Segal and Elinav gave 800 men and women devices that measured their blood-sugar levels every five minutes for a one-week period. The participants filled out questionnaires about their health, provided blood and stool samples, and had their microbiomes sequenced. They also used a mobile app to record their food intake, sleep, and exercise.

The researchers found that blood-sugar levels varied widely among people after they ate, even when they ate the exact same meal. This suggested that umbrella recommendations for how to eat could be meaningless. "It was a major surprise to us," says Segal.

The researchers developed an algorithm for each person in the trial using the data they gathered and found that they could accurately predict a person's blood-sugar response to a given food on the basis of their microbiome. That's why Elinav and Segal believe the next frontier in weight-loss science lies in the gut—they believe their algorithm could ultimately help doctors prescribe highly specific diets for people according to how they respond to different foods.

Unsurprisingly, there are enterprising businesses trying to cash in on this idea. Online supplement companies already hawk personalized probiotic pills, with testimonials from customers claiming they lost weight taking them.

So far, research to support the probiotic-pill approach to weight loss is scant. Ditto the genetic tests that claim to be able to tell you whether you're better off on a low-carb diet or a vegan one.

But as science continues to point toward personalization, there's potential for new weight-loss products to flood the zone, some with more evidence than others.

WHEN PEOPLE ARE ASKED TO ENVISION their perfect size, many cite a dream weight loss up to three times as great as what a doctor might recommend. Given how difficult that can be to pull off, it's no surprise that so many people give up trying to lose weight altogether.

But most people do not need to lose quite so much weight to improve their health. Research shows that with just a 10 percent loss of weight, most people will experience noticeable changes in their blood pressure and blood sugar control, lowering their risk for heart disease and type 2 diabetes—two of the costliest diseases in terms of health care dollars and human life.

For Ottawa's Jody Jeans, recalibrating her expectations was what helped her finally lose weight in a healthy—and sustainable—way. People might look at her and see someone who could still afford to lose a few pounds, she says, but she's proud of her current weight, and she is well within the range of what a qualified doctor would call healthy.

"You have to accept that you're never going to be a willowy model," she says. "But I am at a very good weight that I can manage." ◻

THE CASE FOR EATING MORE PLANTS

You don't have to go vegetarian to benefit from a produce-rich diet.

BY JAMIE DUCHARME

IT'S NO SECRET THAT FRUITS AND VEGGIES are good for you. But a recent Netflix show, *You Are What You Eat: A Twin Experiment*, shows just how powerful—and fast-acting—they can be.

The show features pairs of adult identical twins who participated in a study published in November 2023. For eight weeks, everyone in the study ate a diet rich in fruits, vegetables, whole grains, and legumes and low in sugars and refined starches. But one twin from each pair was assigned to eat only these plant-based foods, while the other also ate animal products such as chicken, fish, eggs, and dairy.

Both groups saw improvements in their cholesterol levels and modest reductions in weight over the eight weeks, but those trends were more dramatic among twins who followed the vegan diet. Average fasting insulin levels—another marker of cardiometabolic health—also dropped among the vegan, but not the omnivorous, twins.

"This suggests that anyone who chooses a vegan diet can improve their long-term health in two

NUMEROUS STUDIES SUGGEST THAT PEOPLE WHO EAT A MEDITERRANEAN DIET—WHICH INCLUDES FISH—TEND TO LIVE LONGER AND REPORT BETTER HEALTH THAN PEOPLE WHO FOLLOW OTHER EATING STYLES.

months," Christopher Gardner, PhD, a Stanford University professor and senior author of the study, said in a statement. And, Gardner added, following a vegan diet may not be as difficult as many people imagine: 21 of the 22 twins assigned to that eating plan stuck with it for all eight weeks.

ANOTHER POINT FOR PLANTS

The Stanford study is not the only recent evidence pointing to the promise of plant-rich diets. A study published December 2023 in *JAMA Network Open* found that people who eat low-carbohydrate diets rich in plant-based proteins and fats, as well as whole grains, tend to gain less weight over time than people who eat low-carb diets with a lot of animal products and refined starches.

"Having a diet that's rich in fresh fruits, non-starchy vegetables, whole grains, nuts, legumes, and plant-based oils is advisable for maintaining or improving your overall health," says Binkai Liu, a research assistant in the Harvard T.H. Chan School of Public Health's nutrition department and first author of the *JAMA Network Open* study.

Two recent analyses of previously published studies also found benefits associated with plant-based diets. The first linked vegetarian diets to a lower risk of heart disease than omnivorous diets, while the second, like the twins study, found that vegan and vegetarian diets are associated with lower levels of cholesterol and other markers of potential heart problems.

WHICH IS MORE IMPORTANT: MORE PLANTS OR LESS MEAT?

In addition to validating plant-based diets, studies have long shown that eating too much meat—particularly red and processed meat, such as sausage and bacon—is linked to health problems including heart disease and cancer. But is all meat consumption bad for you?

It's debatable. Some studies and experts refute the idea that vegan diets are automatically healthier than those that include meat. Becoming a vegan or vegetarian can make it difficult to get certain nutrients found in animal products, such as vitamins B12 and D, and people who eliminate meat often replace it with foods that may limit the nutritional benefits of a vegetarian lifestyle. Plus, numerous studies suggest that people who eat a Mediterranean diet—which includes fish—tend to live

longer and report better health than people who follow other eating styles.

In the statement, Gardner said that cutting out all meat shouldn't necessarily be everyone's goal. "What's more important than going strictly vegan," he said, "is including more plant-based foods into your diet." Even the omnivores in his study, after all, saw some drops in cholesterol and body weight after eight weeks, likely in part because they ate plenty of fresh foods high in fiber and low in saturated fat.

A study from 2017 backs up that idea. Researchers tracked a group of people for more than a decade to see how dietary changes affected longevity. They estimated that even one small daily change—swapping a serving of red or processed meat for nuts or legumes—translated to an 8 to 17 percent drop in early death risk.

It's hard to make one-size-fits-all statements when it comes to nutrition, as people's bodies are unique and have different needs. Another twin study, this one from 2019, found that even people who share nearly all of their DNA can have different physiological responses to the same foods, for example.

But if there is any universal truth in nutrition science, it seems to be that loading up your plate with plants is always a good decision. ◻

WHY ULTRA-PROCESSED FOODS ARE SO BAD FOR YOU

Made of ingredients not found in a home kitchen, highly processed snacks and meals are low in fiber and often high in sugar and calories. They also change our relationship with food—in a bad way.

BY TARA LAW

MOST PEOPLE RECOGNIZE THAT A nutritious diet promotes a healthy life, but navigating the wide range of options at your grocery store isn't always straightforward—especially when so many foods are advertised as healthy (but aren't).

A growing number of recent studies have raised health concerns about a certain type of food that most Americans eat: ultra-processed foods. One such study, published in November 2022 in the *American Journal of Preventive Medicine*, concluded that these foods likely contributed to about 10 percent of deaths among people age 30 to 69 in Brazil in 2019. Other studies—including one published in *Neurology* in July 2022, which found that a 10 percent increase in ultra-processed food consumption raises the risk of dementia—have linked the food category to severe health outcomes.

Unlike minimally processed foods or unprocessed foods—like eggs, which travel from the farm to your kitchen looking pretty much the same—ultra-processed foods have been radically changed by manufacturers. By the time they hit your grocery shelf, they've likely been heated, pressed, and enhanced by additives designed to make them last longer, taste better, and appear more attractive, often to the detriment of your health. Here's what you need to know about ultra-processed foods.

WHAT ARE ULTRA-PROCESSED FOODS?

Ultra-processed foods are "made mostly or entirely from substances derived from foods and additives," wrote the authors of a 2017 commentary published in the journal *Public Health Nutrition*. These additives are ingredients not usually used in home cooking, such as preservatives, dyes, and nonsugar sweeteners.

This definition covers a wide range of foods in your local grocery store, from instant soup to packaged snacks to certain meat products, including sausages and hot dogs. Such foods tend to have telltale signs, says Tim Spector, a professor in genetic epidemiology at King's College London and the author of *Food for Life: The New Science of*

Not all packaged foods are ultra-processed and unhealthy. But a red flag to look for is a label listing 10 or more ingredients.

Eating Well. Typically, he says, they have a very long shelf life and 10 or more ingredients, which often include "products that you wouldn't find in your kitchen or that you can't understand."

They're distinct from how some nutrition researchers define processed or minimally processed foods. These foods tend to contain just two or three ingredients—usually a whole food plus salt, oil, or sugar—and have often been preserved, cooked, or fermented. Minmally processed foods include canned fish, fruit in syrup, cheese, and fresh bread.

But not all ultra-processed foods are equally unhealthy. Fang Fang Zhang, chair of the division of nutrition epidemiology and data science at Tufts University, notes that whole grain, ultra-processed foods—like some packaged breads—are an important source of fiber for many people. "Even with ultra-processed food…whole grains are a better choice than refined grains," says Zhang.

Researchers at Northeastern University have created a tool for comparing packaged foods in the same category in order to choose the one with the least amount of processing. For instance, in the yogurt category, one plain organic yogurt scored a 4/100, a favorable score indicating a low amount of processing, while Oui Petite by Yoplait received a maximally processed score of 100.

WHY ARE THESE FOODS SO HARMFUL?

Longitudinal studies in the Americas and Europe have linked eating more ultra-processed food to a number of health risks, including increases in obesity, high blood pressure, type 2 diabetes, and even dementia. Other research, including two studies by researchers in Spain and France published in the *British Medical Journal*, has linked consuming ultra-processed foods to an increased risk of early death.

Ultra-processed foods tend to be junk food: low in fiber and high in sugar and calories, says Zhang. But because ultra-processed foods are defined by the types of ingredients they contain, not by their nutritional content, this category can also include foods that have beneficial nutrients, such as breads high in fiber.

Scientists who research ultra-processed foods say there seems to be something about the processing itself—not just the nutritional content—that makes them unhealthy. In one 2019 study that supports this idea, researchers split 20 people into two groups and controlled what they ate for two weeks. Both groups ate meals with identical quantities of calories, sugar, fat, fiber, and micronutrients, but one group ate a diet of ultra-processed food, while the other ate unprocessed food. In the end, the people who ate ultra-processed food gained weight, while those who ate unprocessed food lost weight.

Researchers have come up with several theories to explain this. One, says Eduardo A.F. Nilson, a researcher at the Center for Epidemiological Research in Nutrition and Public Health at the University of São Paulo, who coauthored the Brazilian study, is that eating ultra-processed foods changes the way people eat overall: replacing homemade food with ready-to-eat, energy-dense foods that are easier to overeat. "They are made, by design, for overconsumption," says Nilson. "They have hyper-palatability. We say they have 'hyper-flavors'—they will be very sweet, very salty . . . and because they are ready to eat, they will replace traditional diets."

Another idea, says Spector, is that ultra-processed food spurs people to eat too quickly. Spector and other scientists are also investigating whether the problems start when ultra-processed foods reache your gut. Spector says that in his research, he's found that some of the chemicals in ultra-processed foods—especially emulsifiers, which are added to food to help mix substances—disrupt gut microbes, which scientists theorize send signals to the brain when you've had enough to eat. "Either it sends signals to the brain or to the gut microbes to eat more, or it's simply that the food is so easy to eat that it gets into the system so fast that you don't have time to get your fullness signals in the brain," Spector says.

NOT EVERYONE AGREES THAT ALL ULTRA-PROCESSED FOODS ARE DANGEROUS

The late Michael J. Gibney, a professor and the founding director of the Institute of Food and Health at University College Dublin, dedicated much of his research and work to nutrition and food. He found the ultra-processed food category too broad to be particularly useful. He thought the umbrella term incorporated too many different types of foods and villainized too many kinds of ingredients—including food additives, such as preservatives, that U.S. public-health authorities have deemed safe. Gibney argued that these issues undermined research because it is difficult to standardize which foods are included in studies.

The concept of ultra-processed food also discounts the importance of reformulating food—for example, making it whole grain or lower in sugar—which has helped make many processed foods healthier. For many people, eliminating processed food just isn't realistic, as it makes up too much of their diet, and they don't have the time or money to cook every meal.

HOW DO YOU CUT BACK?

Experts agree that reducing consumption of ultra-processed foods shouldn't be the public's responsibility alone. Many people don't live in communities with access to healthy, minimally processed food, which tends to be more expensive than ultra-processed food, says Nilson. To reduce consumption of ultra-processed food, Nilson argues, the government will need to implement policies to expand access to healthy food, such as by limiting the availability of ultra-processed food in schools.

Another important policy, says Nilson, is for the government to warn the public about the dangers of ultra-processed food and to implement clear labeling. Some countries have already started to warn the public about ultra-processed foods. For instance, in 2022, Canada announced new labeling requirements for prepackaged food, including labels when such products are high in sodium, added sugar, or saturated fat, and Health Canada incorporated warnings about highly processed food into its online healthy food choices guide.

If you want to make your own diet healthier, Spector says a mindset change is key. "We just need to get people thinking about food not in a calorie way, and think about the quality," he says. If you want to reduce the number of ultra-processed foods you eat, Spector suggests turning to other foods that are cheap and don't take much preparation, such as beans, lentils, and eggs. For snacks, he suggests nuts, seeds, and whole fruit.

"Try going off [ultra-processed food] for a week," he says, "and see what happens." ◻

WHY EVERY MEAL SHOULD START WITH A VEGETABLE

There's no need to take carbs off your plate—just reach for your greens first. Food sequencing is the science of eating vegetables before other carbs to prevent glucose spikes and keep off excess weight.

BY MATT FUCHS

BEFORE THE PANDEMIC, BARBARA Senich, a retiree from Chapel Hill, North Carolina, was diagnosed with prediabetes, meaning the sugar levels in her blood put her at risk for developing type 2 diabetes. The source of that blood sugar was sweet foods, grains, and other carbohydrates. She says she thought about such foods every 30 seconds, and it led to constant snacking.

Since then, she's cut her cravings and blood sugar by changing how she eats. Senich didn't ditch carbs. She changed the order in which she eats them.

Researchers have recently found that eating nonstarchy vegetables before carbs may result in lower, healthier blood sugar compared with having carbs first. Especially at breakfast, these veggie starters can also suppress the hormones that cause hunger throughout the day.

Carbs aren't inherently bad. They're the main energy source for the nervous system, fueling the brain and muscles, and they provide fiber that helps with digestion and cholesterol. Although carbs are found in some unhealthy foods, they're also plentiful in wholesome options such as unprocessed fruits, lentils, and beans. With some high-carb foods, though, blood sugar (glucose) levels can climb higher than the ideal range, especially if such carbs are eaten on their own and in excess. If these spikes occur often over the years, the cells stop responding to insulin, the hormone that signals the cells to take in glucose for energy use. This problem, called insulin resistance, causes sugar to build up in the blood—a defining feature of diabetes.

About 1 in 3 Americans, or 98 million, have prediabetes, and more than 80 percent aren't aware of it. Many will develop type 2 diabetes, potentially resulting in nerve damage, vision loss, and a shorter life. But by changing the order in which you eat your food, it's possible to eat your carbs and have healthy blood sugar too. It's free and "doesn't require superhuman willpower," Senich says.

A NATURAL GLUCOSE FILTER

When we eat our veggies first, the fiber sets up a

filter in the intestines. Once the carbs arrive on the scene, the filter slows them down, like sand catching floodwater, so the glucose enters the bloodstream in a trickle instead of a gush. Less insulin is needed for our cells to absorb these drips, putting less strain on the pancreas. "The totality of the research strongly supports the notion that food sequencing does reduce glucose spikes after a meal," says Alpana Shukla, MD, an associate professor of research at Weill Cornell Medicine who studies food order.

The strategy could have the biggest payoff for people with prediabetes and diabetes simply because they have higher glucose levels to begin with. But those with normal blood sugar can see benefits as well. In one study, when healthy people saved eating rice for last, their glucose peaks were significantly lower than when they ate rice before meat and vegetables. Over time, more-stable glucose could help prevent serious illnesses.

Another plus for everyone is that when you eat vegetables first, you tend to eat more of them, compared with filling up on carbs before having greens. Many Americans are vitamin-deficient and, on average, we get 10 to 15 grams of fiber per day, whereas our ancestors enjoyed about 100 grams. Switching up the order "tends to favor more nutrient-dense

foods," Shukla says, "which is good whether you have health issues or want to prevent them."

HOW TO HAVE VEGGIE STARTERS

Aim to eat a vegetable 10 minutes before you eat your carbs, though you'll still see some benefit without taking any break before the carbs, Shukla says. Noosheen Hashemi, founder and CEO of the health-tracking company January AI, keeps her blood sugar levels healthy by bringing vegetables like broccoli, fennel, or peppers to restaurants in her purse, anticipating high-carb dishes. "I carry vegetables," she says. (TIME's owner, Marc Benioff, is an investor in January AI.)

It's not necessary to eat the vegetables by themselves to get the benefits. Combining veggies and protein before carbs results in 46 percent lower glucose peaks compared with carbs first in people with prediabetes. This combo may work slightly better than veggies alone, according to Shukla.

Another benefit: feeling full for three hours after a meal, because starters with veggies and protein suppress a hormone called ghrelin that causes hunger. We may consume fewer calories as a result. When people have the same meal in the reverse order, with carbs first, this ghrelin hormone rebounds much higher at the three-hour mark.

Eating carbs last turns up another hormone, GLP-1, that slows the rate at which your stomach sends food to the intestines, further easing the burden on the insulin system. The effect of GLP-1 forms the basis for the blockbuster weight-loss drugs, like Ozempic, that currently are surging in popularity. "You can harness your own GLP-1 and boost it through this intervention," Shukla says.

Food order may be particularly useful at breakfast. After that long stretch of not eating overnight, your mealtime glucose could rise higher than at lunch or dinner, Shukla says. Start your monring meal with a veggie omelet, she suggests. Mix lots of vegetables with the egg protein before finishing with your carb: one piece of multigrain toast.

"We know that meal ordering across the day has an impact," says Sarah Berry, associate professor of nutritional sciences at King's College London and chief scientist at the science and personalized nutrition company ZOE. Unhealthy glucose levels after lunch are partly shaped by whether glucose spiked at breakfast, Berry has found, and carb-heavy cereals and bagels dominate our breakfast menus.

Start the day with a veggie omelet instead of a bagel. It can help your body regulate blood sugar all day.

For the best results, visualize half your plate covered by vegetables, 25 percent by protein, and 25 percent by carbs, Shukla says. But a smaller starter can help regulate blood sugar too, she adds.

"It's not all or nothing," says Senich, the North Carolinian. She makes sure baby carrots are always within reach, knowing if she has about 10 of them, that's better than eating only carbs.

As always, it's good to aim for carbs that are unprocessed, complex, and high-fiber.

TRY A PROTEIN APPETIZER

Another option shown to flatten out glucose spikes: a protein primer without vegetables. Getting protein on its own prior to carbs can also prevent glucose spikes and increase fullness. Before eating oatmeal, Senich makes sure to have sugar-free Greek yogurt or nuts, both good protein sources. An "almond appetizer" reduces post-meal glucose by 15 percent.

Joe Sapone of Atlantic Highlands, New Jersey, the founder of a consulting business, says food sequencing along with medication has helped him

lose 120 pounds. "I've gotten into the habit of eating protein first," he says. He's a fan of whey protein shakes. "I'm Italian, so food is religion," Sapone adds. "I totally want pasta and bread." After the shakes, though, less hunger translates into smaller portions.

"Whey is king" because it's loaded with amino acids that "prime the system" for carbs, says Daniel West, a Newcastle University professor who focuses on nutrition and insulin. Just 15 grams of whey before a meal can improve daily glucose by 10 percent. Other research shows sustained benefits over 12 weeks. Pea protein shakes are another evidence-backed option, West says.

Fruit with relatively low sugar could have some benefit as a preload as well. Because of the high amount of fiber in some whole fruits, like strawberries, eating them first, before other types of carbs, may increase the GLP-1 hormone and help suppress appetite, compared with having the whole fruit last, some studies have found. This effect could support weight loss, but research is mixed on whether consuming fruit first helps control blood glucose levels. "Preloading with non-starchy vegetables or protein-rich foods is better because they have very little sugar or carbs," Shukla says.

Eating a low-sugar fruit like strawberries before other carbs may help suppress your appetite.

PREPARE FOR SUCCESS

If you're busy, it's easy to keep veggie starters at your fingertips. Some simple preparation is key. "At the grocery store, I make sure to buy those easy-to-grab vegetables" such as cucumbers, Senich says. While cooking carbs, she likes to snack on chopped-up peppers.

Sapone, who has type 2 diabetes, prepares almost a week's worth of healthy foods ahead of time, placing them at eye level in his refrigerator. He preloads with carrots at his beach club in case the pretzels tempt him. "I'm not a very regimented person," he says, but he's "happy" with food order. He's not alone in that. "Patients swear by food order to support their obesity care," partly because they can still have carbs, says Katherine Saunders, MD, an obesity medicine physician at Weill Cornell Medicine and cofounder of Intellihealth. "The best diet is one that doesn't feel like a diet."

Sapone's enthusiasm was reinforced by his own data. He likes using a continuous glucose monitor to track how carbs on their own spike his glucose numbers and how preloads help. In addition to his lower weight and average blood glucose levels, his cholesterol is down.

Through tech companies like January AI, people can monitor how food order and other factors affect glucose even without using a continuous glucose monitor. Take a photo of your meal, and January AI's algorithm will predict its post-meal effect based on demographics like your age, body mass index, and disease state.

Food sequencing isn't a panacea. For obesity and diabetes, it's most effective when patients also take medications supervised by specialists, as in Sapone's and Senich's cases. Further improvements in glucose management come with good sleep, slower eating, and regular exercise.

And keep in mind that most studies on veggie starters focus on their immediate effects. More research is needed on long-term outcomes. "We have so many tools in the toolbox," Berry says. "Meal ordering is just one of those tools." ◻

DOES INTERMITTENT FASTING ACTUALLY WORK?

It's an increasingly popular way to shed pounds, but is intermittent fasting effective and safe? Here's the latest thinking.

BY MARKHAM HEID

SUSTAINABLE WEIGHT LOSS. PROTECTION from diabetes, heart disease, and cancer. Improved brain health. Enhanced physical fitness and strength. It seems like every week, researchers turn up some new and profound benefit associated with intermittent fasting: eating schedules that incorporate regular periods of low or no food consumption.

By eating normally for several days a week and eating much less on the others, a person may be able to shift their body's cellular and metabolic processes in ways that promote optimal health. And scientists who study intermittent fasting say that while many blanks still need to be filled in, some of the positive health effects of intermittent fasting are no longer in doubt.

"There continues to be good evidence that intermittent fasting is producing weight-loss benefits, and we also have some evidence that these diets can reduce inflammation, they can reduce blood pressure and resting heart rate, and they seem to have beneficial effects on the cardiovascular system," says Benjamin Horne, PhD, former director of cardiovascular and genetic epidemiology at Utah's nonprofit Intermountain Healthcare system, who has published research on the effects of intermittent fasting. "[Intermittent fasting] is something that is moving into practice in the medical field, and it's a reasonable approach for people who don't like daily restriction of their calories."

The bulk of the early research on fasting focused on weight loss. Studies comparing intermittent fasting (also known as intermittent energy restriction) with traditional calorie-cutting diets have found that people lose more weight on the fasting plans. They also seem to like the plans better; intermittent fasters tend to drop out of dietary studies at lower rates than calorie cutters.

