It's a familiar sight on college campuses across the country: Haggard-looking students slump over library desks and laptops. Zombie-like, they lurch across campus in search of caffeine and sugar. The gyms are empty, beds unslept in. At Stanford, it's called "Dead Week"—the seven-day final examination period at the end of every quarter. Students cram their heads with facts and formulas, pull all-nighters, and push themselves to study hard enough to make up for ten weeks of dorm parties and Frisbee golf. However, studies show that these heroic efforts come at a cost (beyond the nightly pizza deliveries and pricey espresso drinks). During final exam periods, many students seem to lose the capacity to control anything other than their study habits. They smoke more cigarettes and ditch the salad bar for the french fry line. They're prone to emotional outbursts and bike accidents. They skip showering and shaving, and rarely make the effort to change clothes. Dear God, they even stop flossing.

Welcome to one of the most robust, if troubling, findings from the science of self-control: People who use their willpower seem to run out of
it. Smokers who go without a cigarette for twenty-four hours are more likely to binge on ice cream. Drinkers who resist their favorite cocktail become physically weaker on a test of endurance. Perhaps most disturbingly, people who are on a diet are more likely to cheat on their spouse. It’s as if there’s only so much willpower to go around. Once exhausted, you are left defenseless against temptation—or at least disadvantaged.

This finding has important implications for your willpower challenges. Modern life is full of self-control demands that can drain your willpower. Researchers have found that self-control is highest in the morning and steadily deteriorates over the course of the day. By the time you get to the stuff that really matters to you, like going to the gym after work, tackling the big project, keeping your cool when your kids turn the couch into a finger paint masterpiece, or staying away from the emergency pack of cigarettes stashed in your drawer, you may find yourself out of willpower. And if you try to control or change too many things at once, you may exhaust yourself completely. This failure says nothing about your virtue—just about the nature of willpower itself.

**THE MUSCLE MODEL OF SELF-CONTROL**

The first scientist to systematically observe and test the limits of willpower was Roy Baumeister, a psychologist at Florida State University with a long-standing reputation for studying puzzling phenomena. He had tackled questions like why sports teams show a home court disadvantage during championships, and why good-looking criminals are more likely to be found not guilty by a jury.* His work has even touched on satanic ritual

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*Curious about the answers? Athletes become more self-conscious during high-stakes competitions in front of a hometown audience, and this interferes with their ability to respond instinctively and automatically to the game. Juries are more likely to assume that an attractive person is basically a “good” person, and that external factors influenced his or her “bad” behavior—providing the benefit of that all-important reasonable doubt.
abuse, sexual masochism, and UFO abductions—topics that would scare away most researchers. You could argue, however, that his most frightening findings have little to do with the occult, and everything to do with ordinary human weakness. For the last fifteen years, he has been asking people to exert their willpower in the laboratory—turning down cookies, tuning out distractions, holding back their anger, and holding their arms in ice water. In study after study, no matter what task he used, people’s self-control deteriorated over time. A concentration task didn’t just lead to worse attention over time; it depleted physical strength. Controlling emotions didn’t just lead to emotional outbursts; it made people more willing to spend money on something they didn’t need. Resisting tempting sweets didn’t just trigger cravings for chocolate; it prompted procrastination. It was as if every act of willpower was drawing from the same source of strength, leaving people weaker with each successful act of self-control.

These observations led Baumeister to an intriguing hypothesis: that self-control is like a muscle. When used, it gets tired. If you don’t rest the muscle, you can run out of strength entirely, like an athlete who pushes himself to exhaustion. Since that early hypothesis, dozens of studies by Baumeister’s laboratory and other research teams have supported the idea that willpower is a limited resource. Trying to control your temper, stick to a budget, or refuse seconds all tap the same source of strength. And because every act of willpower depletes willpower, using self-control can lead to losing control. Refraining from gossiping at work may make it more difficult to resist the cafeteria dessert table. And if you do turn down that tempting tiramisu, you may find it more difficult to focus when you’re back at your desk. By the time you’re driving home, and the idiot in the next lane almost runs into you because he’s looking at his cell phone—yeah, that’ll be you screaming out your window that he should be sure to program 911 into his phone, the jackass.

Many things you wouldn’t typically think of as requiring willpower also rely on—and exhaust—this limited well of strength. Trying to impress a date or fit into a corporate culture that doesn’t share your values. Navigating a stressful commute, or sitting through another boring meeting. Anytime
you have to fight an impulse, filter out distractions, weigh competing goals, or make yourself do something difficult, you use a little more of your willpower strength. This even includes trivial decisions, like choosing between the twenty brands of laundry detergent at the market. If your brain and body need to pause and plan, you’re flexing the metaphorical muscle of self-control.

The muscle model is at once reassuring and discouraging. It’s nice to know that not every willpower failure reveals our innate inadequacies; sometimes they point to how hard we’ve been working. But while it’s comforting to know that we can’t expect ourselves to be perfect, this research also points to some serious problems. If willpower is limited, are we doomed to fail at our biggest goals? And thanks to the near-constant self-control demands of our society, are we destined to be a nation of willpower-drained zombies, wandering the world seeking instant gratification?