"Intermittent fasting is a good option for weight loss for overweight and obese people," says Michelle Harvie, a research dietitian with the Prevent Breast Cancer unit at the Manchester Breast Centre in the U.K. Harvie has coauthored several studies on intermittent fasting, and her research has repeat-

edly shown that it outperforms traditional diets in terms of weight loss, reduced body fat, and improved insulin resistance. She has also found some evidence that intermittent fasting may beat traditional weight loss plans when it comes to lowering a woman's risk for breast cancer, and that, at least in rodents, fasting plans may disrupt or counteract the development of neurological diseases such as Alzheimer's and Parkinson's.

Most of Harvie's research has examined 5:2 fasting plans—protocols that restrict calorie intake two days a week while allowing normal eating on the other five. But she says there's also promising research on diets that impose fasting every other day (usually referred to as alternate-day fasting plans) and on time-restricted fasting, which are diets that restrict daily food consumption to a six- or eight-hour window.

"None of these have been studied head to head, but they all improve health," says Mark Mattson, PhD, adjunct professor of neuroscience at the Johns Hopkins School of Medicine and former chief of the Laboratory of Neurosciences at the National Institute on Aging.

Mattson has published multiple studies and reviews on intermittent fasting. There's evidence that these diets bolster stress resistance and combat inflammation at a cellular level, he says. "People undergo a metabolic switch in which the liver's energy stores are depleted, and so the body's cells start using fat and ketones for energy," he explains. This switch is a form of mild challenge to the human body that he compares to exercise. Just as running or lifting weights stresses the body in beneficial ways, the stress imposed by fasting appears to induce some similarly beneficial adaptations. Whether you're talking about physical activity or fasting, "these cycles of challenge, recovery, challenge, recovery seem to optimize both function and durability of most cell sites," Mattson says.

Fasting also makes sense from an evolutionary standpoint. All-the-time access to food is a relatively new phenomenon in human history. Back when sustenance was harder to come by, "natural selection would have favored individuals whose brains and bodies functioned well in a food-deprived state," Mattson says.

Horne agrees. "You think back to long ago, when food gathering and production were not what we have today, and people would go extended periods of time without eating," he says. "The people who survived to have children were individuals who were able to survive those periods, so just from that perspective, you would expect that fasting would have an effect to improve health."

But while experts are optimistic about intermittent fasting, they acknowledge there are still many unknowns. Almost all the human research to date has been in overweight or obese adults. "We don't know of its benefits in normal-weight people, as it

has not been studied," Harvie says.

It's also not yet clear whether there are any potential long-term risks associated with intermittent fasting, or if older adults or kids would benefit from these eating plans. Another unknown is whether intermittent fasting could increase a person's risk for anorexia. But almost everything we've learned about intermittent fasting so far suggests it's likely to be beneficial for most adults, Mattson adds.

How should you try it? Mattson says there are several methods, but the 5:2 plan has the most data backing it up. For two days a week (either consecutive or broken up), aim to consume just 500 daily calories of fat or protein—foods like eggs, fish, and nuts. For example, one day's meal plan could be two scrambled eggs for breakfast (180 calories), a quarter cup of almonds for a snack (200 calories), and a four-ounce cod fillet for dinner (100 calories). You can divvy up your calories however you like during the day. "But better to have no or very little carbohydrates," he says. While you'll want to eat healthy foods the other five days of the week, you don't have to worry about counting calories or avoiding carbs.

FASTING ALSO MAKES SENSE FROM AN EVOLUTIONARY STANDPOINT. ALL-THE-TIME ACCESS TO FOOD IS A RELATIVELY NEW PHENOMENON IN HUMAN HISTORY.

First meal is lunch? With time-restricted fasting, you limit eating to a six- or eight-hour window.

"You can jump right into it," Mattson adds, "although it may be easier if you start off with just one day a week for a month or two." He says you can expect to feel hungry and irritable for the first few weeks. You might also have headaches. "But by the end of the first month, we've found almost everyone has adapted and there are no symptoms," he says.

It may turn out that longer periods of fasting—say, going 24 hours or even several days without any food at all—could be even more beneficial. "There's some evidence that the longer you do a complete fast, the more benefit you get," Horne says.

Research by Valter Longo, PhD, a professor of gerontology and director of the Longevity Institute at the University of Southern California, has found that fasting for four or five consecutive days a month may extend life and reduce disease risk. But again, more human data is needed—especially when it comes to fasting's effects on older or ill adults.

Be sure to check in with your doctor before trying intermittent fasting, Horne advises. He warns that this eating style is not a silver bullet: "There's no amount of exercise or fasting that can overcome a bad diet or an unhealthy lifestyle."

The research on intermittent fasting is exciting. But the old rules of good health still apply. ◻

MODERN DIET QUESTIONS ANSWERED

Should you go super low-carb? Are cleanses healthy? Can mindful eating help you snack less? Cut through the confusion with this expert advice.

BY MARKHAM HEID

PRESSING QUESTION: SHOULD I TRY THE KETOGENIC DIET?

Don't let its fancy name fool you. A ketogenic diet (keto for short) is essentially a low-carb, high-fat diet—albeit one taken to extremes.

"In a clinical setting, a strict ketogenic diet would involve ultra-low carb consumption, like 20 or 30 grams a day," says Eric Westman, MD, director of the Lifestyle Medicine Clinic at Duke University. That's about the number of carbohydrates in one small apple.

Westman's research on carb-restricted diets suggests they can help reduce appetite, spur weight loss, and improve markers of heart disease. His findings aren't outliers. From Atkins and South Beach to Mediterranean and Zone, low-carb, high-fat diets—or LCHF plans—are all the rage, and growing evidence suggests they're a big improvement over the typical carb-heavy American diet. But keto is the most carb-restrictive member of the LCHF gang.

Along with slashing carbs, a ketogenic plan also calls for limiting your protein consumption. If you know your macronutrients, you'll recognize that cutting carbs and restricting protein means seriously upping your fat intake. And that's exactly what a true ketogenic diet entails. "You'd want healthy fats to account for about 80 percent of your calories and protein around 20 percent," Westman says. (For comparison's sake, the average American gets roughly half of her calories from carbs, 15 percent from protein, and 30 percent from fat, per the Centers for Disease Control and Prevention.)

Like the guidance to cut carbs, this advice to rein in protein intake dovetails with some of the latest nutrition science, which suggests that limiting protein can lower disease risk and extend life for people younger than 65.

So what, exactly, does "ketogenic" mean? The diet's name refers to a specific type of energy-carrying molecule called a ketone. "Most people are always in a state of glucosis, meaning they're burning glucose from carbohydrates for energy," Westman says. "But you determine what your body burns for fuel based on what you feed it." By se-

verely restricting carbs and increasing your fat intake, you can shift your body into a state of "ketosis," which means it's burning fat instead of glucose. "Ketosis used to be considered abnormal, but it can actually be very healthy," Westman says.

In fact, ketogenic diets have been used for nearly a century to treat seizures, says Gary Yellen, PhD, a professor or neurobiology at Harvard Medical School. "It dates back to studies from the 1920s that found this kind of diet was like a sustainable form of fasting, which we've known, supposedly since antiquity, to be beneficial for epilepsy," he says.

It's not clear just how a ketogenic diet works for seizures. But Yellen says seizures are like electrical storms in the brain. "There are potassium channels in the brain that, when open, seem to have a quieting influence on this electrical excitation," he says. "We think these channels work better when the brain is using ketones instead of glucose for energy." Even when epilepsy medications have failed, a ketogenic diet can work wonders, he says.

That's good news for people with an epilepsy diagnosis. But what about the rest of us?

Westman's research suggests a ketogenic diet can help treat obesity, type 2 diabetes, and fatty liver disease. For people suffering from those con-

ditions—as well as older adults and kids—Westman says a keto plan can have "huge impacts" on nutrient intake and health. You'd want to try it only with a doctor or dietitian's supervision, he says.

"If you're a young and healthy adult, I have no safety concerns about removing carbs," he adds. "It's really not a radical concept." You may experience some short-term issues like bad breath, constipation, and flu-like symptoms. (Drinking lots of water can help.) But the lasting benefits could range from reduced hunger and increased energy to weight loss. Some preliminary research even hints at memory improvement.

More research is needed to determine whether the kind of extreme carb restriction associated with keto is necessary to unlock all these benefits, especially if you're healthy. "Ketogenic and other very-low-carbohydrate diets can be quite challenging to follow over the long term, and the possibility of adverse effects has not been ruled out," says David Ludwig, MD, a professor of nutrition at Harvard School of Public Health. "Usually such severe restriction isn't necessary." He points out that not all carbs are equal, and that the speed with which a carbohydrate food affects your blood sugar—what's known as its glycemic index—makes a difference.

One dubious practice of some keto diet adherents is using urine, blood, or breath test kits to check their circulating ketone levels. While those kits can tell you if your body is indeed burning ketones instead of glucose, Westman says there's no good evidence that one ketone level is better than another. "The level of water in a stream doesn't necessarily tell you how much water is flowing through it," he says. "In the same way, measuring the level of ketones in the blood doesn't tell you the whole story."

Until science sorts out all the ins and outs of balancing carbs, protein, and fats for optimal health, going full keto may be overkill. But based on the latest nutrition research, cutting carbs in favor of healthy fats seems sensible.

"YOUR BODY HAS BUILT-IN MECHANISMS FOR DETOXIFICATION, INCLUDING YOUR LIVER, KIDNEYS, AND GASTROINTESTINAL SYSTEM."

PRESSING QUESTION: ARE CLEANSES HEALTHY?

Skip the lemon water and extravagant juices. Peculiar potions and potables that claim to "detoxify" your body are just the latest reincarnations of snake oil.

"I always look for science to inform my recommendations," says Joy Dubost, PhD, a dietitian, food scientist, and spokesperson for the Academy of Nutrition and Dietetics. "But to date, there's no solid science backing any of these cleansing or detox approaches for weight loss or health."

Of course, the word "cleanse" has been applied to a huge range of diets, from those that replace one or two daily meals with fruit smoothies to the more extreme types that advocate drinking little more than spiced water for a week or longer. The extreme kind—those that could never permanently supplant a normal diet—don't tend to have long-lasting effects.

Not only is the hard science on cleanse diets missing, but Dubost says the premise underlying these drinks—that you can somehow flush your system of pollutants—doesn't pass a basic sniff test. "Your body has built-in mechanisms for detoxification, including your liver, kidneys, and gastrointestinal system," she says. "Swallowing some kind of solution isn't going to further enable

those organs, so the whole premise of detoxifying is inaccurate.

"I've also never seen an explanation for what 'cleanse' or 'detox' diets are cleansing or detoxifying your body of," Dubost adds. "I think the vagueness there may be part of the appeal."

Put another way, if you're eating a healthy diet packed with fruits, vegetables, whole grains, and lean protein—the kind of sustainable diet that will help keep your weight down and lower your risk for many diseases—your body has no use for any radical detoxification measures. And if your diet is poor, pounding juice for a week isn't going to do you any good.

"You'll drop some water weight on these cleanses because you won't be consuming very many calories," Dubost says. "But that weight will come back when you start eating again." The kind of severe calorie restriction associated with cleanse diets can also lead to muscle breakdown and feelings of extreme fatigue, as well as headaches, irritability, cramping, and diarrhea.

But what about those people who say they feel amazing after completing a cleanse? Fabrizio Benedetti, MD, a professor of neurophysiology at the University of Turin Medical School in Italy, has written books about the placebo effect. "Feelings, perceptions, and a sense of well-being are very much influenced by placebos," he says.

Benedetti cites a recent milkshake study out of Yale University. During the study, researchers gave people a milkshake and told them it was either a 620-calorie "indulgent" shake or a 140-calorie "sensible" shake. Although all the milkshakes were identical, hunger-producing hormone levels plummeted in the "indulgent" milkshake sippers but remained elevated among the "sensible" shake group. In other words, mind outweighed milkshake when it came to people's hunger.

"We see placebo effects in the world of health science all the time," Dubost says. "The mind is powerful, and I think it plays a big role for people who feel like going to diet extremes will offer them more benefits."

All that said, Dubost admits she can see one potential benefit to cleanse diets. "Some people like 'flipping the switch,' or doing something extreme to kick-start a new eating plan," she says. If you know your diet isn't great and you want to make a change, doing something a little over the top to initiate a hard break or reset from your old ways could put you in the right mindset to stick with a healthier eating routine, she says.

Like using the start of a new year as motivation to change something in your life, initiating a cleanse for a few days before adopting a healthier, well-rounded diet could have some psychological benefit, Dubost says. But again, a cleanse won't be doing your health any favors.

"It's amazing what people put their bodies through for a quick fix," Dubost points out. "If they'd put that kind of energy into a less restrictive, more sustainable diet, they'd have a lot more long-term success."

PRESSING QUESTION: ARE VEGGIE CHIPS OR STRAWS HEALTHIER THAN POTATO CHIPS?

If you're trying to sneak more vegetables into your—or your kid's—diet, swapping regular potato chips for veggie chips or sticks may seem like a healthy substitution. But nutrition experts say some of these ostensibly good-for-you snacks are just junk food in disguise.

"Those veggie sticks are super popular at my 6-year-old's kindergarten, but they're really no better than potato chips," says Liz Weinandy, a staff dietitian at the Ohio State University Medical Center. "They have very small amounts of spinach or tomato paste, but they're still a deep-fried food, and they're not going to contribute to your daily vegetable intake in a way that supports overall health."

Some brands of veggie snacks are actually made primarily from ground-up potato. "Often veggie

chips and straws contain potato starch [or] potato flour as their primary ingredients, and you may see powdered spinach, for example, toward the end of the ingredient list—meaning many of these veggie chips are really quite similar to potato chips," says Caroline Meehan, a registered dietitian and nutritionist at the University of Maryland Medical Center.

Veggie chips benefit from what researchers call the "health halo effect," because, at a glance, they seem nutritious because of the way they're packaged or promoted. But that aura of health is an illusion, Weinandy says.

One example: the packaging of some veggie straw products depicts photos of whole vegetables and trumpets the straws' lack of preservatives and artificial flavors. While cutting these additives is a good thing, many traditional potato chips and other unhealthy snack foods can make similar claims. And all these visual and textual cues, coupled with the word veggie, can hoodwink consumers into thinking veggie chips and straws are healthy. But they're not, Weinandy says.

"We know that deep-fat frying can promote low-grade inflammation," she explains. Research has also linked consuming acrylamide—an organic compound that forms when potatoes and some other starchy foods are fried—to an elevated risk for heart disease and mortality. (Some "baked" veggie snacks may not be fried in oil, but those are uncommon.)

But while veggie chips and straws aren't healthy, those made with actual vegetables (and not potato starch) may still be an upgrade over old-school potato chips. Brands like Terra produce chips made with parsnips, sweet potatoes, and other non-white-potato vegetables. "I still would not make the argument that this is a healthy food," says Dana Hunnes, RD, MPH, an adjunct assistant professor at the UCLA Fielding School of Public Health. "The real healthfulness would come from eating the actual vegetable or root in a more natural form, such as boiling, sautéing, or baking."

But for someone who's going to eat fried chips either way, skipping regular potato chips in favor of products like Terra chips could provide a bit more fiber and a little less sodium, Hunnes says.

"Look for vegetable chips that have the vegetable product as the first or second ingredient on the list," Meehan advises. She also recommends shopping for a snack that has fewer than 200 milligrams of sodium per serving and at least a few grams of fiber.

Weinandy understands that some people don't like vegetables, or that trying to get kids to eat vegetables can be a chore. For these folks, she recommends blending leafy greens into smoothies or adding chopped vegetables to pancake batter or casseroles. These are creative, tasty ways to inject more of these healthy foods into your diet, she says. Veggie chips are not the answer. "They may have a little more nutrition," she says, "but the negatives still outweigh the positives."

PRESSING QUESTION: SHOULD I TRY MINDFUL EATING?

Grab a raisin—just one raisin—and put it on a plate. Now, sit down and examine the raisin. Smell it. Roll it between your fingers. When you feel you've fully appreciated its raisin-ness, pop it into your mouth, and consider its taste and texture as you slowly chew and swallow.

You've just dabbled in the trendy practice of mindful eating: a kind of meditation in motion that's increasingly being scientifically studied for its potential health benefits. Like other mindfulness methods, mindful eating emphasizes a judgment-free awareness of your thoughts, emotions, and sensory experiences, and it helps you pay attention to a task all of us do multiple times a day but seldom stop to notice.

Some experts believe that mindful eating helps attune practitioners to many parts of the body and can therefore have benefits from the brain to the gut. Mindful eating can help connect you to your body's built-in hunger and fullness cues, signals many of us miss when we're distracted by TV, our phone, and other external stimuli, says Megrette Fletcher, a registered dietitian, cofounder of the nonprofit Center for Mindful Eating, and the author of five books on mindful eating. It can also help you make better food choices. "The key benefit of mindful eating is that it is a sustainable approach to dietary change," Fletcher says.

Here's how mindful eating can help improve your diet and health.

It might help you eat less. One review of 24 studies, published in the *American Journal of Clinical Nutrition*, found evidence that "attentive eating" helped people eat less during meals, while inattentive eating led people to eat more during

Tune in to your meals and snacks: Mindful eating has been been shown to help people eat less at that meal and throughout the day.

a scheduled meal and also to snack later on.

Eating while you're distracted seems to have effects even after you're full. A study of TV watchers published in the journal *Frontiers in Psychology* found that the more engaged they were with a TV show, the more they tended to eat.

This type of "mindless" eating can also prompt you to eat more later in the day. "Distraction reduces how much attention you allocate to what you're eating, and your memory for that eating experience will be less accurate and vivid," says Eric Robinson, first author of the *American Journal of Clinical Nutrition* review and a behavioral scientist at the University of Liverpool in the U.K. How well you remember your meal matters, Robinson says, because your memory of what you've eaten seems to play an important role in regulating your appetite.

Research has shown that asking people to recall in detail what they had for lunch leads them to eat less during an afternoon snack. Other research supports the idea that the degree of hunger you feel is dictated in part by your conscious awareness, not just by how much food you've consumed.

By strengthening your memory for what you've eaten, therefore, mindful eating may help control your appetite—and, by extension, your intake.

It can cut down on cravings. "Training in mindful eating may break the link between experiencing a food craving and indulging it," says Ashley Mason, PhD, an assistant professor in the department of

psychiatry at the University of California, San Francisco. "If we are mindful of our food craving—and mindful of how we feel after taking one bite, say, of a piece of chocolate cake—we might find fewer bites satisfying." Mason's research supports this notion. In a study she coauthored in the *Journal of Behavioral Medicine*, she found that when people practiced mindful eating, they ate less in response to their cravings, and this had a small but measurable effect on their weight.

Another aspect of mindful eating—its emphasis on awareness of thoughts and emotions and where they come from—could promote healthier mealtime habits by helping people tune in to their bodies. "We might realize that our food cravings are actually indicating something else," Mason says. "Maybe we are stressed, tired, or otherwise uncomfortable in some way that would be better served by an adaptive behavior that doesn't involve eating," such as exercising or taking a nap.

It may benefit your body and your gut. Paying attention to what's on your plate may make for a healthier gut—and not just because you may be eating less. Some mindful-eating proponents say the practice encourages people to chew and savor their food more, slowing down the pace of a meal. Research has found that slow eating (and lots of chewing) helps trigger the release of gut hormones that aid digestion. A study published in the *Journal of Crohn's and Colitis* found that mindfulness practices can reduce symptoms in patients with inflammatory bowel disease—most likely by relieving stress, which is an established trigger of symptoms. Other studies have found that mindful eating may help people with type 2 diabetes by easing blood sugar spikes and improving diet quality.

Mindful eating might not help you lose weight, though. The practice may not be the best weight-loss solution. "The research regarding mindful eating and weight loss is not clear," Fletcher says. Some studies show an edge for using mindful eating as a weight loss tool, while others find none. A recent review of the research on mindful eating found "a lack of compelling evidence" that the practice could aid in weight management.

"We don't know how much attention is required, or whether it's possible to train people to eat more attentively in order to eat less and lose weight," Robinson says. It's also not yet known how much distraction is too much—or whether some types of distraction (like eating while answering email) are more diverting than others (like eating with friends), he says.

More research is needed. What is already clear, however, is that being distracted while you eat could lead to eating more overall—and that the promising benefits of mindful eating are worth paying attention to.

PRESSING QUESTION: WHAT'S THE SAFEST WAY TO DROP A FEW POUNDS FAST?

You've heard (over and over again) that gradual weight loss is sustainable weight loss. And you're totally going to incorporate all of those healthy lifestyle changes that will help you shed your extra pounds and keep them off for good.

But you'll start all that next month. This month, you've got your friend's wedding and a beach weekend to worry about. So what's the best way to lose a few pounds fast—without doing anything that could be harmful?

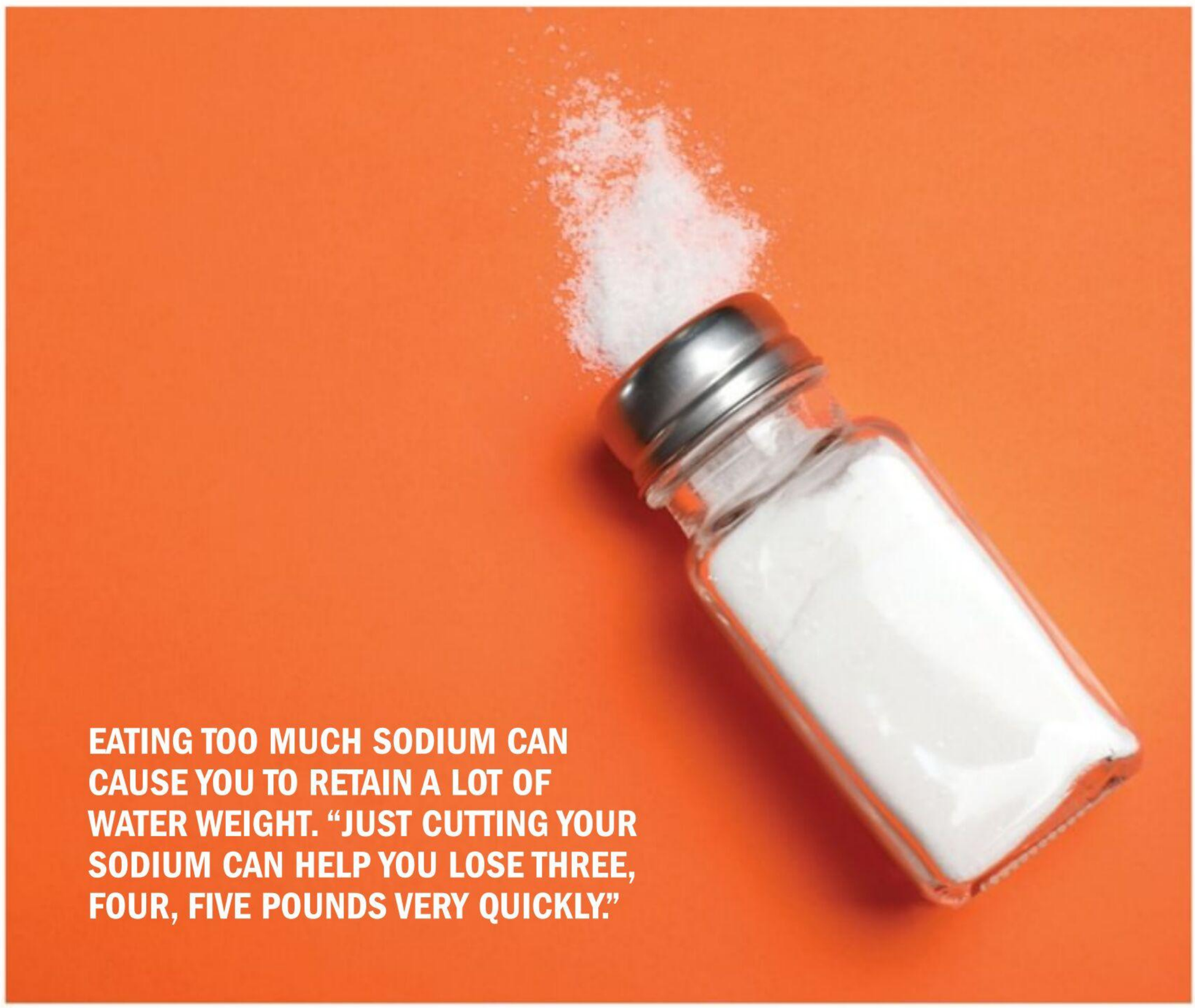
You can begin by ditching salt, says Hunnes. "The average American eats about 4,000 milligrams of sodium a day, and that can cause you to retain a lot of water weight," she explains. "Just cutting your sodium way down can help you lose three, four, five pounds very quickly."

To do that, you'll want to steer clear of packaged products—including cured and deli meats—all of which tend to be loaded with salt. Hunnes explains that anything under 1,500 milligrams a day is very good, but if you can go lower sticking with fresh foods, even better.

Also on the chopping block: processed carbohydrates. Think breads, pastas, fruit juices and pretty much all snack or dessert foods. "Carbs are hydrophilic molecules, meaning they love water," Hunnes explains. "They make it more difficult for your body to release water from your kidneys through metabolism."

By ditching processed carbs and cutting way back on sodium, you'll lose weight, and it will be the kind around your midsection that people will really be able to notice. "With water weight, you can be bloated and not realize it," Hunnes says. "I have people do this and say, 'I can see my abs for the first time!'"

There are two important warnings to note here: If you're not completely healthy, you should talk to your doctor before making any changes to your



diet, Hunnes says. Also, if you're exercising a lot while you're trying to lose weight—and especially if you tend to sweat a ton when you work out—you need to be careful about slashing salt too severely. Sodium is one of the electrolytes your body loses when you sweat. If you're adding an intense exercise program to your low-salt diet in order to lose weight, you could be at risk for hyponatremia, a potentially life-threatening condition linked with heavy sweating, heavy water intake, and too-low sodium consumption.

The risk for hyponatremia is very low, but it's something to be aware of if you're really pushing yourself hard by exercising for hours a day while drinking a lot of water and consuming little salt, Hunnes says.

What if you're already pretty disciplined when it comes salt and processed carbs? You can lose five pounds in two weeks by restricting your diet to one meal and three protein-powder shakes a day, says Zhaoping Li, MD, director of the Center for Human Nutrition at UCLA's School of Medicine.

"Your one meal should be non-starchy vegetables—so no beans or potatoes or rice—and lean protein like chicken, fish, or eggs," Li says. "You also want to cook your vegetables, and make them the dominant part of your meal."

Eating your veggies cooked helps your body absorb more of their nutrients, and the protein in your meat and shakes will help keep your hunger in check. Your lone meal should include about three cups of food, and it doesn't matter if you have it at lunch or dinner, Li says.

When it comes to protein shakes, the type of protein—whey or plant-based—doesn't matter much either. It's the amount that counts. "Women should have one scoop, or 20 grams of protein, with each shake," Li says. Men should aim for 30 grams. Mix that protein powder with water or almond milk, but skip dairy milk. (While dairy fat can help you lose weight, it's not ideal if your goal is short-term rapid weight loss.)

"You can have black coffee or water," Li adds. But skip the cappuccinos, lattes, and alcoholic drinks. They tend to pack a lot of calories per ounce, so they will make it harder to reach your goal. ◻

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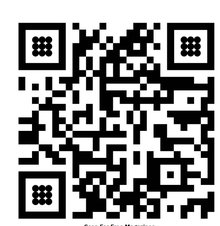
THE BREAKTHROUGHS

What you need to know about the bold new world of weight-loss drugs, metabolic surgery, and other science-backed ways to get lasting results.



THE DIET DRUG REVOLUTION

It's being called the end of obesity. Yet many doctors and regular people are uneasy about living in the age of Ozempic. They are not eager to return to a time when thinness was prized without question.

BY JAMIE DUCHARME

It's quite unusual for a medication to become a household name; even more uncommon for its branding to become, like Advil, shorthand for an entire class of products; and, rarest of all, for it to change not just U.S. medicine but U.S. culture.

Ozempic has done all three.

Approved in 2017 as a type 2 diabetes medication, Ozempic has largely made its name—and a fortune for its manufacturer, Novo Nordisk—as a weight-loss aid. Novo Nordisk knew early on that diabetes patients often lost weight on the drug, but even company executives couldn't have guessed how widely it would eventually take off, as both an off-label anti-obesity treatment and a vanity-driven status symbol for those simply looking to shed a few pounds. Its runaway success mirrors that of similar medications, including Eli Lilly's Mounjaro and Wegovy, another Novo Nordisk product and the only one in the trio technically approved for weight loss. Prescriptions for all of them are flying off the pad at an eye-popping rate.

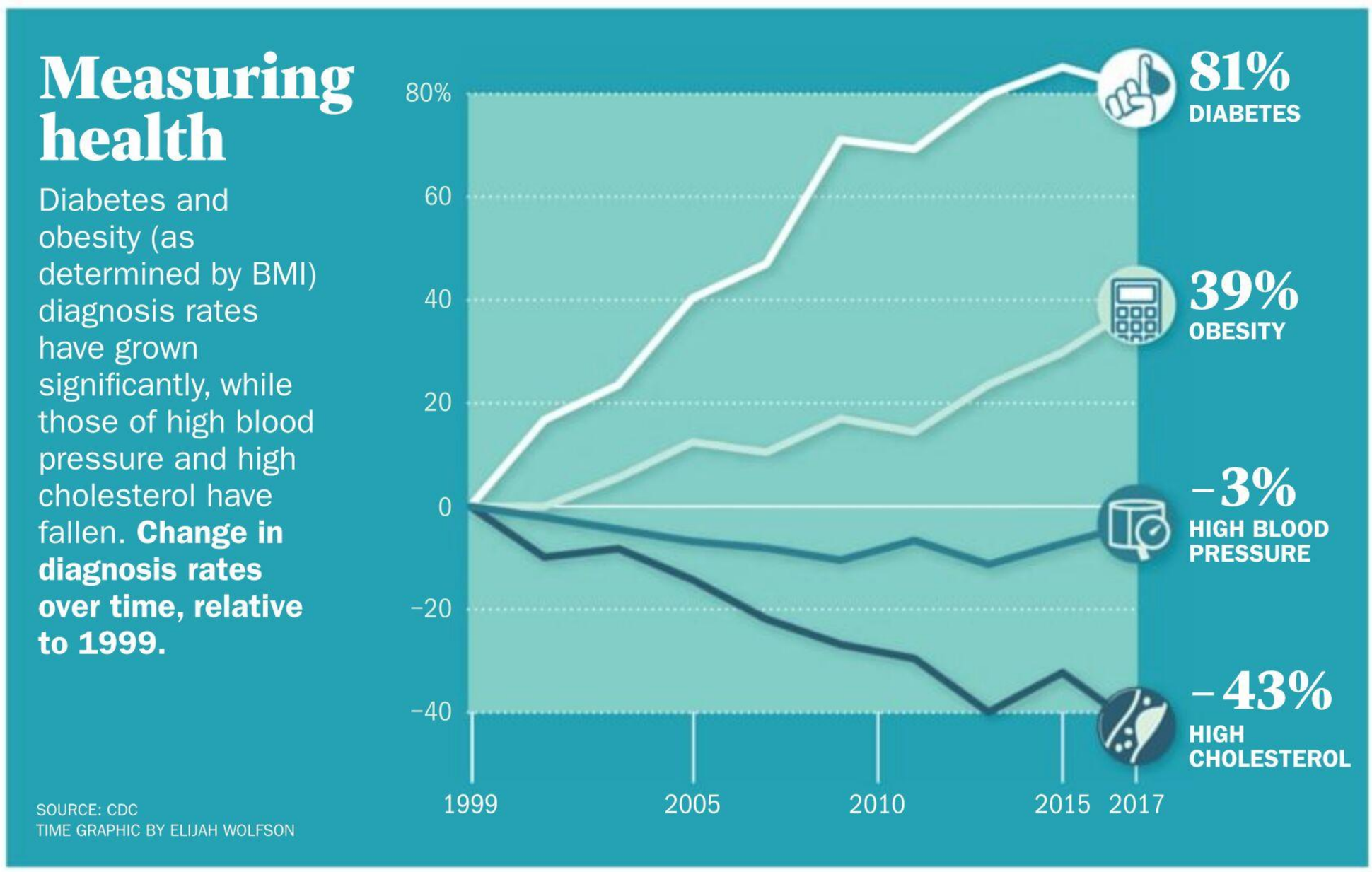
Novo Nordisk sold around $14 billion of its various diabetes and obesity drugs in the first half of 2023, and Eli Lilly sold almost $1 billion worth of Mounjaro in a single quarter that year. Prescriptions for these weight-loss meds are up 300 percent since early 2020, with more than 9 million written in the U.S. in the last three months of 2022 alone, according to health care industry research firm Trilliant Health. Demand is so great that Ozempic, Wegovy, and Mounjaro have all in recent years gone into shortage, and patients with type 2 diabetes have in some cases struggled to fill their prescriptions as they compete for limited supplies with people looking to slim down. Meanwhile, spas, internet suppliers, and compounding pharmacies are all fighting for their piece of the Ozempic pie.

No one can quite agree on whether this frenzy is a good thing. Plenty of physicians (and, of course, the pharmaceutical executives who stand to get very, very rich) say it is, given that roughly three-quarters of U.S. adults qualify as either overweight or obese and are thus, according to leading public-health au-

thorities, at risk of a range of serious health complications. "Obesity is an epidemic, and we urgently need effective treatments," says Sahar Takkouche, MD, an obesity and bariatric medicine specialist at Vanderbilt Health.

But some doctors, researchers, and activists are uneasy about living in the age of Ozempic—one that has felt like a kind of déjà vu, a return to an era when thinness and weight loss were unquestioningly valued. Before the Ozempic tsunami, a growing number of doctors and researchers had begun advocating for Health at Every Size, a research-backed set of principles from the Association for Size Diversity and Health that hold that body size is not a measure of health or worth, and that all people deserve high-quality, non-stigmatizing medical care. Their efforts contributed to a burgeoning field known as weight-neutral medicine, which sees weight and health as separate, and worked in tandem with the wider body-positivity movement to help loosen the diet industry's vicelike grip on American psyches. As the 2000s progressed, women's magazines stopped pushing diets quite so hard. Clothing brands bragged about hiring models larger than a size zero. Even Weight Watchers rebranded as a "wellness" company called WW.

Then Ozempic and its cohort came along, and it turned out lots of people still wanted to be skinny. Some industry watchers have even predicted that the rise of drugs like Ozempic—and an impending crop of new, potentially more effective competitors, including Eli Lilly's newly approved offering, Zepbound—could spell the end of obesity. But as these drugs transform both standard medical practice and



Obesity is an epidemic that contributes to many chronic health problems, including type 2 diabetes and high cholesterol.

cultural ideas about weight loss, a contentious debate is simmering beneath the surface: Should we even be treating obesity?

The U.S. medical establishment is clear about its stance on obesity: It is a "common, serious, and costly chronic disease," as the U.S. Centers for Disease Control and Prevention puts it. By CDC estimates, more than 40 percent of U.S. adults and almost 20 percent of children and adolescents are obese, putting them at risk of health problems including heart disease, type 2 diabetes, stroke, and certain types of cancer. An additional 30 percent of adults are considered overweight, meaning less than a third of U.S. adults meet the CDC's standard for a healthy body weight.

If obesity is a disease, it follows that it should be treated. Historically, diet and exercise have been plan A for treating obesity. But in practice, lifestyle changes like these often aren't enough. "Try as we might, a lot of exercise typically does not result in a significant amount of weight loss," says Glenn Gaesser, PhD, a professor of exercise physiology at Arizona State University. That's in part because people tend to get hungrier the more they move, offsetting whatever calories they burn at the gym, and in part because the body gets used to its size and works to stay at that set point, Gaesser explains. Lifestyle fixes can work for some people, studies show, but lots of people lose only modest amounts of weight or regain the pounds over time—a process known as "weight cycling" that is itself linked to cardiovascular and metabolic health problems.

For years, doctors had relatively few options to offer the many patients for whom diet and exercise didn't work—things like the type 2 diabetes drug metformin, which can cause a modest amount of weight loss, and bariatric surgery, which works well but is unpopular among patients. And then came Ozempic and the rest.

Ozempic, Wegovy, and Mounjaro all work by simultaneously slowing digestion and mimicking the appetite-suppressing hormone GLP-1 through a weekly injection. (Mounjaro also targets a second type of hormone receptor.) This double whammy means people need to eat far less food than usual, leading to an average 15 to 20 percent reduction

in body weight after about a year. They don't work well for everyone, but compared to older meds, "the efficacy of these drugs is remarkable," Takkouche says. "The weight loss is undeniable." And this class of drugs doesn't just lower the readings on a scale. According to data from Novo Nordisk, semaglutide (the generic name for both Ozempic and Wegovy) slashes the risk for major cardiovascular events like heart attack and stroke by 20 percent among overweight or obese adults with heart disease.

Justin (who asked that only his first name be used) saw "life-changing" results when he began taking Wegovy earlier this year. After struggling to lose weight through diet and exercise, the 29-year-old from North Carolina lost about 30 pounds in less than six months on the medication. As he followed the instructions and scaled up his dosage over time, though, he started to experience side effects including acid reflux, nausea, diarrhea, and lethargy. (Research suggests intestinal blockage and an elevated risk of thyroid tumors are also potential side effects.) Eventually, Justin felt he had to choose between his health and his quality of life. As much as it pained him, quality of life won out.

Since quitting Wegovy in June, Justin has gained back about half the weight he lost, a common outcome for patients who stop using GLP-1 drugs—which many do, either because of side effects or cost, since many insurance plans don't cover weight-loss drugs and out-of-pocket prices can exceed $1,000 a month. Despite his mixed experience, Justin would still recommend that someone trying to lose weight consider Wegovy, and he may someday go back on it himself at a lower dose. "It made enough of a difference, and it's something I've been wanting for so long," that it's tempting to go back, he says.

Many obesity-medicine specialists share Justin's feelings. "We have effective tools" for weight loss now, says Laura Davisson, MD, director of medical weight management at West Virginia University Medicine. "Why not use them?"

There is one big reason, according to a passionate group of doctors, researchers, and activists who believe in the principles of Health at Every Size. They feel obesity never should have been labeled a disease in the first place—and thus may not need to be treated at all. "Manipulating weight is not a path to health," says Ragen Chastain, a certified patient advocate who coauthored a library of Health at Every Size resources. "The belief that fewer fat people existing is good—that's weight stigma."

As Chastain and others like her see it, Ozempic and its sister drugs are not life-saving anti-obesity medications but new tools for reinforcing old, damaging body standards rooted in stigma, not science—all while raking in gobs of money for pharmaceutical companies.

The idea that obesity is not a disease is still a controversial take in mainstream medicine. The CDC and American Medical Association (AMA) disagree with it, as do many physicians in the field.

"'Healthy at any size'—I don't even like the connotation," says Caroline Apovian, MD, codirector of the Center for Weight Management and Wellness at Boston's Brigham and Women's Hospital. "There is unhealthy body weight."

And yet the research on weight and health leaves room for questions. There are plenty of studies that show links between obesity and health problems ranging from fatty liver and sleep apnea to heart disease and cancer. But studies also suggest that up to half of people with obesity are metabolically healthy, that people in that group are not at elevated risk for heart disease and death, and that people who are overweight may in fact have a lower risk of premature death than people at "normal" weight. Studies have also found that, even though obesity is considered a risk factor for developing heart disease, overweight patients tend to fare better than thinner patients when they're treated for related conditions, a finding often called the "obesity paradox." Research also suggests that weight loss has less of an impact on health than physical fitness or the quality of one's diet.

"We've got this entire body of research based on a hypothesis that if you make fat people look like thin people, they'll have the same health outcomes," Chastain says. But she's not convinced that's the case at all.

For one thing, body mass index (BMI), the measure commonly used to diagnose overweight and obesity, is inherently flawed—a fact acknowledged by influential organizations, including the AMA. When the AMA designated obesity a disease in 2013, its own Council on Science and Public Health urged against that decision. The council's chief concern was the imprecision of BMI, which is a crude measure of total weight relative to height that, on its own, does not say much at all about someone's health. It cannot, for example, distinguish between

fat and muscle—which is why some athletes have BMIs that technically put them in the obese range.

BMI's path to ubiquity is convoluted. The formula—weight in kilograms divided by height in meters, squared—was developed in the 1830s by Adolphe Quetelet, a Belgian mathematician interested not in diagnosing obesity but in defining the "average man," an effort that mostly glossed over people other than white men. The resulting formula, known as the Quetelet Index, fit neatly into the burgeoning field of "race science," a pseudoscientific effort to draw distinctions between people of different races that fed into the eugenics movement, explains scholar Sabrina Strings, author of *Fearing the Black Body: The Racial Origins of Fat Phobia.*

By the early 1900s, prominent U.S. eugenicists had latched onto the idea that fatness was a marker of moral failing associated with people of color. "We think that fatness is linked to disease," Strings says, but "the history of fat stigma actually transits through race science and eugenics."

Later, in the 1960s, Black women were integral in starting fat-liberation movements that laid the groundwork for the modern body-positivity movement. These activists ran counter to the mainstream medical community, which was growing increasingly concerned about weight. In the 1970s, more than a century after the Quetelet Index was first developed, the prominent American physiologist Ancel Keys revived it. Keys felt insurance companies were using flawed methods of assessing weight-related health risks among people they covered. He proposed using the Quetelet Index (renamed as BMI) instead—even though, in a study he coauthored in 1972, Keys did not demonstrate that BMI consistently correlated with future heart disease risk.

Today, experts widely agree that BMI is imperfect. And yet it's still used in research, to diagnose obesity, and to determine who is eligible for drugs like Wegovy. "We're knowingly saying, 'We don't even know how to measure [excess fat], but we're going to use the measure we have anyway and define two-thirds of the population as diseased,'" says Lisa Erlanger, MD, a Seattle-based family-medicine physician who supports Health at Every Size.

Erlanger believes that weight functions less as a measure of health than as a social determinant of health—in other words, a non-medical factor that nonetheless affects health through its impact on overall wellness. The weight stigma larger people encounter in doctor's offices, the workplace, and social settings can all harm health, Erlanger says. And in the U.S., adults with obesity are likely to be non-white and non-college-educated, two socioeconomic factors also linked to poorer health outcomes due to structural inequality.

Erlanger feels so strongly that she has stripped weight from her medical practice wherever possible. Her office is designed to be comfortably navigated by people who are larger. The reading material in the waiting room doesn't mention diets or weight loss. She doesn't weigh patients at the beginning of their appointments. She never prescribes weight loss, and especially not weight-loss drugs.

"I support anyone's efforts to reduce their marginalization in society," she says. But at the same time, "I believe I have an ethical obligation not to offer a treatment with false promises."

It wasn't weight loss that motivated Irene, who is 54 and lives in Washington, to ask for a semaglutide prescription. Irene (who asked that only her first name be used) has a binge-eating disorder and often stayed up late into the night, snacking for hours after her husband and children had gone to bed. Irene read on social media that semaglutide had helped other people manage their binge-eating disorder, so it seemed worth a try. But it also felt something like self-betrayal.

For most of her life, Irene was locked in a cycle of losing and regaining weight, obsessing about food and calories and constantly wishing her body looked different. Then, a few years ago, she learned about Health at Every Size and threw herself into the community with gusto. She sought out doctors who shared her perspective and joined a fat-liberation group—which made her deeply hesitant about using semaglutide, a drug infamous for helping already-skinny Hollywood starlets slim down. "It has been tricky to lose some weight and not get caught up in that as an aspiration going forward," Irene says. "I deeply, deeply believe in [Heath at Every Size] and would love for the rest of the world to come around to it as well."

But now she has to balance her support for the movement with the reality that, in an effort to manage her eating disorder, she has become one of the millions of people driving demand for anti-obesity medications to new heights.

Pharmaceutical companies seem perfectly happy

to meet that demand. Some industry watchers have predicted that Mounjaro will become one of the highest-selling drugs of all time, sending maker Eli Lilly's share prices soaring by about 25 percent. Meanwhile, Ozempic and Wegovy helped Novo Nordisk reach a nearly $442 billion market capitalization as of late 2023—higher than the gross domestic product of its entire home country of Denmark.

IT'S NO SURPRISE, THEN, THAT AN ARMY of new weight-loss medications are receiving or marching toward regulatory approval, some with results even more impressive than their predecessors. Data from Eli Lilly suggest tirzepatide, the active ingredient in both Mounjaro and Zepbound, can help people lose about a quarter of their body weight in less than two years. The pharma giant is, along with other companies, also exploring oral GLP-1 drugs, which would have an even lower barrier to entry than their injectable formulas. (Novo Nordisk's Rybelsus is already available as a pill.) With so many options currently or soon to be available, it's not so far-fetched to imagine a world when all anyone needs to lose weight is a prescription.

WITH SO MANY OPTIONS CURRENTLY OR SOON TO BE AVAILABLE, IT'S NOT SO FAR-FETCHED TO IMAGINE A WORLD WHEN ALL ANYONE NEEDS TO LOSE WEIGHT IS A PRESCRIPTION.

Davisson says about 80 percent of her patients are already on some form of weight-loss drug. She feels anyone who is overweight or obese should consider some form of treatment, since they may develop complications over time even if they're healthy at the moment. "Everyone is metabolically healthy until they're not," she says.

But other physicians are struggling with their place in this new world. When Mara Gordon, MD, a family physician in New Jersey, finished her medical training almost a decade ago, she didn't question the idea that weight loss was a good thing. But the longer she practiced—and saw how her patients shut down when she urged them to drop a few pounds—and the more studies she read, the more she began to doubt whether weight loss should be an assumed goal. "I found, increasingly, that it was all downside," she says.

Gordon minimized weight's role in her practice, focusing instead on other markers of health—things like insulin resistance (which can predict diabetes risk), blood pressure, chronic pain, mental health, and quality of life. Today, though, more and more patients come into her office asking for Ozempic and Wegovy by name. Often, she says, patients who want to drop pounds are technically overweight but have little medical reason for taking a GLP-1 drug: normal cholesterol, good blood pressure, no diabetes or warning signs for it. On a purely medical basis, Gordon feels there's no need to take out her prescription pad.

But when she looks at the whole picture, the decision becomes more complex. Her patients' test results may not signal a problem, but they're still desperate to lose weight—maybe so they have the energy and mobility to play with their kids, or to improve their body image, or simply to fit into a world that prizes thinness. In those moments, Gordon has to set aside her personal feelings about Ozempic, and about weight loss writ large.

"If you're facing hatred and fatphobia on a daily basis, if you can't do the things you need to do because the chair at your office isn't the correct size," Ozempic may truly help, Gordon says. "I wish we lived in a less superficial society. But my job is to take care of the patient right in front of me." She often writes the prescription in the end. ◻

MYTHS ABOUT THE MEDS

There are many misconceptions about this group of medications. Here, a doctor contends that the common arguments against weight-loss drugs are flawed.

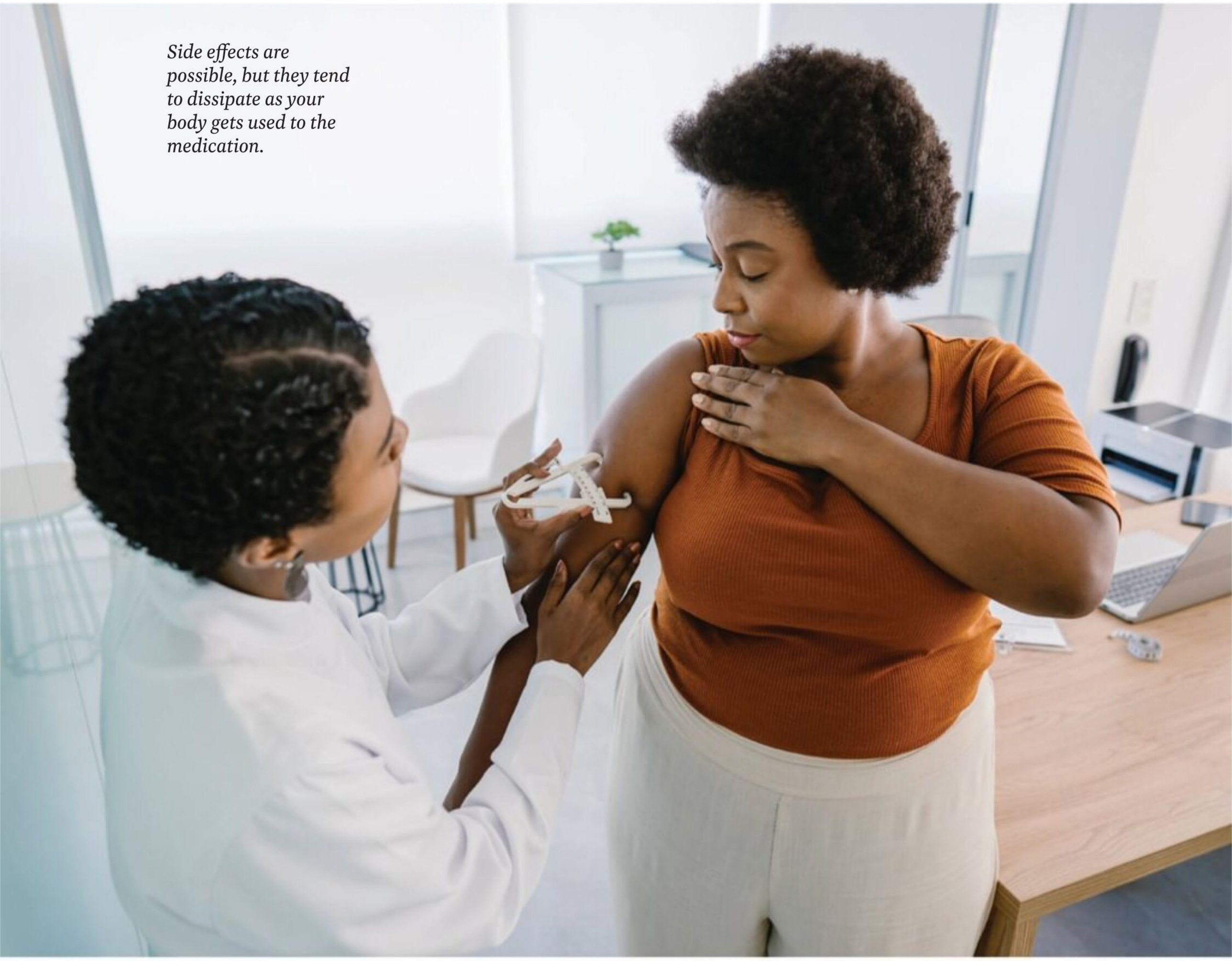
BY YONI FREEDHOFF, MD

IMAGINE THAT A NEW MEDICATION WAS developed, and it not only provided meaningful improvement for the debilitating chronic condition it was prescribed for but also helped to treat and prevent myriad other serious diseases. Imagine that this drug markedly improved a person's quality of life, with noted reductions in pain and improvements in mobility along with increases in confidence and mood. Now imagine that the media and medical coverage of its release are almost uniformly negative or sensationalistic.

This is precisely what has happened with the new generation of anti-obesity medications that began with Wegovy and Ozempic, and with many more rapidly on their way. Currently approved medications lead people with obesity to lose on average 15 percent of their body weight, which in turn has dramatic benefits for multiple weight-responsive medical conditions, including diabetes, high blood pressure, sleep apnea, gastroesophageal reflux disease, fatty liver disease, and more. Clinical trials of newer molecules demonstrate even greater losses with the most recent, Retatrutide, demonstrating a 24 percent body weight loss after 48 weeks of use, and where weight in those participants appeared to still be dropping. Sustained weight loss has been shown to decrease the risk of developing those same conditions, as well as some of our most common cancers, including breast, uterine, and colon.

We also know that sustained weight loss helps to reduce mechanical joint pain, increase mobility, improve quality of life, and, for many, improve self-esteem and self-worth when it comes to internalized biases around weight, food, and body image—all issues poisoned by society's obsession with weight and with the notion that if you just want to lose weight badly enough, you'll find a way. The corollary of which is that if you don't, it's because you're lazy, or gluttonous, or both.

And yet the media hasn't focused enough on the huge potential upside of these drugs. Instead, they've amplified them as a punch line of celebrity jokes and promoted unfounded fear about these drug's effects.



Many flawed arguments have been aired. Here are 10 of the most common—debunked.

1. YOU NEED TO TAKE THEM LONG TERM AND IF YOU STOP, YOU'LL REGAIN THE WEIGHT

Yes, that's how treatments for chronic conditions work. Regarding drug treatments for other conditions, that fact doesn't seem to bother anyone. For instance, if you have high blood pressure and you start taking a medication that effectively treats your high blood pressure, you still have high blood pressure. If you stop treatment, it'll come back.

2. THEY WON'T LEAD EVERYONE TO LOSE ALL THEIR EXCESS WEIGHT

While this is true, the concept is not one we seem to worry about when we consider other chronic medical conditions. Using high blood pressure again as an example, a large percentage of people who have high blood pressure require multiple medications to keep it under control, and sometimes even then it never reaches "normal" levels. This partial reduction in blood pressure reduces its conferred risk, just as a partial reduction in weight does.

The right Rx? Responsible doctors only prescribe semaglutide medications like Ozempic and Wegovy to people who actually need them.

3. THERE ARE SIDE EFFECTS

Having written at least 1,000 prescriptions for these new medications, I can say that yes, there are. But not appreciably more than with other medications used to treat various chronic conditions where the benefits they provide are sufficient to warrant the prescription. The good news with anti-obesity medications is that generally, the side effects dissipate with ongoing use. But even if they didn't, the fact that the vast majority of people choose to remain on these medications, and their doctors continue to prescribe them, speaks to the risk-benefit calculations. Individuals who take medications despite side effects have decided that the benefits and impact of those medications outweigh the impact of their side effects. Clinicians who continue to prescribe them have performed their own calculus, or, more likely, know that the media's depiction of these drugs' side effects is not representative of their frequency or their severity.

4. THEY DON'T TREAT OBESITY'S ROOT CAUSES

How many drugs treat root causes? Do asthma drugs treat air quality? Do cholesterol-lowering medications regulate trans fat in our food supply? Do pain relievers prevent injury?

5. THEY'RE EXPENSIVE

Most new drugs are. Research, development, and clinical trials are not cheap—especially when it comes to drugs for obesity, as the regulatory hurdles set for them are systematically more rigorous than for most categories of medication. That said, in the United States, the average cost for the most prescribed of these medications, semaglutide, is approximately $13,600 annually, a significant cost but not out of line with other new drugs in the U.S.

To that point, have you heard that the annual cost of abrocitinibet, a drug approved this year for eczema, is $60,000, or that the median annual price of the 17 novel drugs the Food and Drug Adminis-

tration (FDA) approved since July 2022 is more than 10 times that of semaglutide at $193,900?

6. TOO MANY PEOPLE WILL BENEFIT

No, really—people have been arguing against the use of these medications because they will benefit too many people! An op-ed was even published in the *New England Journal of Medicine* in which economists opined that covering them could bankrupt Medicare because so many people would qualify for their use. Meanwhile, their main argument was based on the Institute for Clinical and Economic Review's cost benefit anaylsis on semaglutide, whereby in order to reach the conclusion that the drugs were not cost effective, they explicitly report choosing to ignore the drug's many benefits: "The long-term benefits of preventing other comorbidities including cancer, chronic kidney disease, osteoarthritis, and sleep apnea were not explicitly modeled in the base case."

7. PEOPLE WILL USE THESE MEDICATIONS INAPPROPRIATELY

The prescription of a medication requires a person meet the medical criteria set by the FDA or their country's medical regulators. No doubt, given the drug's efficacy, there will be people who don't meet medical need criteria for its prescription trying to find ways to take it. But if people who don't meet medical criteria are taking this medication, that's a problem with their prescribers, not with the medication.

8. WE ARE MEDICALIZING HEALTHY PEOPLE BY DIAGNOSING THEM WITH A DISEASE

As with many chronic diseases, diagnosis is a matter of statistical risk associated with exceeding the level of an associated biomarker. For instance, a blood sugar or blood pressure level where we see risks accrue sufficiently to recommend treatment, and where there's no guarantee that not treating would lead to any long-term complications, leads to the diagnosis of diabetes or hypertension. While risks are not guarantees, there's no public agonizing over conferring the diagnoses of and treating high blood pressure or type 2 diabetes before they lead to problems—preventing their associated problems is in fact a good thing. There is only outrage here because society considers obesity to be a disease of personal responsibility.

9. LIFESTYLE CHANGES ALONE SHOULD BE SUFFICIENT TO LOSE WEIGHT

That is true for a small percentage of people. But for the rest, sustained significant weight loss through lifestyle alone requires wide-ranging privilege, and even then, there are dozens, if not hundreds, of factors affecting our weights beyond our direct control—from genetics to medical challenges to our social determinants of health. Moreover, the vast majority of chronic noncommunicable diseases are modifiable by way of lifestyle, yet it's only with obesity that a false dichotomy is pushed so hard: that behavior is the only solution and offering medication implies failure.

10. THEY WILL LEAD TO EATING DISORDERS

Which do you think is more likely to lead to disordered eating—highly restrictive dieting that leaves a person battling hunger, cutting out their favorite foods or entire food groups, and that involves a constant mental battle replete with maladaptive thinking around one of life's seminal pleasures, which society claims should be doable if you just want it badly enough, or a medication that decreases your hunger and your cravings, and makes you feel full faster?

We need to move beyond the double standards around and the demonization of anti-obesity medications. This is what happens when centuries of teaching and a poor understanding of this disease have led the world to believe obesity is a disease of choice and a reflection of individual weakness. Paradoxically, it will likely be these and improved future anti-obesity medications that will finally begin to erode these explicit and implicit biases, as their efficacies will undermine the notion that people are choosing not to address their obesity. The efficacy and safety of these drugs, especially as they improve, will demonstrate that obesity can be managed by primary care providers just as high blood pressure is—with a quick office visit, a discussion of lifestyle changes, and the offer of medications to help. ◻

Yoni Freedhoff, MD, is an associate professor of family medicine at the University of Ottawa and the medical director of the Bariatric Medical Institute. He has received a clinical grant from the global pharmaceutical company Novo Nordisk.

SURPRISING BENEFITS OF WEIGHT-LOSS DRUGS

Weight-loss medications may have powerful advantages, including reducing heart disease risk, improving sleep apnea, easing joint pain, and possibly treating addiction.

BY ALICE PARK

THE NEW WEIGHT-LOSS DRUGS WEGOVY and Zepbound are in high demand, and the clamoring will only increase in coming years, experts predict. That's because drugs like these, which rely at least in part on the appetite-regulating hormone GLP-1, are being investigated not just for weight loss and diabetes but also for a wide range of other conditions.

"Weight loss is only part of it," says Ian Neeland, MD, chair of the American Heart Association's obesity science committee and an associate professor of medicine at Case Western Reserve University.

Here's the latest (and still-growing) list.

HEART DISEASE

In March 2024, the U.S. Food and Drug Administration (FDA) allowed doctors to prescribe Wegovy (semaglutide) to reduce the risk of heart attack or stroke in people who are overweight and have a history of heart problems. In one study, people taking Wegovy had a 20 percent lower risk of heart attack, stroke, or death from a heart event compared with people who didn't take the medication.

Some of that benefit to the heart may come from the weight loss itself, since weight can have an adverse effect on the heart. But in the study that Wegovy's maker, Novo Nordisk, submitted to the FDA, some of the benefits appeared before people began losing weight—suggesting that the drugs are working in other ways to improve the cardiovascular system.

It's possible that the new weight-loss drugs, which belong to a broader group of hormones called incretins, work directly on fat cells that promote inflammation and contribute to atherosclerosis, or narrowing of the blood vessels. "Markers of inflammation drop pretty dramatically in patients taking tirzepatide [Zepbound] in trials," says Dan Skovronsky, MD, chief scientific officer at Eli Lilly, which makes Zepbound. (Zepbound combines two incretins: GLP-1 and GIP.) "That suggests there may be secondary effects to obesity, since visceral fat is inflammatory. That's exciting to explore."

Lilly is also studying Zepbound's potential heart

Losing weight can help sleep apnea. Research into one weight-loss drug found it greatly reduced sleep apnea episodes.

benefits by focusing on people with heart failure, because "body mass puts a strain on the heart, and reducing weight should have a profound effect on overall health," Skovronsky says.

To better understand some of the broader effects the drugs are having on the body, Lilly is also conducting a large trial tracking how Zepbound affects 15,000 people with obesity and their overall rates of a variety of diseases and death. "We are studying death from any cause to see if incretins could have life-saving or life-preserving benefits, which we expect to be true," Skovronsky says.

FERTILITY

Social media is full of stories of "Ozempic babies" that were born to people struggling with infertility who were able to get pregnant after starting GLP-1 drugs for diabetes or weight loss. But reproductive health experts caution that the connection may not be as direct as people might think.

"What would surprise nobody is that getting weight into normal range will promote fertility," says Zev Williams, MD, director of the Columbia University Fertility Center. "If that's through diet, exercise, or medications, the net result is that there is a common pathway from reducing obesity to improving fertility."

Extra weight can lead to abnormal menstrual cycles, which can also make pregnancy more difficult, says William Dietz, MD, director of the Stop Obesity Alliance at George Washington University. Losing weight could help to restore cycles and increase the chances of pregnancy.

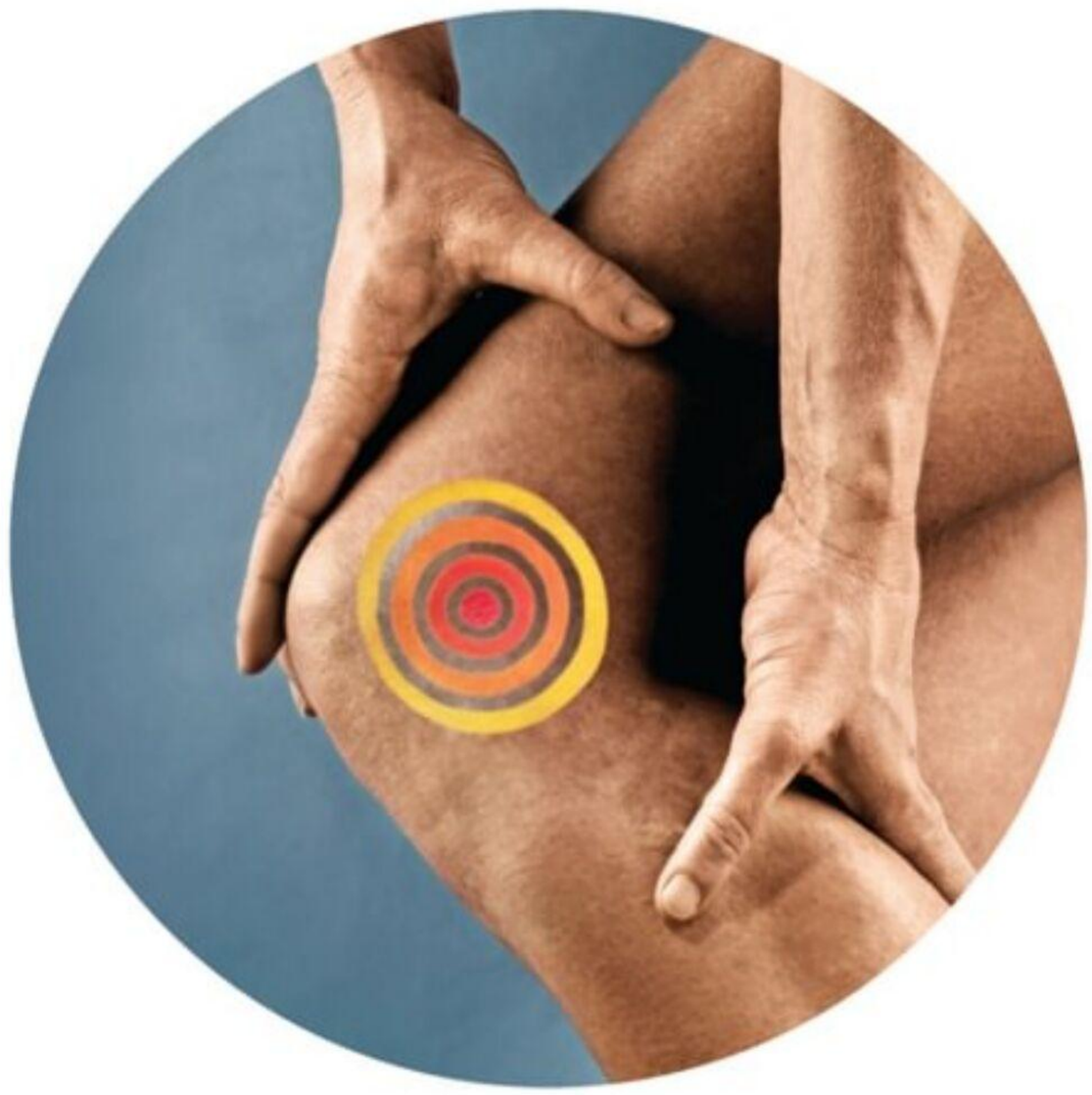
Beyond that, incretins could address some of the biological processes involved in fertility. About 10 percent of women of childbearing age in the U.S. have polycystic ovary syndrome (PCOS), which is the most common cause of infertility. PCOS is a hormone disorder, and it can be driven by insulin resistance or increased levels of insulin in the body. And because insulin is closely tied to weight, controlling weight—and the resulting normalization of insulin responses—could also address PCOS and ultimately a woman's chance of getting pregnant.

KIDNEY DISEASE

People with diabetes often develop kidney complications. Those taking the drug Ozempic (semaglutide—the same drug as Wegovy—but approved in different doses for diabetes) reduced their risk of dying from either kidney or heart events by 24 percent, according to data from Ozempic's maker Novo Nordisk.

Lars Fruergaard Jorgensen, the company's CEO,

says he anticipates that in coming years, the market for drugs like Ozempic will become more specialized and diverse due to the wide range of body systems that are affected by weight gain. "Today we look at obesity as one market, but going forward it will be made up of different segments—some people with obesity and fatty liver, some with obesity and cardiovascular disease, and others with obesity and kidney disease," he says. "Different products might lend themselves to slightly better outcomes, so we may see more personalized obesity care over time."



LIVER DISEASE

Over time, obesity can lead to the accumulation of fat cells in the liver, contributing to a condition called metabolic dysfunction associated steatohepatitis (MASH). The excess fat causes inflammation that can damage the organ and potentially lead to liver failure. In early studies, Lilly scientists reported that tirzepatide can slow the progression of MASH, possibly preserving liver function. In a study involving 190 people with the condition, 74 percent of those receiving the highest dose of the drug (three times the dose for weight loss) were able to clear themselves of the disease after a year compared with 13 percent of those receiving placebo.

OBSTRUCTIVE SLEEP APNEA

About 40 percent of people who have a BMI of 50 or greater also have obstructive sleep apnea, which causes them to stop breathing temporarily when asleep. Losing weight can directly lower the risk of sleep apnea, and results from a late-stage study from Lilly showed that tirzepatide led to 30 fewer such events, or a reduction of 63 percent, each hour for people with obesity and the sleeping disorder. The drug could be "practice-changing" for these patients, says Skovronsky, since there are no effective medications currently available, and most people rely on continuous positive airway pressure (CPAP) machines and other cumbersome devices.

OSTEOARTHRITIS

Excess weight has a damaging effect on joints and can alter the body's fat-to-muscle ratio, so losing weight may also impact the muscles and skeletal system. Researchers are studying whether incretins, which can reduce inflammation, represent a new group of potential treatments for conditions such as osteoarthritis, in which joints deteriorate as inflammation flares up.

ADDICTION

Weight gain can also lead to changes in the brain, including increasing inflammation that can affect nerves. But research also suggests that incretins can have direct effects on brain pathways, in particular those involved in the reward system implicated in addictive behaviors. Studies in animals show that incretins, and GLP-1 drugs in particular, can dampen brain signals associated with reward and addiction and lead to lower intake of alcohol and addictive drugs. Scientists are now studying whether the same effects occur in people.

The range of conditions impacted by incretins hints at the power they may have in addressing a number of chronic diseases—and that's not lost on the scientists developing the next generation of these drugs, which combine multiple incretins. The goal also includes shifting these from injections to pills to make it more convenient and accessible to more people. The many conditions implicated by the medications are "a good reminder of how important metabolism is for overall health, and it impacts our risk for disease," says Skovronsky. "It's something we knew but were never able to improve with pharmacology. Now we can, so seeing all the benefits that could occur is super exciting." ◻

HOW GENES FACTOR IN

Not only can your genes impact your weight, they can predict your best weight-loss drug, according to cutting-edge science.

BY ALICE PARK

As popular as the latest drugs being touted for weight loss—including Ozempic, Mounjaro, and Wegovy—are on social media, like any medication, they don't work in the same way for everyone. Not all are even approved to treat obesity, but they are being used off-label as a relatively easy way to shed pounds. While some users lose 20 percent or more of their body weight on these drugs, others struggle to shed single-digit percentages.

That shouldn't come as a surprise. Obesity isn't a monolith, and the factors that contribute to extra pounds are different for different people. In the same way that cancer doctors are now bringing more precision to which treatments they use by learning about the genes that drive people's cancer, doctors who treat obesity are beginning to figure out the major contributors to an individual person's obesity. That's been catalyzed by the new class of more effective weight-loss drugs that have been recently approved, with more on the way. Now that those medications are available, doctors are focusing on directing patients to the best treatments for them, whether it's one of the newer drugs, some combination of older drugs, or a keener attention to diet and exercise.

While obesity and diabetes specialists have been applying this tailored approach to helping their patients lose weight for many years, it's not as familiar for medical professionals who aren't in these specialty fields but are often people's first medical contact when it comes to trying weight-loss treatments. For them, having additional tools to differentiate between patients who are most likely to respond to the newest drugs, for example, and those who aren't could save people time, money, and frustration.

Andres Acosta, MD, an assistant professor of medicine at Mayo Clinic, has dedicated the past decade to developing such a tool. He and his team divide obesity into what he calls four phenotypes, or categories based on certain genetic factors that are primarily responsible for causing obesity.

Hungry Brain: people who never feel full.

Hungry Gut: those who eat until they're full but get hungry again within an hour or so.
Emotional Hungry: those who eat to reward themselves or cope with emotional issues rather than based on physiological hunger.
Slow Burn: those whose metabolism makes it difficult for them to burn calories properly.

What drives obesity, Acosta says, should also drive which treatments people receive. Those who never feel full, for example, will struggle more with diet interventions, while those with metabolic imbalances might never lose enough weight even if they exercise to exhaustion.

In 2021, Acosta cofounded a company, Phenomix, that took his years of research and developed a saliva test called MyPhenome that can distinguish the four types of obesity by analyzing a set of genes related to obesity that Acosta identified. In March 2024, the company soft-launched its first test, for Hungry Gut, and in May it launched Hungry Brain. Together, says Acosta, the two tests should identify the main contributor of obesity in about half or more of people with the condition. And the two tests will give doctors and patients clearer guidance about whether drugs like Wegovy and Rybelsus, and even the diabetes medications Ozempic and Mounjaro, will help them lose weight.

HOW THE TEST COULD CHANGE OBESITY CARE

"When I see patients and talk about the options they have and discuss how they are used, their cost, and the possible side effects, I always tell them that it doesn't matter what they choose, because at the end of the day, using the medications is like shooting in the dark," says Daniela Hurtado Andrade, MD, an endocrinologist at Mayo Clinic who worked with Acosta to develop and test the different obesity types. "We try something, and if it works, great. If it doesn't, then we discontinue it and try another medication. It's really trial and error."

The practice is pretty widespread in the obesity field, similar to the way doctors cycle through drug treatments for hypertension and depression, making educated guesses about which medication might work best for each person based on their health history and symptoms. Even more entrenched is the idea that obesity isn't a disease but a characteristic for which patients can, and should, find their own solutions. "As a society, we haven't been addressing obesity with appropriate medical care," says Deborah Horn, DO, medical director of the UTHealth Houston Center of Obesity Medicine and Metabolic Performance. "We've told people to eat less and move more and left them to find solutions on their own, but now that we have beautiful, evidence-based treatments, we in the medical community have to make sure that this disease gets great medical care."

Part of that care involves matching patients to the right treatments as quickly and efficiently—and affordably—as possible. Horn has reached out to Phenomix to learn about offering MyPhenome to her patients, because having the test will go a long way toward accomplishing that.

The newer weight-loss drugs, which target the GLP-1 hormone that regulates appetite, can cost up to $1,400 a month, and many insurers don't cover them, leaving patients to pay out of pocket or order them more cheaply from abroad, or find alternatives from compounding pharmacies that make copycat versions of the drugs. The test could weed out people who are currently on these expensive drugs but aren't benefiting much from them. "It can help us figure out which patients to give this class of medications to, and do more targeted weight loss," says Zaid Jabbar, MD, president of the Illinois Obesity Society and an obesity specialist in private practice, who is one of the hundreds of doctors waiting to offer MyPhenome for his patients. "It can also help us make sure we are using our resources effectively."

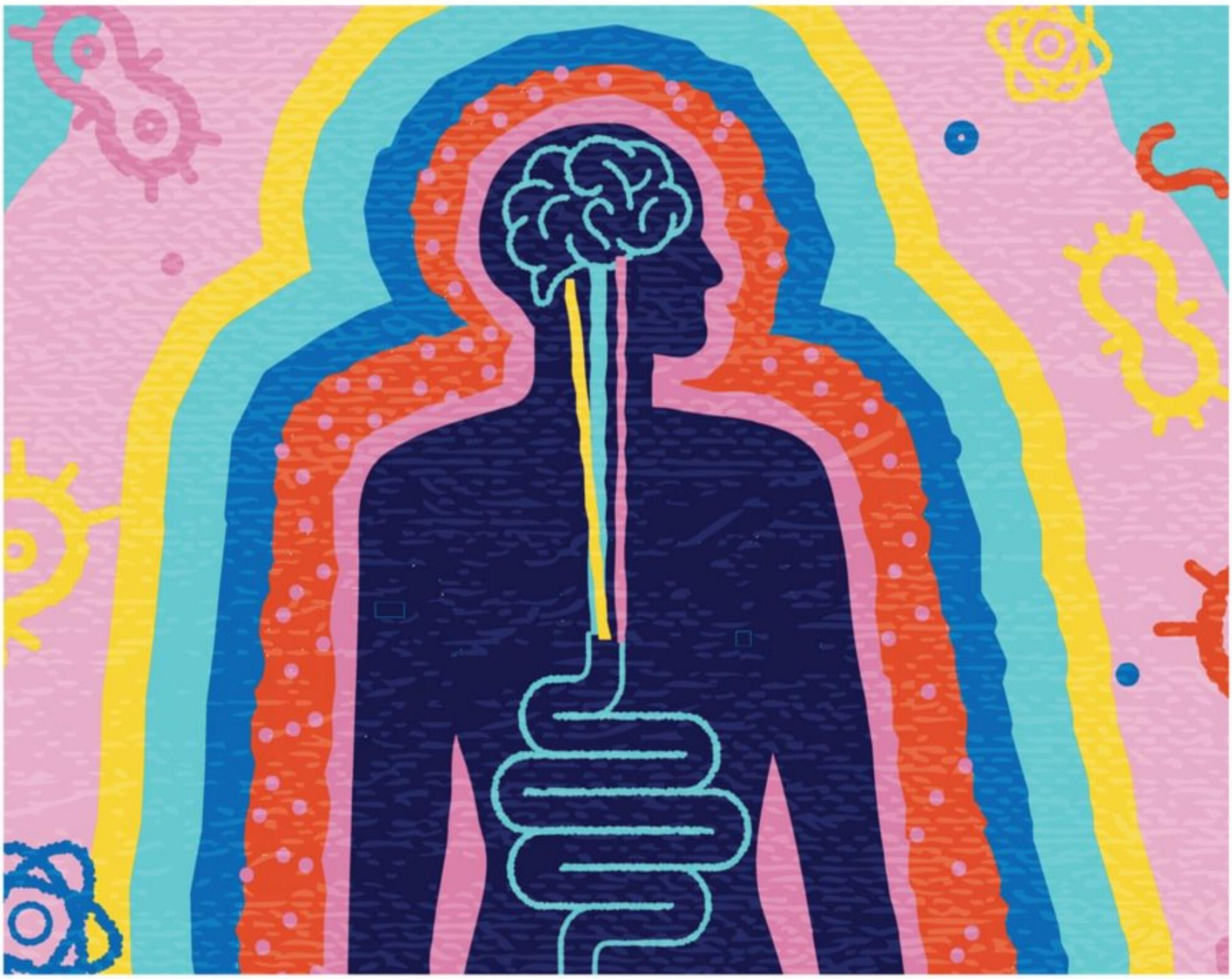
MyPhenome could also provide more solid justification for different combinations of drugs, beyond the GLP-1 medications, that doctors prescribe for weight loss using their experience and educated guesses about which are most likely to be effective. These include medications for conditions like migraine, depression, and addiction, which have also been linked to weight loss. "We look at comorbid conditions and use medications that match those conditions in combination," says Jabbar.

NOT EVERYONE WHO TREATS OBESITY AND DIABETES sees the necessity for such a test, however. Osama Hamdy, MD, medical director of the obesity clinical program at Joslin Diabetes Center, who hasn't requested the test and has only reviewed published data on the approach, says most people with obesity will likely lose an appreciable amount of weight on a GLP-1-based drug, so testing them might not add that much more information to doc-

tors' decisions to prescribe. For people with diabetes and obesity, the test might be slightly more helpful, since only about 22 percent of them are likely to respond to GLP-1 drugs. But even for those patients, Hamdy says he uses factors other than genetics to identify them, including age, their body mass index, the duration of their diabetes, and calculations of how well they respond to insulin. He'd like to see clinical studies that look at weight-loss outcomes among people who were treated based on the test and those who were not, to get a better sense of how much value phenotyping can add to optimizing weight-loss therapies.

HOW THE TEST WORKS

Such data may come as more people use the test, and in the meantime, for doctors who don't have the same level of expertise in managing obesity, MyPhenome could be a useful first step in narrowing down treatment options.



People with Hungry Gut genetic factors feel hungry again an hour after eating, which can lead to obesity. They're likely to benefit from weight-loss drugs.

Doctors need to prescribe the test first, and can do so by creating an account with Phenomix. The company provides doctors with a swab kit that patients use to collect saliva from both cheeks, which the doctor then sends to Phenomix. The company contracts with a genetic sequencing lab that analyzes the sample for 6,000 variants across nearly two dozen genes strongly related to obesity.

Based on an algorithm that Acosta developed after studying the genetics of 1,000 people with obesity, the test then classifies people according to the most likely reason for their weight gain. The test focuses on genes related to things such as insulin resistance, energy intake, how quickly the stomach empties, and other factors, such as how much people eat before feeling full and how often they feel hunger, which Acosta's team documented when the participants consumed two meals a day in the research lab. "Once we had all the data, we put all that knowledge into a big gigantic pool and, using machine learning, tried to find predictors and patterns of what predicts what type of eating," says Acosta.

Indeed, genetics are the primary driver of obesity in anywhere from 40 to 70 percent of people with the condition, and in trials, Acosta says, most participants fell into either the Hungry Gut or Hungry Brain categories.

For $349, doctors and patients will, in 10 days or less after the lab gets the saliva samples, receive results that indicate whether the patient is positive or negative for both types. Based on the information he's seen so far on the different obesity types, Jabbar agrees that more than half of his patients will likely fit into either the Hungry Gut or Hungry

Brain categories. He anticipates using the test not only for new patients to give him a "road map for how to navigate their weight management," but also for those in the middle and even at the end of their weight loss journeys. For new patients, if they test positive for Hungry Gut, for example, that would give Jabbar more confidence prescribing a GLP-1-based weight-loss drug like Wegovy or Rybelsus, which work by slowing the emptying of the stomach's contents and absorption of food in the gut, and helping people feel full for longer. If they test positive for Hungry Brain, on the other hand, he would likely recommend other drugs, like the combination of naltrexone and bupropion that works on the brain's dopaminergic system to help the brain register satiety.

That could make managing patients more efficient. Currently, Jabbar says, it takes about six to nine monthly visits to settle on an effective weight-loss program for his patients, but if the test can identify a productive treatment more quickly, people may only need three to four visits before they follow a schedule of less frequent maintenance visits.

Jabbar says the test could be useful for people who are in the process of reaching their weight-loss goals or even those who have already reached them. Identifying their obesity type can help doctors to wean them off of drugs they are taking that aren't as effective in helping them lose weight.

WEIGHT-LOSS DRUGS AREN'T THE ONLY SOLUTION

Insurance companies are not yet covering MyPhenome, as the test is so new. So patients will have to pay for it out of pocket—which Jabbar believes is still a good investment if it ends up saving people from spending money on medications that aren't as effective for them. And for those whose test shows they should take an expensive drug they can't afford, the company provides a diet and exercise regimen tailored to specific obesity types designed to mimic the effects of the drug.

"It's important for people to understand that no matter what they do in terms of anti-obesity drug treatments, lifestyle—diet and exercise—is going to be the backbone," says Hurtado Andrade, the Mayo Clinic endocrinologist who works with Phenomix. If they can't take the drug, they can at least try to parallel the effects of the medications by changing their diet and exercise program.

For people with Hungry Gut, for example, a high-protein diet that promotes the activation of hormones like GLP-1, just as the drug does, can help to suppress eating. Hurtado Andrade's group at Mayo recommends such patients eat three to five smaller meals a day that are high in protein to keep the satiety signals in their gut active.

For those with Hungry Brain, the Mayo group recommends a large-volume diet, high in fiber and low in calories. People with this type of obesity should try to eat one to two full meals a day in order to keep the stomach full so the distension signals the brain to stop eating.

Hurtado Andrade is now helming a study, sponsored by Phenomix, that will continue to gather data on test users and improve the algorithm's ability to classify people into the different obesity types. "Any strategy to see obesity as a chronic condition and not a patient characteristic helps to individualize obesity treatment and allows me to tell patients that it's not their fault," she says. "So from a clinical perspective, it's very, very relevant."

WHERE THE TEST WILL BE AVAILABLE

About 315 doctors have contacted Phenomix about ordering the test, and 39 have already placed orders, according to Mark Bagnall, the company's CEO. Phenomix has shipped about 200 test kits so far.

The company is initially targeting obesity specialists, who will likely have the shallowest learning curve in applying the test. But ultimately, the test is meant to help nonspecialists, including family doctors and internists, to manage obesity in their patients more efficiently.

Horn, of UTHealth Houston, says there will never be enough specialists to treat patients with diabetes, not to mention the upwards of 70 percent of Americans who are overweight or obese. "We need to lean into primary care doctors, nurse practitioners, and physician assistants, who can do an excellent job of treating chronic disease," she says. "This test can help them not only more quickly stratify patients but also help them to continue learning more about the disease and educating themselves about obesity." Arming more doctors and health professionals with the right tools for selecting the right anti-obesity therapies could finally turn the obesity curve around and bring more people to manageable, long-term weight control. ◻

WHO NEEDS WEIGHT-LOSS SURGERY?

Bariatric surgery is not an easy path, but it gives many people who have battled their weight for years a chance at a healthier future.

BY GINNY GRAVES

IT'S BEEN 22 YEARS SINCE SHERRY GIEDD, 60, of Brooklyn, New York, had gastric band bariatric surgery. At the time, she weighed 315 pounds. "I was so desperate to lose weight, I would have had my jaw wired shut," she says. In the two years after surgery, she lost 150 pounds, and although she regained some during stressful periods in her life, her weight has mostly hovered around 155, which is what she weighs now. "I was able to have long-term success because of surgery," she says. "It freed me. It stopped the noise of continuous hunger. The barbarians were no longer at the gate."

If you know anyone who takes Wegovy or one of the other new weight-loss drugs (and, let's face it, who doesn't know someone?), you've probably heard them say something similar. Although surgery and medication work through different mechanisms, they both reduce hunger—often dramatically—giving people who've battled their weight for years the chance to finally be successful. But while just 1 percent of those who qualify for bariatric surgery actually go through with it, the number of people clamoring to get their hands on weight-loss meds is so high the drugs are in short supply. Which raises the question: In the era of Ozempic, does anyone need to go under the knife anymore?

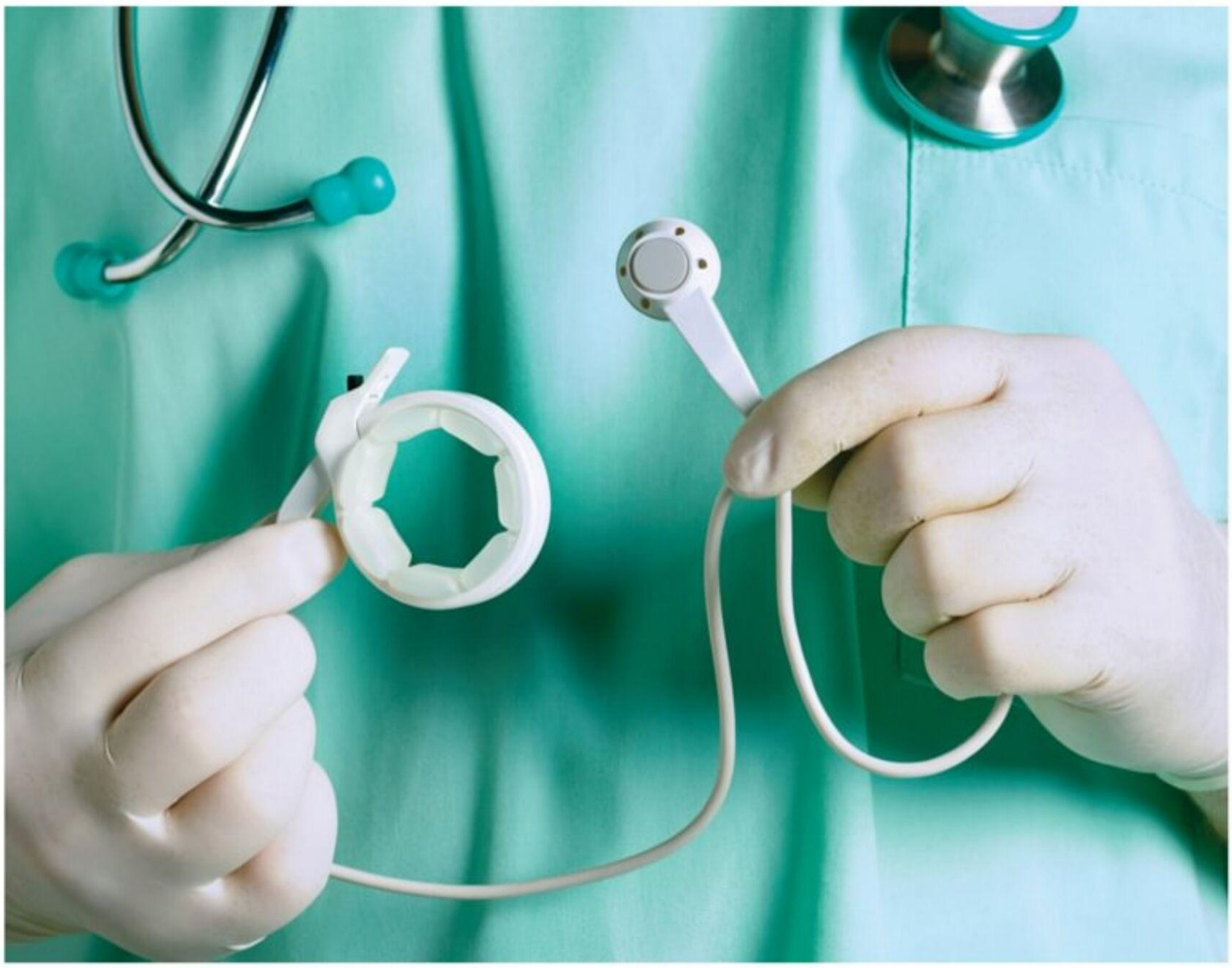
"I'm thrilled we finally have effective medications, but it's not an either/or proposition," says Christine Ren-Fielding, MD, chief of bariatric surgery at New York University Langone Hospital, who performed Giedd's surgery. "Increasingly, surgery and medication are being used together. But the truth is, for most people, surgery is more effective." Not everyone responds to weight-loss medication or

can afford to take it for various reasons, she explains, so it often makes sense to explore surgical options before committing to a medication you will need to take for life.

THE WEIGHT LOSS AND HEALTH GAINS OF SURGERY

Bariatric interventions are designed for those with a BMI of 35 or higher with at least one weight-related health problem, or a BMI of 40 or more—which roughly equates to about 100 pounds of excess weight—regardless of health problems. "Surgery typically helps people lose 30 to 40 percent of their total weight," says Francisco Guzman-Pruneda, MD, a bariatric surgeon at Columbia University Irving Medical Center. "The new weight loss drugs are more like 15 to 20 percent. That's revolutionary, and something we've never seen with medication before. But they're still not comparable to surgery."

The magnitude of weight loss most people achieve through surgery comes with significant health benefits. Sleep apnea goes away in the majority of people, as does diabetes—sometimes within hours or days for gastric bypass patients. Blood pressure drops, cholesterol improves, and cardiovascular disease resolves in more than half of



In a gastric band or lap band procedure, a silicone band is placed around the top part of the stomach, which makes the person feel full more quickly.

people. What's more, while having obesity increases the risk of cancer, a long-term study of more than 30,000 bariatric surgery patients at the Cleveland Clinic found that they were 32 percent less likely to develop cancer than study subjects with obesity who didn't have surgery and didn't lose weight.

In addition, for a study published in the *Journal of the American Medical Association* in June 2024, researchers looked at the medical records of 6,070 patients who had either undergone bariatric surgery or taken one of the new weight-loss drugs. They found that, in those who had diabetes for 10 years or fewer, bariatric surgery was associated with a 62 percent reduction in mortality compared with medication—a disparity that was mediated by greater weight loss in the surgery group.

"Surgery may be better than medication for long-term health outcomes because it's more likely to prevent weight regain," says Ren-Fielding. "In terms of diabetes and other health issues, you're better off losing 50 pounds and keeping it off than losing 100 and regaining 50."

Another recent study revealed that surgery is more cost-effective, too. Researchers from Tampa General Hospital plotted the costs of surgery (a one-time procedure) and medications (with weekly injections for life) and discovered that the cost of medications like Saxenda and Wegovy exceeds Roux-en-Y gastric bypass in less than a year and sleeve gastrectomy within nine months.

So why is surgery so underutilized? "Some people don't realize they have obesity or don't see it as a health problem," says Ann M. Rogers, MD, president of the American Society of Metabolic and Bariatric Surgery (ASMBS). "Plus, a lot of doctors don't bring it up. Some are uncomfortable talking about weight, and some think all patients should be able to lose weight through diet and exercise alone—but that's a fallacy."

If your BMI is over 35, for instance, your likelihood of achieving and maintaining a healthy body weight with lifestyle habits alone is less than 1 percent, according to the ASMBS.

"It's important to use diet and lifestyle in con-

junction with medical treatment, but obesity is a complex, multifactor disease that is caused by everything from genetic and metabolic factors to stress and socioeconomics," explains Danny Issa, MD, a bariatric and interventional endoscopist at the UCLA Health David Geffen School of Medicine. "Like most diseases, it's not something you're likely to be able to cure on your own."

UNDERSTANDING THE RISKS

People also avoid surgery because they're concerned about safety, says Rogers. "But most of the commonly used procedures have been refined over many years, and by now the risks are quite low," she says. "Bariatric surgery is safer than gallbladder or hernia surgery, for instance—surgeries that are considered some of the safest, most routine procedures in medicine. Most bariatric procedures can be done laparoscopically, so the recovery is quick. A lot of patients go home within 24 hours."

The risk of death with bariatric surgery is about 0.1 percent—lower than knee replacement and cardiovascular surgery. The overall likelihood of a major complication is about 4 percent. "There's a chance of blood clots and internal bleeding and leaking because of the surgical staples, but those problems can be corrected and fixed," says Ren-Fielding. "That's one reason post-surgery follow-up is important. It would be a fluke if someone died from one of those issues."

Minor complications are more common. Gastric bypass and the duodenal switch can cause deficiencies in essential vitamins and minerals because they work by restricting the absorption of nutrients, says Rogers. "It can be treated with dietary changes and supplements, but you need to get blood tests four times a year after those surgeries, to make sure you're not becoming malnourished," she says.

Gallstones, which cause abdominal pain, nausea, and diarrhea, affect about 38 percent of patients. Obesity increases the risk, and post-surgery weight loss exacerbates it. They're treated with medication and a diet high in fiber and low in cholesterol.

Dumping syndrome, when undigested food moves too quickly from the stomach into the small intestine, causing abdominal cramps, bloating, sweating, nausea, diarrhea, heart palpitations, and dizziness, strikes 20 to 50 percent of people. Treatment includes replacing simple carbs, such as white flour and sugar, with complex carbs, such as whole grains, fruits, and vegetables; avoiding liquids until 30 minutes after you've eaten; and eating six small meals a day instead of three larger ones.

FINDING THE SURGERY THAT'S RIGHT FOR YOU

"First, we get a clear medical history, explain each modality and how it works, and talk about the patient's weight loss and health goals," says Issa. "The results of those conversations provides the road map we use for moving forward."

Three main factors are particularly important to consider, adds Guzman-Pruneda. "Is the patient diabetic? Do they have reflux? What is their BMI?"

If you want to lose 50 to 100 pounds, the gastric sleeve, or laparoscopic sleeve gastrectomy—the most common surgery—is a good option, says Ren-Fielding. "It also can be used as first step for people with severe obesity," she says. In this easy-to-perform procedure, doctors remove the majority of the stomach. Afterward, it's about the size and shape of a banana, which decreases hunger and increases fullness. "It's a good choice for someone who isn't diabetic and doesn't have reflux, because it can cause reflux," adds Guzman-Pruneda.

A newer version, the endoscopic sleeve gastroplasty, leaves no scars and has a shorter recovery. "We insert a long, flexible endoscope through the mouth and remodel the stomach to 20 percent of its original volume," says Issa. "It leads to about 18 percent weight loss, which is very good for a minimally invasive intervention."

Emma Ridley Carter, 52, of Santa Clarita, California, had the procedure last year, and her weight has dropped from 220 pounds to 135. "I'm a new person," she says. "My high blood pressure, insomnia, migraines, and knee pain are gone. I wish I'd done this years ago."

The adjustable gastric band, or lap band, is another option for people who are looking for weight loss in this range, says Ren-Fielding. "A silicone band is placed around the top part of the stomach, helping you feel full more quickly," she says.

If you need to lose more than 150 pounds, you're better off with a more complex procedure, like the Roux-en-Y gastric bypass, says Ren-Fielding. This surgery reduces the stomach to a small pouch about the size of an egg, which is connected to the lower part of the small intestine. The result: You get full faster, and, because the food doesn't enter the early part of the small intestine, you absorb less. "It's

particularly effective for [people with] diabetes," says Guzman-Pruneda.

People with higher BMIs can also benefit from biliopancreatic diversion with duodenal switch, or BPD-DS, which is essentially a combination of the sleeve gastrectomy and the gastric bypass. It's the most effective for diabetes, according to the Mayo Clinic. A newer option, SADI-S—single anastomosis duodenal-ileal bypass with sleeve gastrectomy—is a simpler, quicker version of BPD-DS. "The duodenal switch and the SADI-S provide the most weight loss, so they're good for people with a BMI over 50, but they're more challenging operations, and they're the most likely to cause malabsorption of nutrients," says Rogers.

COMBINING SURGERY AND WEIGHT-LOSS DRUGS

In the end, both surgery and weight-loss drugs may be the most effective approach. A study presented at the ASMBS Annual Scientific Meeting this year found that in patients with extreme obesity—in this case, a BMI of 70 or more—for whom surgery is more dangerous, taking one of the new weight-loss medications prior to surgery was associated with a reduced risk of postoperative complications.

"I often use medications in conjunction with surgery, and my research team is studying it," says Issa. "Anecdotally, it looks like those who start medication in the first year after surgery lose more weight. I consider it for people with very high BMIs—in the 55 to 60 range. It's a one-two punch, which can be very effective."

Giedd started taking Ozempic a year ago. "I haven't lost weight, but it has helped me maintain my weight," she says. "My hunger had returned, and I was constantly food logging and planning every meal to make sure it didn't get the best of me. Getting on the medication curbed my hunger. It made me feel like I felt after the surgery."

Obesity affects more than 40 percent of people in the U.S. and plays a role in many of the leading causes of death, including heart disease, cancer, stroke, diabetes, and chronic liver disease. Given that, adding medication to surgery is a logical choice, according to Rogers. Avoiding surgery isn't. "If you have cancer, you don't just do chemo," she says. "Surgery is part of multimodal therapy for many serious diseases. Why wouldn't it be the same for obesity?" ◻

I Had Bariatric Surgery—and I'm Proud I Did

GOING THE SURGERY ROUTE ISN'T EASY. BUT IT GAVE ME A HEALTHY FUTURE.

BY SHAUN CHAVIS

Ten years before I got the diagnosis I fought to avoid, I made myself a promise: If I ever developed diabetes, I'd get weight-loss surgery.

Back then, in 2009, I was *Health* magazine's 228-pound diet editor, and another editor assigned me a piece on bariatric surgery. I learned that bariatric surgery—also called metabolic surgery—can not only lead to dramatic weight loss but also causes metabolic changes that could put type 2 diabetes into remission.

I've had excess weight or obesity since I was 7. I'd thought about surgery before, only I was afraid of how it would change my life, and I kept believing I could do it on my own. I had plenty of resources: access to all the latest diet books, the major medical journals, and top obesity experts.

So I could do it on my own… right?

What I didn't know then—and what the American Medical Association acknowledged in 2013—is that obesity is a complex chronic disease that requires ongoing medical care. As many as 70 percent of cases are genetic, and there are 500 known obesity-related genes.

I kept trying. Between 2011

and 2021, I lost and regained over 160 pounds. Not all at once. Ten here, nearly 30 there, 56 after a medically supervised liquid diet.

Obesity always won. It is both progressive and relapsing. It causes metabolic adaptation—in other words, it changes appetite and satiety hormones and brain chemistry to encourage regain.

When I lost my fight to prevent diabetes in 2019, I weighed about 275 pounds. My primary care doctor brought up bariatric surgery, and I remembered my promise to myself. Deep breath. Even with support, going into unknown territory felt isolating.

Months of appeals for insurance coverage failed, so I decided to pay out of pocket. My obesity specialist recommended surgeons in the U.S. and Mexico. Myths I'd heard about medical tourism dissipated with research. The American Society for Metabolic and Bariatric Surgery and the Medical Tourism Association offered directories. I shared myth busters with concerned people in my life who tried to discourage me from going to Mexico—or from having surgery at all. My surgeon's YouTube channel reassured my sister. To others, I'd say, "You know 1 in 31 people in U.S. hospitals get infections too?" sometimes followed by, "I'm going to die early if I *don't* do this."

At that point, I weighed 304 pounds, and my body fat was over 50 percent. It's hard to carry that much weight. In addition to diabetes, I had severe sleep apnea, high cholesterol, arthritis, and high blood pressure. Working 10 hours a day as a solopreneur stressed me out—also not good for a healthy weight. My back and knees hurt constantly. Just Swiffering the living room took forever.

I chose to go to an obesity medical center in Tijuana for a mini gastric bypass, a laparoscopic procedure that, according to a review published in the *International Journal of Surgery* in 2018, is at least as effective for weight loss as the older, "gold standard" Roux-en-Y gastric bypass, yet it has a higher type 2 diabetes remission rate.

Surgery in Mexico cost a third of what I would have paid at home in Atlanta. But Mexico wasn't just about affordability for me. The surgical team's expertise stood out, and their nutrition philosophy emphasized natural foods over processed, which aligned with how I like to eat.

There's absolutely nothing easy about having 75 percent of a major organ severed. It took months to figure out how to eat 80 grams of protein a day with a finicky, six-ounce-capacity stomach. A typical day for me is five or six appetizer-size meals: yogurt, egg bites, takeout salads with double protein that I break up into multiple servings, and high-protein overnight oats. I make smooth soups to get more vegetables. Regular strength training is a must to prevent muscle loss. More than half of bariatric patients lose their hair within the first year after having surgery, and even though it's temporary, it's still traumatic.

The weight loss changes your relationships—sometimes ending them. But most of my friends joined me in finding new ways to enjoy one another's company.

By losing 140 pounds, I beat diseases I thought were going to escort me to my grave. I'm convinced that surgery and medication restored my life. My A1C dropped into the prediabetic range. My blood pressure has been normal since I woke up from surgery. I have no more sleep apnea, and the last time I saw my cardiologist, she said, "I don't think you need to see me again."

Recovering so much health lights you up. Last year, I spent a week exploring Oaxaca, walking seven miles a day—no back pain.

In my life, I'd been on so many diet plans, only to see my efforts trumped by weight gain. Surgery and new approaches to obesity treatment, combined with good habits, changed my trajectory. Managing any chronic disease is hard work. But knowing the work I put in pays off? Golden.

NEED A GAME PLAN? GET A COACH

To reach your weight-loss goal, you can download a diet app, consult a doctor or RD—even follow certified trainers on TikTok. Consult this guide to find the best support for you.

BY LISA LOMBARDI

When Amy Spencer, who works as a television writer in Venice, California, wanted to lose a few pounds, she found support right on her phone, in the form of a diet app. "Learning the calories, fat, and protein content of everything I ate and logged in kept me conscious of my next bites," she says. "It kept me accountable."

Across the country, Orsola Fiorillo Vecchione, a teacher who lives in Larchmont, New York, worked with a certified personal trainer three days a week to gain muscle and lose 23 pounds. "My trainer was the support I needed," she says.

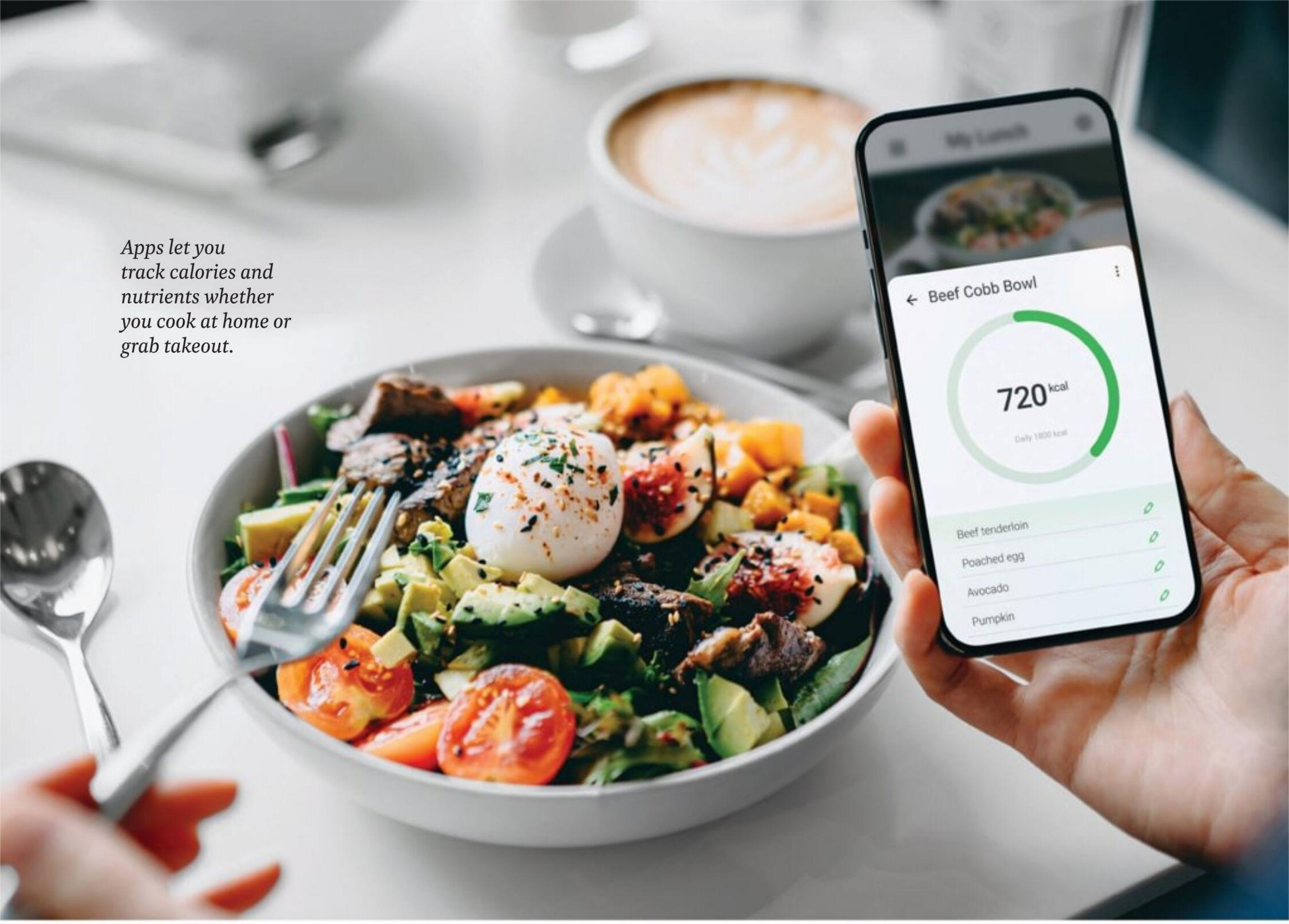
When it comes to losing weight, finding support is key. That's because weight loss is not straightforward, says Naomi Parrella, MD, medical director of the Center for Weight Loss and Lifestyle Medicine at Rush University in Chicago. "Losing weight is actually a little bit more complicated than we've been told," she says. "If you don't have somebody guiding you or at least saying, 'This is normal' or, 'We need to make a tweak,' it's easy to feel discouraged, and then it's hard to keep going."

These days, you can get that all-important guidance from a weight-management doctor, registered dietitian, certified trainer, even a diet or fitness app. Some insurance providers, including UnitedHealthcare, also offer free virtual diet support groups.

Equally important is knowing who *not* to trust. TikTok insta-experts top that list, according to Dana Hunnes, RD, MPH, a dietitian and adjunct assistant professor at the UCLA Fielding School of Public Health. "Unless that person has an RD or MD behind their name and fully understands metabolism and nutrient utilization, they may not be the best resource," she says.

Many people work with more than one type of coach at the same time or at different points in their journey. In fact, weight-management doctors often feature a team-based approach that includes consults with RDs, psychologists, and other specialists.

Yet hiring a coach (or three) can get expensive, so how do you know who to choose? Here's what each type of weight-management pro can do for you.



Apps let you track calories and nutrients whether you cook at home or grab takeout.

WEIGHT LOSS AND FITNESS APP

Best if: You're super busy and prefer asynchronous help. Also ideal if you find data useful and challenges motivating.

How it works: You may have already tried a diet or fitness app—half of all smartphone users have used one. Noom, Lose It!, MyFitnessPal, WW (formerly Weight Watchers), and other offerings make up a $940 million (and growing) market. "Apps for sure have a place in supporting weight loss and health," says Hunnes. One plus is that they're right there in your pocket, so you can easily check how you're doing with your daily eating or get a virtual high five right when you need it. "Some people do better with more immediate and regular feedback," Hunnes says.

Apps vary in their functionality, but most let you set goals, log meals and snacks, and plan and track workouts. Many spit out macronutrient info (for example, how many grams of protein, carbs, and fat are in each food you consume).

There's a big range of prices with apps. You can test one out using its free level (that's all Spencer used to get results) or sign on for a paid membership with a monthly fee in the $15 to $20 range (for example, MyFitnessPal is $19.99 a month). The cost of membership will vary widely based on whether it includes personalized coaching. Noom does and is $70 a month; the fitness app Future is $149 a month and features personalized coaching from a certified personal trainer.

WEIGHT MANAGEMENT DOCTOR

Best if: You have a medical issue or want to rule one out, you've tried other approaches but gained the weight back, or you prefer a team-based approach.

How it works: Many people assume weight-management doctors are for the clinically obese or people who also have diabetes or high cholesterol. But weight specialists see the whole gamut of people trying to reshape their bodies, says Parrella.

A visit with a weight-management doctor starts with your goals—what celebrity trainer Jillian Michaels famously calls your *why*. "It doesn't have to

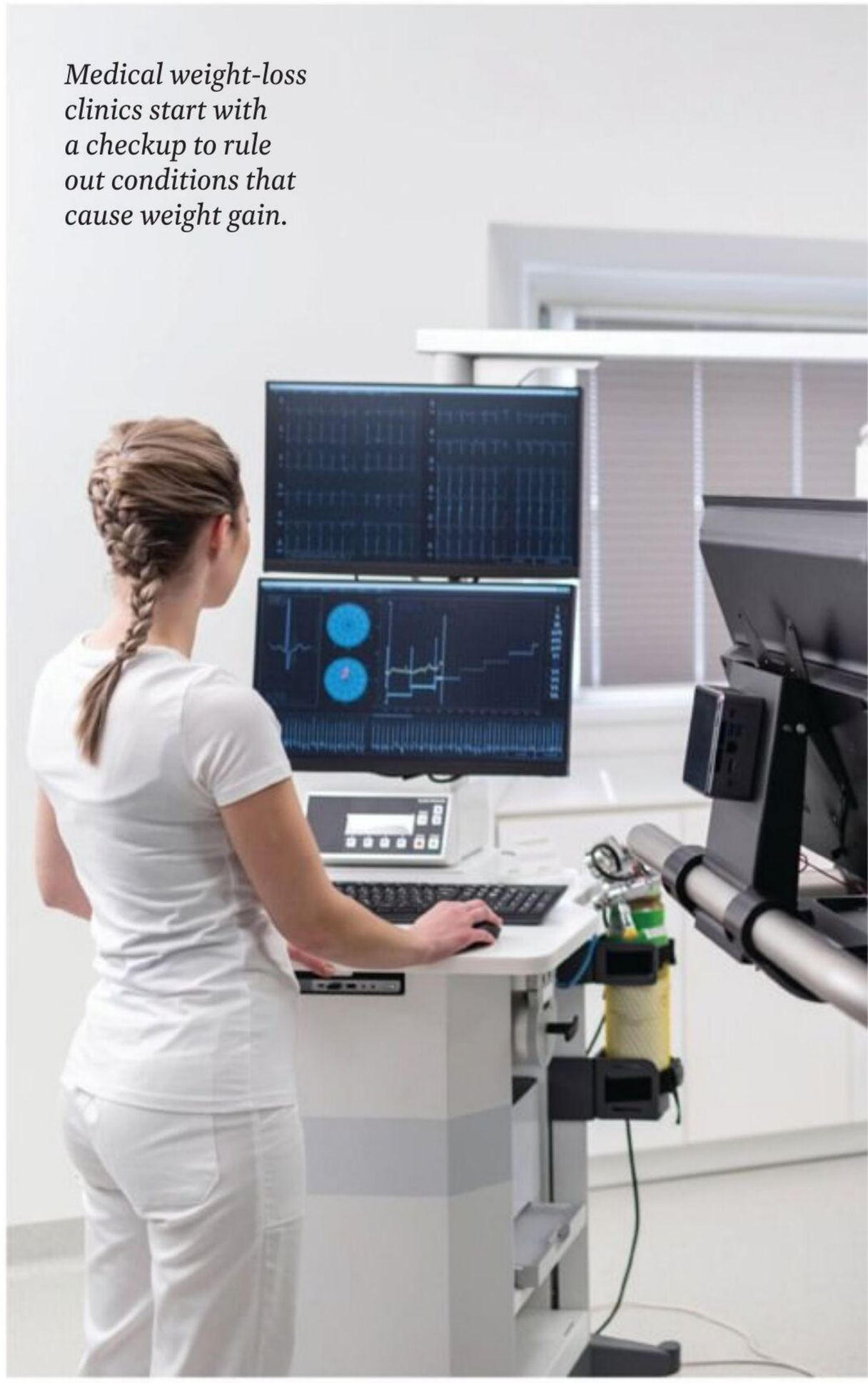
be complex," says Parrella. "It's just, 'What is the driver?' Some people say they want to feel better, some say they want to look better; some say, 'I want to get off all the meds.'" Knowing what your driving force is will help your doctor create action steps and keep you motivated.

A big advantage to seeing an MD? You'll get a thorough health assessment to make sure that there isn't something physiological going on that's making it easy to gain and/or hard to lose. A doctor will run labs to test for root causes, including the one we all think we have: a sluggish thyroid. If you do have an underlying problem, such as sleep apnea, that is connected to weight gain, you'll get a referral to a specialist to address the issue. You'll also get a review of the medications you're on to make sure you're not taking something that could lead to weight gain.

Why is a medical assessment important? A sudden spare tire can be a symptom of an emerging health problem. "Over 93 percent of the U.S. population is metabolically unhealthy, and for many, it manifests as excess weight developing around the waistline," Parrella says. "This can be a warning sign something might be amiss with your body that you need to get under control."

You might be tempted to just check in with your internist about your weight gain, but there's good reason to see a specialist instead. A 2024 study by University of Michigan researchers published in *JAMA Network Open* found that adding obesity specialists to primary care doctors' offices helped high-risk people lose an average of 4.4 percent of their body weight over a year—better results than primary care doctors' offices without obesity MDs.

Consulting a weight-management physician is sometimes but not always covered by insurance; check with your plan. You are more likely to get coverage if you have a concurrent health problem.



Medical weight-loss clinics start with a checkup to rule out conditions that cause weight gain.

REGISTERED DIETITIAN

Best if: You want a customized meal plan including satiating snacks; you are trying to lose weight after having a baby and/or while breastfeeding.

How it works: There are a few reasons to consider working with a registered dietitian (RD) or registered dietitian nutritionist (RDN). Research suggests that diet is more important than exercise for weight loss. And we now know that losing weight is more complex than calories in, calories out. A nutrition pro can help you plan daily meals and snacks wisely, choosing combinations of foods you like that keep hunger away and prevent blood sugar spikes, which can make the plan easier to stick with and more likely to work for you.

A dietitian can share practical guidance on what to eat morning to night that takes your lifestyle into consideration. If you're someone who travels three times a week for your job, you have no use for a plan built around home-cooked meals. But someone who loves to cook may thrive on that approach.

A nutrition pro can prove invaluable if you have food allergies or IBS, challenges that make daily food choices more complicated. Another group who should consider this route: Women who are trying to lose weight after a baby or while breastfeeding. Registered dietitians will share easy recipes, which

can go a long way to beat the boredom factor of "I can't eat another filet of salmon with spinach!"

RDs are trained to help you determine your macro- and micronutrient needs and calorie and protein goals, which you can plug into a diet app. Working with a physician? An RD can translate lab levels into what to do food-wise, says Hunnes.

Look for the letters RD or RDN after a diet specialist's name. Nutrition coaches may not have the same level of training. Some insurance plans will cover consults with RDs. Without insurance, prices can range from $100 to $200 and up an hour, according to Dietitian Success Center, a professional advocacy and support organization.

CERTIFIED PERSONAL TRAINER

Best if: You have a handle on healthy eating but need a push to work out, you need help with proper form, or you have a medical problem or past injury.

How it works: In the effort to drop pounds and get healthier, a certified personal trainer can be the missing link, helping you to tailor your exercise efforts to support weight loss. That was the goal when Vecchione hired one in January 2024. She lost 23 pounds from January to June with a clean diet and strength training three to five days a week. "My trainer really kept me on task. People think only cardio work is important [for weight loss], but it's not true—especially for women," she says. "We need to increase our muscle mass, and strength training helps with losing and maintaining weight."

Vecchione appreciates that her trainer makes sure she uses proper form. Indeed, that's a key advantage to working out with an expert rather than doing a routine you found online. "When your weight is decreasing, your center of gravity actually changes and it's easier to get injured," says Parrella. "So a trainer can be very helpful."

Working with a certified personal trainer can cost $75 to $150 and up an hour. Make sure to stick with a "certified personal trainer"; this accreditation is a sign that the person has been trained to create safe and effective exercise programs.

COGNITIVE BEHAVIORAL THERAPIST

Best if: You're prone to emotional eating, you have gained or lost a lot of weight, you have had an eating disorder, or you have trauma around food.

How it works: We've all heard that we shouldn't "eat our feelings," but it's easier said than done. You come home from work mad as all get-out at your idea-stealing colleague, and that pint of Ben & Jerry's sure feels like a release.

"If your mood is not well managed, sleep is disrupted, activity gets disrupted, food choices get disrupted. It impacts everything," Parrella says. Cognitive behavioral therapy, or CBT, can help you identify unproductive coping strategies and improve them. Without that means of emotional support, some dieters will turn to other vices, such as alcohol, Parrella explains.

To find a trustworthy CBT practitioner, ask your primary care doctor for recommendations. Few therapists take insurance, unfortunately, and rates can range from $150 to $300 and up a session, though some offer a sliding scale. ◻

3

HABITS THAT STICK

The daily rituals, moves, and lifestyle approaches that can improve your well-being and make it easier to stay in shape for the long term.

WHAT WE CAN LEARN FROM JAPAN

It's a land without obesity or Ozempic, not due to genes but rather daily and lifelong habits around eating and movement.

BY JOHANN HARI

In March 2023, the Japanese medical authorities announced that the weight loss drug Wegovy had been approved to treat obesity in their country. It sounded, at first, like great news for the company that makes Ozempic and Wegovy. But the *Pharma Letter* explained that this would not turn out to be much of a boost, for a simple reason: There is almost no obesity there. Some 42 percent of Americans are obese, compared with just 4.5 percent of Japanese people. Japan, it seems, is the land that doesn't need Ozempic.

I wondered how this could be, and if the answer might offer me a way out of a dilemma that was obsessing me. Several months before, I had started taking Ozempic, and I was traveling all over the world to interview the experts on these drugs to research my new book. The more I discovered, the more torn I became. I had learned there are massive health benefits to reversing obesity with these drugs. But I also saw that there are significant risks. I felt trapped between two risky choices—ongoing obesity or drugs with lots of unknowns.

So I went to Japan, to discover: How did they avoid this trap? My first assumption was that the Japanese must have won the genetic lottery—there had to be something in their DNA that makes them stay so slim. But in the late 19th and early 20th century, large numbers of Japanese workers migrated to Hawaii, and they have now been living on the island for four generations. They are genetically very similar to the Japanese people who didn't leave. It turns out that after 100 or so years, Japanese Hawaiians are now almost as overweight as the people they live among. Some 18.1 percent of them are obese, compared to 24.5 percent of people in Hawaii overall. That means Japanese Hawaiians are four times more likely to be obese than people back in Japan. So something other than genes explains Japan's slimness. But what?

I glimpsed part of the explanation when I went to the Tokyo College of Sushi & Washoku to interview the president, Masaru Watanabe. He had agreed to cook a meal for me with some of his trainees. He told me, "The Japanese cuisine's [core] feature is

All Japanese schoolchildren eat the same fresh meal. They discuss its elements and where the ingredients came from.

simplicity. For us, the simpler, the better."

He began to make a typical Japanese meal. He and his chefs grilled a mackerel, boiled some rice, made some miso soup, and prepared some pickles. "We don't traditionally eat meat a lot. We are an island country. We appreciate fish," he said. As the mackerel was grilled, I watched as various oils and fats leeched out. Even more important, Masaru explained, this was an illustration of one of the crucial principles of Japanese cooking. Western cooking, he said, is primarily about adding. To make food tasty, you add butter, lemon, herbs, sauces, all sorts of chemicals. "But the Japanese style is totally the opposite." It's "a minus cuisine." It is about drawing out the innate flavor, "not to add anything extra," he said. The whole point is to try "to make as much as possible of the ingredients' natural taste." To Japanese cooks, less is more.

Japanese meals have very small portions, but more of them—five in a typical meal. Before we started to eat, Masaru explained the Japanese principles of eating. The first thing I had to learn was "triangle eating." All my life, when I was eating a meal with different components, I would mostly eat them sequentially—start the soup, finish the soup; start the salad, finish the salad; start the pasta, finish the pasta. "In Japan, this is regarded as really weird," Masaru said. "It's a rude way of eating." A meal like the one before us should be eaten in a triangle shape. "First, drink the soup a little bit, then go to the side dish—one bite. Then try the rice, for one bite. Then the mackerel—again, a single mouthful. Then go back and have another taste of the soup. This is also the key to keep you healthy. . . . Keeping the balance, so you don't eat too much."

In Japan, you are taught from a very early age to only eat until you feel 80 percent full. It takes time for your body to sense you've had enough, and if you hit a sense of fullness while you're still eating, then you've definitely had too much.

I ate nothing but Japanese food like this on my trip, and three days in, I began to experience an odd mixture of hope and humiliation. I felt healthier and lighter, but I also thought—the Japanese

people have built up a totally different relationship to food over thousands of years, in ways we can't possibly import. So I was surprised to learn that most of Japan's food culture was invented very recently. Barak Kushner, who is a professor of East Asian History at the University of Cambridge, told the writer Bee Wilson for her book *First Bite* that until the 1920s, Japanese cooking was just "not very good." Fresh fish was eaten only once a week, the diet was dangerously low in protein, and stewing or stir-frying were not much of a thing. Life expectancy was 43. It was only when Imperial Japan was creating an army to attack other parts of Asia that a new food culture began to be invented, quite consciously, to produce healthier soldiers. After the defeat of Japan in World War II, when the country was in ruins, the new democratic government stepped up this transformation.

To find out how Japan created a radically different food culture, I arrived at Koenji Gakuen School in Tokyo with my translator on a hot September morning. We were greeted by Harumi Tatebe, who had been the nutritionist there for three years. By law, Harumi said, every Japanese school has to employ a professional like her. She explained that in this position, you design the school's meals in line with rules stipulating that they must be fresh and healthy. You oversee the cooking of the meals. You use the meals to educate the children about nutrition. Then you educate their parents.

That day's meal consisted of five small portions: some white fish, a bowl of noodles with vegetables, milk, some sticky white rice, and a tiny dollop of sweet paste. All the kids eat the same meal, and packed lunches are forbidden. No processed or frozen food ever goes into any of the meals here. "We start from scratch," Harumi said. "It's all about nutrition. … Sometimes with frozen food, they use a lot of artificial additives."

Once the meal was ready, she carried a tray over to the school's head, Minoru Tanaka. It is a legal requirement that the principal ensures lunches meet nutritional guidelines. It's also customary for principals to have the same lunch as the kids, and to eat it first, to make sure it's safe, nutritious, and delicious. He dug in. After a moment, he nodded approvingly. Before they began to eat, one child stood at the front of the class and read out what today's meal was, which part of Japan it came from, and how the elements were good for your health. She then said, "*Meshiagare*!," the Japanese equivalent of "Bon appétit," and everyone applauded.

While the kids were eating, Harumi held up colored ropes. Each one represented a different kind of food you need to be healthy. First she held up the yellow rope, representing carbs, and asked what they do for your health. A child yelled out: "Give you energy!" She held up the red rope, representing calcium, and another child yelled that it makes your bones stronger. As she went though the food groups, she tied each rope together to show that in combination they make a healthy meal.

Up until this point, I had seen aspects of Japan's approach toward health that seemed totally admirable. But next, I saw something that left me with mixed feelings. In 2008, the Japanese government noticed that obesity was rising slightly. So they introduced the Metabo Law, which was designed to reduce the negative consequences of a large waistline. Once a year, every workplace and local government office in Japan has to bring in a team of

Getting their steps: Pedestrians cross an intersection in Tokyo.

nurses and doctors to measure the waistlines of adults between ages 40 and 74. If the measurements are above a certain level, the person is referred to counseling, and workplaces draw up health plans with employees to lose weight. Companies with fattening staff can face fines.

I told all the Japanese people I talked to that if you tried this in the U.S. or Britain, people would be outraged. I said that people would feel like it was not their employer's business what they weighed, and that it was a monstrous invasion of their privacy. Most of them nodded politely, said nothing, and looked at me like I was slightly crazy. I felt like I was communicating across a cultural chasm. Whatever you think of its ethics, the Metabo Law does seem to be—along with Japan's other measures—having an impact. The country's obesity rate is currently at the lowest level in the first world.

As I traveled across the country, I began to see what you gain if you live in the Japanese style. Every morning around 7 or 8 a.m., in parks across Japan,

IN JAPAN, YOU ARE TAUGHT FROM A VERY EARLY AGE TO ONLY EAT UNTIL YOU FEEL 80 PERCENT FULL.

elderly people gather in groups and exercise together. Japanese people live longer than anyone else on earth; on average, men live to be 81, and women reach 88. Even more important, they remain healthy for longer.

I went to Okinawa, an archipelago of islands in the far south of the country, to track down a place that is described by local authorities as the village with the oldest population in the world (though another village in Japan has recently been declared the oldest in the country). By the side of a mountain, we drove into Ogimi. It has 215 households, and 173 people there are 90 or older.

In their community center, some of the very elderly residents were arriving. The first person we met was Matsu Fukuchi, a 102-year-old woman who had walked to the center from her home, slowly but without a stoop, holding on to a cane. She said she took a lot of pleasure in life: "I get together with my grandchildren and have fun, and dance. I love to dance."

Some traditional Okinawan music began to play, and Matsu put on a brightly colored kimono. Then slowly, carefully, joyfully, she stood up, and she began to dance. She moved her hips gently in time with the music, and the other women matched her rhythm, waving their arms. She looked toward me, beaming.

As I watched these centenarian women move with the music, I realized—this is what this whole journey has been about. While Matsu waved her 102-year-old hips in my direction, I thought: This is the potential prize here if we can solve the obesity crisis. More life. More health. More years of joy. ◻

Adapted from the book MAGIC PILL: The Extraordinary Benefits and Disturbing Risks of the New Weight-Loss Drugs *by Johann Hari. Copyright © 2024 by Johann Hari. Published in the United States by Crown, an imprint of the Crown Publishing Group, a division of Penguin Random House LLC.*

Stress Eating? Here's How to Stop

IF YOU REACH FOR A TREAT TO IMPROVE YOUR MOOD, YOU MAY BE CONFUSING PHYSICAL AND EMOTIONAL HUNGER. BREAK THE HABIT WITH THESE TIPS.

BY JAMIE DUCHARME

It should come as no surprise that Americans are stressed. A survey by the American Psychological Association (APA) found that money, work, crime, violence, the political climate, and the future of the nation are all significant stressors for Americans, each plaguing more than half of the survey's respondents.

While stress is bad for the body, the ways people deal with it can be just as unhealthy. The APA found in a different survey that almost 40 percent of adults reported overeating or consuming junk food in response to stress during the prior month. And of those people, about half said they did so weekly.

What is it about food—particularly junk food—that calls to so many of us during stressful times? Here's what the experts say about stress eating.

Stress Eating Explained

People look for comfort in food for both physiological and psychological reasons.

The hormone cortisol rises with chronic stress and can lead to increased appetite, says registered dietitian Allison Knott. "It can be true hunger if you have extended stress that is promoting this cortisol production to the point of impacting your appetite," she says.

But just as often, food is used as a "numbing strategy," says Amanda Baten, PhD, a nutritional psychologist. "It's a distraction strategy, in the same way that people might use alcohol or drugs or sex or TV as ways to create a buffer between themselves and whatever difficult feelings they might be experiencing."

Eating can even spark some of the same neurological reactions that drugs do, albeit to a lesser extent. Brain imaging research has shown that when people binge on carbohydrates and sugar, "it can actually activate the pleasure centers of the brain," Baten says. Research has shown that sugar, like heroin or cocaine, can cause the feel-good chemical dopamine to flood the nucleus accumbens, the part of the brain responsible for pleasure and reward. Sugar can also release endogenous opioids, the body's natural painkillers, which creates a pleasant effect.

But just like drugs and alcohol, emotional eating is a bandage for stress rather than a cure. A healthier response, Baten says, is recognizing that stress and negative emotions happen, and that we have to find sustainable ways to cope with them.

"We are raised in a culture that tells us we should not have negative feelings—we shouldn't be sad, we shouldn't be angry," Baten says. "There's a distinction to be made between what's an appropriate and healthy negative emotion that actually guides us to problem-solve by tolerating that feeling versus what becomes the unhealthy negative emotional reaction or feeling."

Is It Emotional Hunger?

While some people purposely and consciously dive into a pint of ice cream after a trying day, others may stress eat without even knowing it, Knott says. "People go on autopilot," she says. "It becomes part of our lives, and we don't necessarily recognize what is happening."

To avoid mindless eating, it's important to understand the difference between emotional and physical hunger. Before you tear open a bag of chips, take stock of how you're feeling physically and mentally, Knott says. Hunger feels different for everybody, but it's often accompanied by physical symptoms such as a growling or empty stomach, low energy, and headache. If you're craving snacks without any of these physical signs, you may simply be looking for comfort or a distraction, Knott says.

"If you aren't truly hungry, and it's a comfort food type of response, or a way to manage the stress that is related to using food to soothe,

then you might want to take a different approach," Knott says.

Healthy Solutions

When you're in the throes of a stressful situation, just about any healthy distraction—including walking your dog, doing a quick guided meditation, or calling a friend or family member—can help you steer clear of the cabinet filled with junk food. Drinking a glass of water may also help, since people often confuse hunger and thirst, Baten points out.

But in the long term, getting at the root cause of your stress is more important than stopping yourself from snacking in the moment. Healthy habits such as exercise, sleep, and proper nutrition are all sustainable stress relievers, Baten says. And if you consistently struggle with emotional or stress eating, she adds, it may be worth speaking with a mental health professional, who can help you sort out any underlying issues.

"It's important to pay attention to our feelings before they become so intense that we can't think clearly," Baten says. "Emotional eating is happening because there's an emotional need that isn't being fulfilled."

But it's also important to acknowledge that your emotions will win out from time to time—and beating yourself up for occasionally choosing comfort food will only add to your stress.

"Unfortunately, we put a lot of emphasis on our individual food choices, and there can be guilt connected to some of those more indulgent choices, which can ultimately lead to more stress," Knott says. "It really is about your pattern of eating and having a healthful diet in a sustainable, long period of time. That can include these indulgences as part of an overarching diet pattern."

WORK OUT SMARTER, NOT HARDER

You're busy—especially during the work week. You need workouts that tick all the boxes without a big commitment. Try these tricks to fit fat-burning exercise into the time you have.

BY MATT FUCHS

A FEW YEARS AGO, PERSONAL TRAINER Anna Maltby cut back on exercise as she juggled work with being a new mother. Like some of her clients, she suddenly lacked the time and energy to work out the way she used to. She could manage no more than several 15-minute workouts per week, "but I actually felt like I got my minimum effective dose for that stage of my life," she says.

Many of us feel like we're too busy for exercise. Others actively avoid it. But research shows that doing at least some exercise is important for a longer, healthier life without dementia, heart disease, diabetes, or cancer. Other advantages are reaped right away: We're happier and more energetic on a daily basis.

So just how little exercise can you realistically get away with while still getting these critical benefits? Here's how low you can go, according to experts. One interesting and important point: Getting there may require changing how we define exercise in the first place.

MEET THE MINIMUM TARGETS

Official guidelines from the World Health Organization (WHO), the U.S. government, and other groups give adults a few choices for how much aerobic physical activity they should be doing on a weekly basis. One option is getting at least 75 to 150 minutes of "vigorous" activity, meaning your level of huffing and puffing makes conversation difficult and your heart rate rises to about 80 percent of its peak. Another option takes longer, but it's less intense: 150 to 300 minutes of "moderate" activity, at 60 to 70 percent of your maximum heart rate.

You could also combine just enough vigorous and moderate exercise so they add up to the weekly minimum. Because tougher workouts are especially health-giving, they count for more toward your weekly goal; every minute of vigorous activity is equivalent to two minutes of moderate activity. (This means that if you got 50 minutes of vigorous activity, that would count as 100 minutes toward the 150-minute requirement for moderate activity. Then you'd only need to add 50 minutes of

Strength work is essential. You can combine it with cardio to save time.

moderate activity to meet your weekly minimum.)

These bare-minimum amounts deliver the biggest rewards for the fewest drops of sweat, according to decades of research. "If you look at the statistical curve, the increase in benefits is most dramatic" when these minimums are achieved, says Regina Guthold, an epidemiologist at the WHO. If you go higher—over 300 minutes of moderate exercise, for example—you'll keep accruing greater health, but the gains become smaller.

Similar thresholds also support mental health, says Mary de Groot, a psychologist and associate professor of medicine at Indiana University School of Medicine. In a study of more than 1 million people, those who exercised 120 to 360 minutes per week had the best mental health, compared with those who did more or less.

SAVE TIME WITH HYBRID WORKOUTS

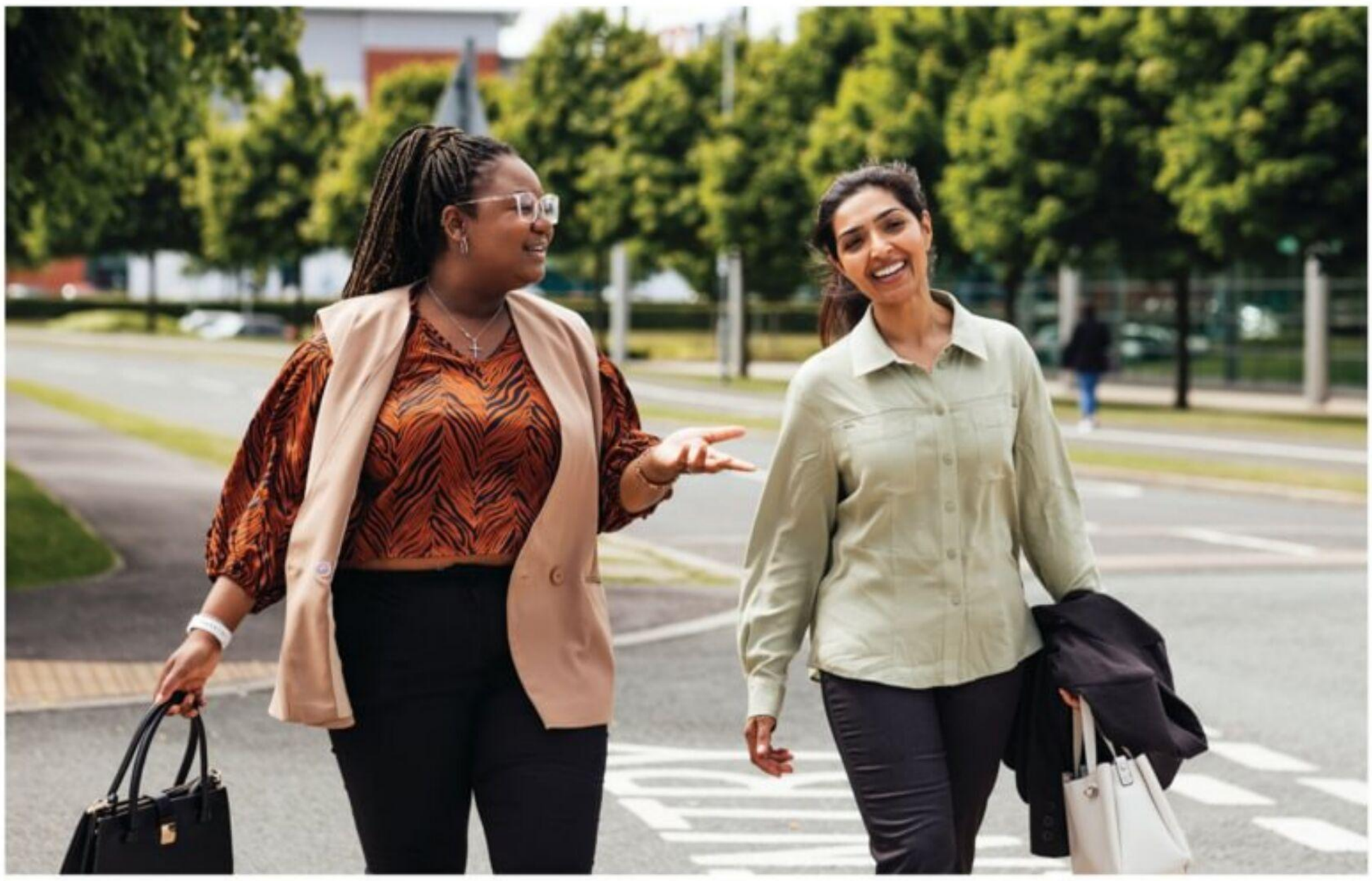
But here's the catch: On top of cardio, strength training is a must, no less than twice per week. If you neglect it, some unsavory effects of older age may await you, like muscle atrophy and osteoporosis.

Now, the time-saving loophole: Strength training can be mixed into cardio sessions. By using your own body weight as resistance (instead of heavier barbells), you can do more repetitions, upping your heart rate along with building muscle. Seniors in particular should focus on this "multi-component activity," the WHO guidelines say, including moves that improve balance to help reduce the risk of falls.

Cardio-strength workouts include push-ups, Turkish get-ups, mountain climbers, burpees, air squats, and lunges. With this hybrid approach, you could still wrap up your exercise for the week in as few as 75 minutes.

SKIP DAYS, NOT MONTHS

Work gets busy; parenthood, vacations, and illness disrupt routines. We often need to skip exercise for several days in a row. (After all, we're only human—not exercise robots.) So how do the weekly minimums translate into everyday life? Must we bust a move every single day or face imminent demise?



Multitask your movement: A "walk and talk" meeting lets you brainstorm with a colleague while you both get some fresh air and steps.

Thankfully, no, Guthold says—as long as you catch up later in the week. "Weekend warriors get the same benefits as those who are active every day for less time," she says. "There's no evidence it needs to be spread out."

What if you skip a week or two at a time? Well, if you reach the minimum amount of physical activity for only, say, three out of every four weeks, that's much better than never reaching it. "It's normal for people to have highs and lows with physical activity, even if they love it," says Stella Volpe, a professor of exercise and nutrition at Virginia Tech and president of the American College of Sports Medicine, another influential organization that publishes activity guidelines.

"Life happens," says Katrina Piercy, an exercise physiologist at the U.S. Department of Health and Human Services (HHS) who leads development of the Physical Activity Guidelines for Americans. "But if you're working toward meeting the guidelines in a typical week, you're going to see benefits."

Even on your off-weeks, just five minutes of activity a day will send more blood pumping through the body, which prevents blood vessels from stiffening. It could also improve blood sugar and sleep quality, Piercy says. But the more off-weeks that pass, the more your health may eventually suffer, notes Volpe. Just two weeks straight of being very sedentary causes aerobic fitness and muscle mass to decline significantly, potentially paving the way for disease.

MIX EXERCISE WITH MOVEMENT BREAKS

Stay still for over an hour and your feet may start tingling as the blood pools there, compelling you to get up and stretch. This light movement is important, but for most people, it's not taxing enough to count toward their weekly exercise minimum. So here's another way to save time on exercise: Use these breaks to get your heart rate up so it qualifies as moderate or even vigorous exercise.

Studies show that the more movement breaks you take, the lower your risk of death (at least anytime soon), says Keith Diaz, an associate professor of behavioral medicine at Columbia University Medical Center. These breaks are necessary even if you also exercise. "The other 98 percent of the day you're not moving does matter," Diaz says.

To save time, you can use four or five of these breaks as mini-exercise sessions, each about five minutes long. If you're healthy enough to ramp up the intensity, try one-minute exercise snacks, 20 times per week or more, says Martin Gibala, a professor of kinesiology at McMaster University who

wrote a book called *The One-Minute Workout*. That could mean walking quickly or running up some stairs, depending on your fitness level. "Your total time spent exercising will be reduced, and there's the simultaneous benefit of breaking up periods of prolonged sedentary behavior," Gibala says.

We shouldn't "blow off exercise completely" on days we're too busy for one long workout, Gibala says: "Exercise doesn't have to be this special thing you do at a special place." In a study of more than 25,000 people wearing fitness trackers, Gibala and his colleagues found that people who didn't formally exercise but got three separate bouts of vigorous activity, each lasting only a minute or two, during their everyday lives lowered their risk of dying from cancer by about 40 percent and heart disease by 50 percent over a period of about seven years.

Diaz found that adults who engaged in five minutes of walking every 30 minutes improved their blood sugar, blood pressure, mood, and energy levels. Taking such breaks actually leads to more productivity at work, not less, according to Diaz's preliminary findings. "Humans tend to have trouble focusing for longer than 20 minutes at a time anyway," he notes.

You could have speed-walking meetings, or run from your office to the coffee shop. Volpe has a friend who watches TV with his kid but mutes the commercials, puts on music, and dances with the child until the show resumes. "You'll be amazed how good you feel by dancing a little instead of getting a snack," Volpe says.

Piercy turns supermarket shopping into races, timing herself while carrying her groceries in a basket for muscle strengthening. "Some days I don't have a formal workout," she says, "but I grocery shopped, or I found other ways to multitask some activity."

REDEFINE "EXERCISE"

Here's the ultimate hack to reduce exercise time: Find physical activities that don't feel like exercise at all. (Warning: This may involve being social, having fun, and bonding with nature.) For example, you could ask a friend to join sessions of high-intensity interval training at a park. HIIT mixes bursts of activity with recovery breaks. When you can talk with people you like during the rest intervals, exercise drudgery transforms into a mobile hangout.

Sports like tennis count as HIIT. So does interval walking if it gets your heart rate up. The kicker is that the recovery intervals also go toward your minimum weekly exercise goal. "The rest intervals certainly count toward total minutes because your heart rate stays high during the breaks," Volpe says. Magically, your 75 minutes of vigorous exercise could drop below 40.

You may forget you're exercising when distracted by the park's natural beauty, leading to more benefits. "The improvements in mood…are even better when people exercise outside, away from their tech," Diaz says. So-called "green exercise" improves emotions and self-esteem, and protects against depression, de Groot notes.

FIND YOUR "ME"

Your level of minimum exercise—your ME—depends on who you are. "When working with people on physical activity plans, the first thing I do is encourage them to think about their goals and values," de Groot says.

If you prioritize longevity and defying your age, your self-chosen ME will be higher than others' minimum. "The more you exercise, the longer you'll live free of chronic disease," Diaz says. "But that's not everyone's goal." Some care more about finding a sustainable amount that helps them feel good in the moment, for example, so they can carry groceries or climb steps without fatigue or pain.

Here are factors to consider in setting your ME.
Time commitments: Some of Maltby's clients are pregnant. "What counted as a great workout before this season of life just may not be possible in a few months," she says.
Physical capacity: Activity guidelines may differ for those with illness or disability.
Psychological makeup: Teens with ADHD, for instance, may need more exercise to "optimize their brain functioning," says Erin Gonzalez, a clinical psychologist specializing in ADHD and health behaviors at Seattle Children's Hospital.

Fitness trackers and mood apps can show how different MEs translate into heart health, sleep quality, and positive emotions. The HHS created a "Move Your Way" weekly activity planner. "Monitoring your health data and progress objectively is very helpful," Gonzalez explains.

Fitness wearables can also turn exercise into family time. Instead of nagging your teen to get active, strive toward your minimum goals together. ◻

The 3 Best Moves That Don't Require Equipment

BUILDING MUSCLE HELPS BURN FAT. YOU CAN USE YOUR OWN BODY WEIGHT TO DO THIS STRENGTH WORKOUT AT HOME.

BY MARKHAM HEID

If you have access to a gym, there's nothing wrong with using exercise machines. But it's also a good idea to sometimes forgo equipment and use the weight of your own body to work out.

Here's why: While machines tend to isolate specific muscle groups, "a lot of body-weight exercises force you to control your movements and stabilize yourself, and to do that, you need to recruit and train a lot of different muscles," says Chris Gagliardi, a certified personal training and weight management specialist with the American Council on Exercise.

It's a good workout for your brain, too, since body-weight moves often require more concentration than machine-based exercises. "To put the different pieces together and execute these moves properly, you have to stay focused, engaged, and present," Gagliardi says. "A lot of machines don't have that cognitive component."

Stepping off the machines also gives your body a chance to make different shapes and move the muscles that machines might miss. "With most machine-based exercises, you're moving along one plane—either forward-backward or side-to-side," Gagliardi says. "With body-weight movements, you hit multiple planes, so you have the ability to train not just different muscle groups but also how the body moves."

These are the three best exercises that require nothing more than your own body weight.

1. Burpees

How to do them: Start out standing and then squat down so your palms are on the ground. From here, thrust your feet back so that you're in the starting position for a push-up (also known as a plank). Hold this pose for a second or two, do a push-up, and then reverse the steps—pull your legs forward so you're back in a squat, and then jump up so you're landing back in your starting position. (If you're confused and it would be easier to watch a video, there are many helpful tutorials on YouTube.)

What they do: Burpees train your chest, triceps, shoulders, core, hips, thighs, calves, and butt. "Really, you're targeting your entire body," Gagliardi says. "And there are a lot of different variations you can throw in to personalize it." For example, you could hold the push-up position a few seconds longer to better activate your abdominal muscles. Or, when you have the movement down cold, you could speed everything up to enhance the overall aerobic aspect of the exercise.

A fun twist on a traditional burpee is the inchworm. "Instead of squatting down and kicking your feet back, you squat down and walk your hands out in front of you," Gagliardi says. "You'll engage your shoulders and triceps and core more with this variation."

2. Mountain Climbers

How to do them: Get down on all fours, then step forward with one leg as though you're in the process

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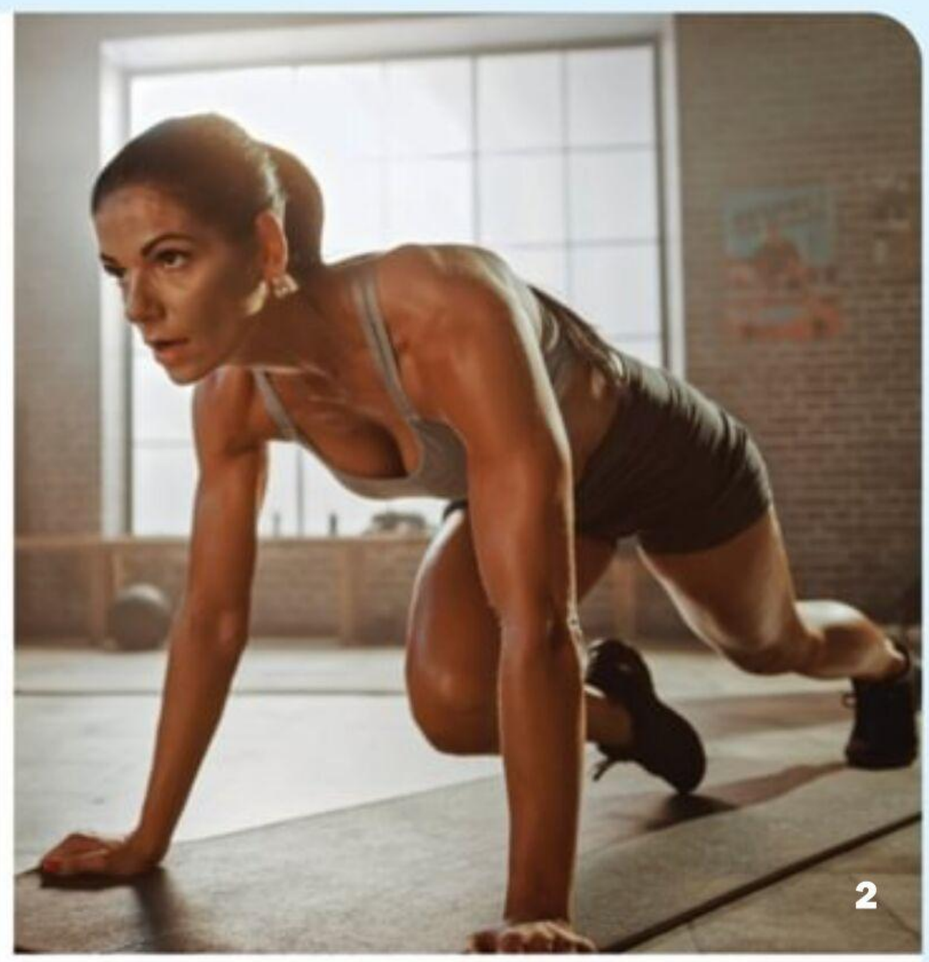

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of scrambling up a steep hill. From this starting position, use a jumping motion to push your forward leg back while pulling your back leg forward. "It's kind of like you're running in place, but on all fours," Gagliardi says.

What they do: Mountain climbers train your upper body, arms, and shoulders while also increasing lower-body strength, flexibility, and cardio-respiratory fitness. "Again, you're targeting a whole lot at once," Gagliardi says.

3. Turkish Get-ups

How to do them: This move is tricky and requires some practice and proper instruction. But in a nutshell, you'll start flat on your back with one arm and hand raised and pointed at the ceiling. Without letting your arm or hand drop, you'll roll onto your side, plant a foot on the ground, and rise to your feet.

What they do: Turkish get-ups target your shoulders and core but also a lot of underutilized stabilizing muscles in your back and around your hips. "It's great exercise on its own, and it's also good for warming up," Gagliardi says. Once you have the movement down, he recommends adding a kettlebell to increase the difficulty.

Add all three of these moves to your exercise regimen, and you can count on engaging and training a more diverse set of muscles than you would if you spent all your gym time on machines.

9 REALISTIC WAYS TO SQUEEZE IN MORE STEPS

Walking is a low-impact way to get cardio, build muscle, and burn calories. You don't have to hit 10,000 steps to reap the benefits.

BY ANGELA HAUPT

EVERY DAY FOR THE PAST DECADE, I'VE tried to dethrone the family walking champ: my 67-year-old dad. Despite my youthful advantage—he has more than 30 years on me, as he's quick to point out—I haven't logged more steps than him once. I find this to be both mortifying and a point of vicarious pride; his fitness is remarkable. It's also excellent motivation to find creative ways to finally out-walk him.

My dad and I compete using our favorite pedometer app, which displays each day's steps in a bar graph. (While we both wear Apple Watches, we like the app best for logging the entire day's steps, and we keep our phones on us all the time.) If you've barely moved, your results for that day show up in a disapproving red. If you land somewhere between 5,000 and 10,000 steps, it's a milder orange. And once you reach 10,000 steps per day, the graph becomes green and showers your phone screen with confetti as you jump up and down (and maybe forward; more steps). We send each other screenshots at the end of the day, and while I hit 10,000 at least a few times a week, he exceeds 20,000 steps every single day.

Fitness experts say that, really, both of us are winning: Striving to increase your step count by any amount is almost always a good thing. "Walking is probably the most basic, most fundamental thing that nearly everybody has the ability to do," says Tamanna Singh, MD, co-director of the Sports Cardiology Center at Cleveland Clinic. "It allows us to get our heart rate elevated and to build up our aerobic endurance. It helps control our blood pressure, it helps control our cholesterol, it helps with weight management, and it helps with blood sugar control."

Walking is a low-impact activity, which means it's gentle on the joints—and unlike other types of exercise, there's no learning curve to do it properly or safely. Research indicates that walking can improve body mass index, lower the risk of type 2 diabetes and stroke, and slash the chances of early death. According to a study published in 2012, walking for about an hour a day can cut the effects of weight-promoting genes in half. Another study

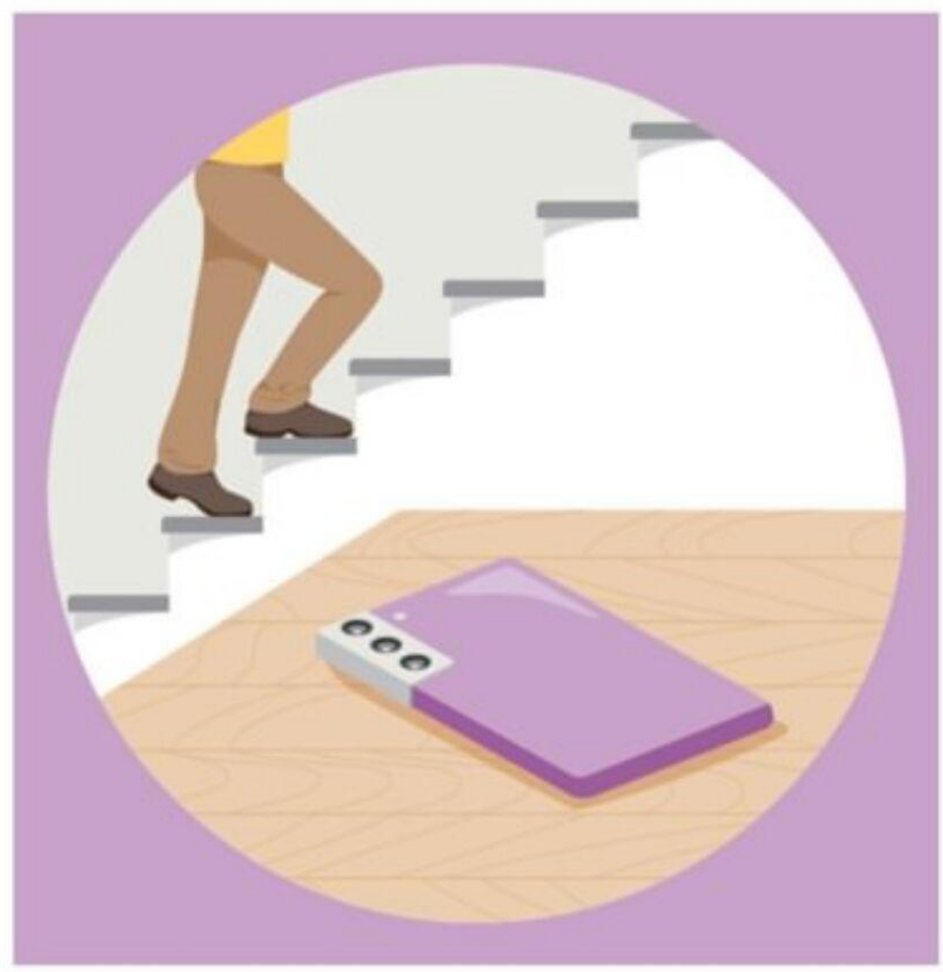
found that just a 15-minute walk can curb cravings for chocolate, while another suggested that people who walked at least 20 minutes a day five days per week logged 43 percent fewer sick days than those who exercised once a week or less. Clearly, there are more reasons than not to take a walk.

Generally, the more steps you aim for a day, the better. But don't worry if you fail to meet the 10,000-per-day benchmark. "That was a number thrown out there as more of a marketing ploy," says Cedric X. Bryant, president and chief science officer of the American Council on Exercise. "If individuals can get about 7,000 steps or so, they're going to be doing a pretty good job of hitting the mark." Of course, it depends on your own personal profile, he adds: Someone who currently does little to no daily activity will benefit from logging just a couple thousand steps per day. "It takes a very small dose to elicit a pretty nice response," Bryant says.

Here are nine ways to step up your steps—and make achieving your goal extra fun.

RECRUIT A WORKOUT BUDDY OR JOIN A WALKING CLUB

Partway into the pandemic, fitness trainer Brianna Joye Kohn realized that many of her friends had fled New York City. She missed being able to call them up to go on a walk—so she posted a TikTok video inviting her million-plus followers to join her for a stroll through the city. "I thought maybe I'd get 10 or 20 people," she recalls. Around 300 women showed up. These days, Kohn leads City Girls Who Walk, a club that meets every Sunday for a 40-minute outing. More than 700 people of all ages joined one of the group's recent walks. Walking with a group offers accountability and can make exercising more fun. There are also a variety of mental-health benefits, including reduced loneliness, Kohn has found. Spinoffs of her club have popped up around the world. If there's not one where you live, you might consider launching your own. "Don't be scared of taking that first step and posting about it, because you never know who you're going to meet or who will want to join," Kohn says.



STOP TEXTING PEOPLE WHO ARE NEARBY

What do you do when you want to talk to someone upstairs, or down the hall? "We probably yell, and we probably text," Bryant says. (Guilty.) "Instead, get up, walk, and communicate with them face-to-face." Replace every text, email, call, or Slack to the nearby target of your attention with an in-person visit, and your daily step count will soar.

WALK IN PLACE DURING TELEVISION SHOWS

When you're watching non-streaming TV, stand up every time there's a commercial break and march in place until the show resumes, Bryant suggests. "We know that disrupting sedentary behavior is very beneficial," he says. For example, research suggests that standing up and moving for about three minutes every half hour may lessen the negative

health effects associated with prolonged sitting. Other studies have found that three one-minute bursts of activity every day promotes longevity, and that stepping in place during TV commercials can indeed increase physical activity and daily steps.

GET (OR BORROW) A DOG

It's one thing to skip a walk and disappoint yourself; it's another to let down a set of puppy-dog eyes. That's why every morning, two hours before work, my standard poodle and I go for a three-mile walk. He moves at one speed—a gallop—which means we very efficiently log a lot of steps.

Research published in *Scientific Reports* in 2019 indicates that dog owners are four times more likely to meet exercise recommendations than those who don't have a pup. More than half of the dog owners surveyed reported walking their pet for at least 150 minutes a week at a pace of 2.5 miles per hour. An earlier study, published in 2017, found that dog owners spent 22 extra minutes per day walking and took 2,760 additional steps per day.

If you don't have a dog, Singh suggests volunteering to walk dogs at a local animal shelter. "It's a great way for people to move and also do a little bit of service," she says. "You're helping yourself as much as you're helping a little animal, and they deserve to walk as much as we do."

USE A TRACKER

Research suggests that fitness trackers are pretty motivating: One study, published in 2022, found that people who used a pedometer walked nearly 400 steps per day more than those without one. And when Australian researchers reviewed hundreds of studies involving 164,000 people worldwide using wearable fitness trackers, they concluded that using the devices encouraged walking up to 40 minutes more each day, which came out to about 1,800 additional steps.

"Especially if you're a visual person, it's a really great way to see your progress," Singh says. "I think

that sometimes we under- or overestimate how much we move, so to have an actual marker of that is very helpful."

CREATE SOME COMPETITION

My dad and I compete for bragging rights—but Singh suggests elevating the stakes. Create a competition with your friends, family members, or colleagues, and commit to at least 8 to 12 weeks. "Try to accrue a certain number of steps per month or per week, and maybe have a couple prizes intermittently," she says. At the end of the competition, whoever has the greatest number of steps will win, for example, a gift card to their favorite restaurant or a celebratory gathering in their honor. "It's a friendly way to get something positive out of competition and still be supportive of one another," Singh says.

IF IT'S COLD OUTSIDE, DESIGN AN INDOOR CIRCUIT

On a recent December evening, my dad and I realized we were both 200 steps short of our goals. So we marched up and down the stairs and through the hallway over and over, cheering along the way.

It might feel slightly ridiculous, but indoor circuits are effective, Singh says. Turn on some music and form a conga line through the house, or listen to an entertaining podcast. She suggests committing to climbing the stairs a certain number of times every day. "It's an incredible way to build endurance, power, and strength," she says.

There are lots of other great ways to take advantage of indoor movement, says certified personal trainer Michael Jones. He recommends running in place (or on a treadmill), shadow boxing, and dancing. "They're fun, and they're sure to get your heart rate up and help you hit your step goals without leaving the house," he says.

HOLD MOBILE MEETINGS

As Bryant told me about his favorite walking strategies, he was in motion. "I have a headset on, and I'm moving the whole time," he said. In addition to walking inside or outside during calls, he aims to host walking meetings with his colleagues. You can do the same. Notify meeting attendees in advance so they can dress accordingly, and choose a flat path—ideally in a quiet area like a park.

ALWAYS BE PREPARED

To cultivate a no-excuses lifestyle, Singh recommends always keeping your sneakers with you. Heading out on errands? Commuting to work? Pack your walking shoes so if the opportunity arises, you can pop out of your car and sneak in a quick walk. "Keep them where you see them," she says.

That pairs nicely with my super-walker dad's best advice on getting a lot of steps. "Discipline is key," he told me. "And then the willpower to follow through. I make myself do it." ◻

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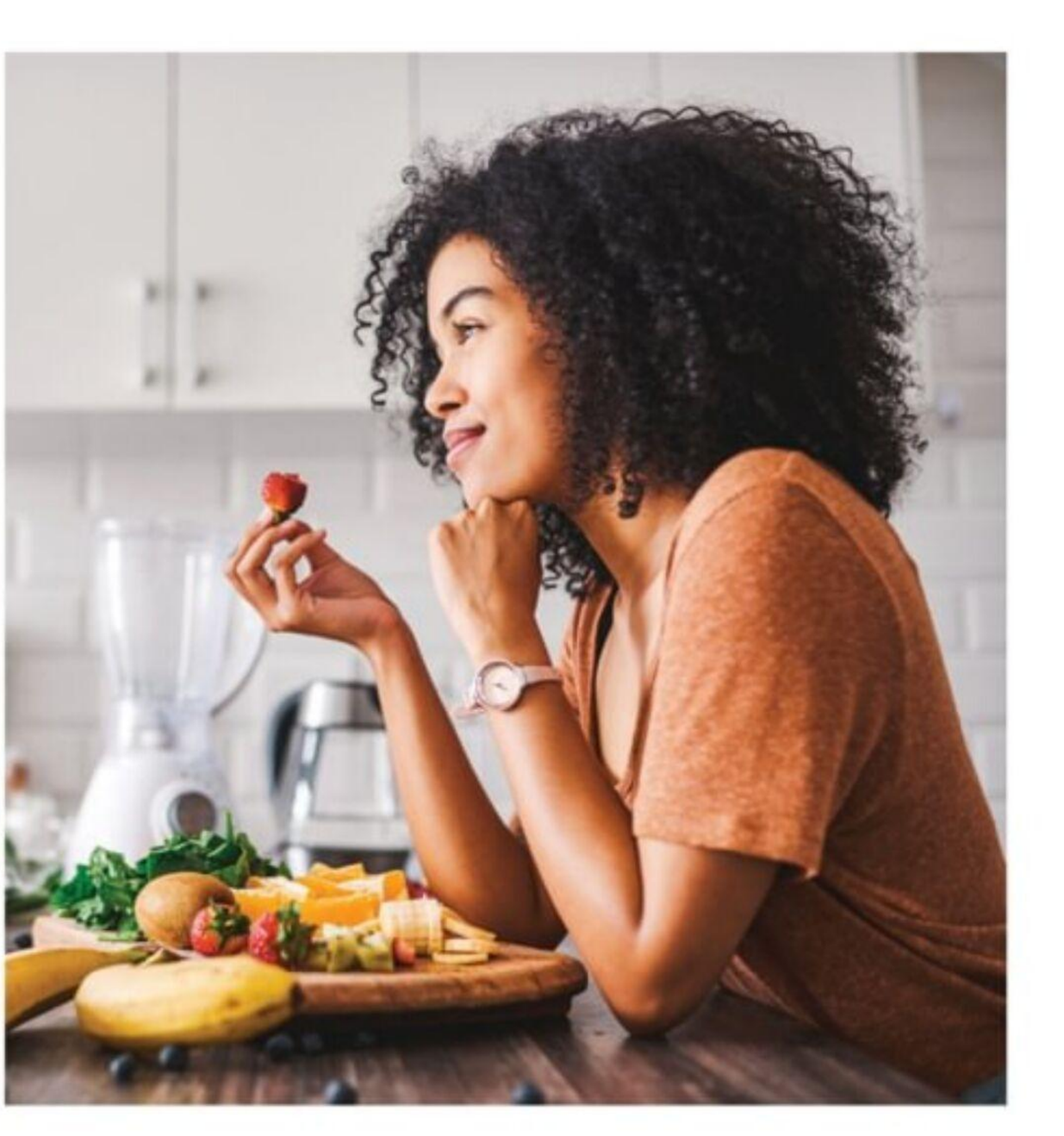
Seeing the Light

Getting out in daylight may be good for reducing weight, according to a growing body of research. A cell study by University of Alberta researchers found that the fat cells beneath the skin shrink when exposed to UV light. And a study by Northwestern University Medicine researchers discovered that exposure to early-morning light was linked to lower BMI. More research needs to be done, but in the meantime, consider it another reason to take a break and get active outside.

New Paths to a New Tomorrow

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