Luckily there are things you can do to both overcome willpower exhaustion and increase your self-control strength. That’s because the muscle model doesn’t just help us see why we fail when we’re tired; it also shows us how to train self-control. We’ll start by considering why willpower gets exhausted. Then we’ll take a lesson from endurance athletes—who regularly push past exhaustion—and explore training strategies for greater self-control stamina.

**UNDER THE MICROSCOPE:**
**THE HIGHS AND LOWS OF WILLPOWER**

The muscle model of willpower predicts that self-control drains throughout the day. This week, pay attention to when you have the most willpower, and when you are most likely to give in. Do you wake up with willpower and steadily drain it? Or is there another time of the day when you find yourself recharged and refreshed? You can use this self-knowledge to plan your schedule wisely, and limit temptations when you know you’ll be the most depleted.
**A WOULD-BE ENTREPRENEUR PUTS FIRST THINGS FIRST**

When Susan woke up at five-thirty a.m., the first thing she did was check her work e-mail at her kitchen table. She would spend a good forty-five minutes over coffee responding to questions and identifying her priorities for the day. Then she headed off on an hour-long commute to put in a ten-hour day as a key account manager for a large commercial shipping company. Her job was demanding—conflicts to be negotiated, egos to be soothed, fires to be put out. By six p.m., she was already drained, but more often than not, she felt obligated to stay late or go out for dinner or drinks with coworkers. Susan wanted to start her own consulting business, and was taking steps to prepare herself financially and professionally. But most evenings she was too tired to make much progress on her business plan, and she feared that she'd be stuck in her job forever.

When Susan analyzed how she was spending her willpower, it was obvious that her job was getting a hundred percent, starting with the early-morning e-mail and ending with her long commute home. The kitchen-table e-mail session was an old habit from when she was new to the job and eager to exceed expectations. But now, there was no good reason those e-mails couldn't wait until she got to the office at eight a.m. Susan decided that the only time of day she was likely to have the mental energy to pursue her own goals was before her workday. She made it her new routine to spend the first hour of the day building her business, not taking care of everyone else's needs.

This was a smart move for Susan, who needed to put her willpower where her goals were. It also demonstrates an important willpower rule: *If you never seem to have the time and energy for your “I will” challenge, schedule it for when you have the most strength.*
WHY IS SELF-CONTROL LIMITED?

Obviously we don't have an actual self-control muscle hidden underneath our biceps, keeping our hands from reaching for dessert or our wallet. We do, however, have something like a self-control muscle in our brain. Even though the brain is an organ, not a muscle, it does get tired from repeated acts of self-control. Neuroscientists have found that with each use of willpower, the self-control system of the brain becomes less active. Just like a tired runner's legs can give out, the brain seems to run out of the strength to keep going.

Matthew Gailliot, a young psychologist working with Roy Baumeister, wondered whether a tired brain was essentially a problem of energy. Self-control is an energy-expensive task for the brain, and our internal energy supply is limited—after all, it's not like we have an intravenous sugar drip into our prefrontal cortex. Gailliot asked himself: Could willpower exhaustion simply be the result of the brain running out of energy?

To find out, he decided to test whether giving people energy—in the form of sugar—could restore exhausted willpower. He brought people into the laboratory to perform a wide range of self-control tasks, from ignoring distractions to controlling their emotions. Before and after each task, he measured their blood sugar levels. The more a person's blood sugar dropped after a self-control task, the worse his performance on the next task. It appeared as if self-control was draining the body of energy, and this energy loss was weakening self-control.

Gailliot then gave the willpower-drained participants a glass of lemonade. Half of them received sugar-sweetened lemonade to restore blood sugar; the other half received a placebo drink that was artificially sweetened and would not supply any usable energy. Amazingly, boosting blood sugar restored willpower. The participants who drank sugar-sweetened lemonade showed improved self-control, while the self-control of those who drank the placebo lemonade continued to deteriorate.

Low blood sugar levels turn out to predict a wide range of willpower
failures, from giving up on a difficult test to lashing out at others when you're angry. Gailliot, now a professor at Zirve University in Turkey, has found that people with low blood sugar are also more likely to rely on stereotypes and less likely to donate money to charity or help a stranger. It is as if running low on energy biases us to be the worst versions of ourselves. In contrast, giving participants a sugar boost turns them back into the best versions of themselves: more persistent and less impulsive; more thoughtful and less selfish.

Well, as you can imagine, this is just about the most best-received finding I've ever described in class. The implications are at once counterintuitive and delightful. Sugar is your new best friend. Eating a candy bar or drinking soda can be an act of self-control! (Or at least restoring self-control.) My students love these studies and are only too happy to test the hypothesis themselves. One student used a steady supply of Skittles to get through a difficult project. Another kept a tin of Altoids (one of the last breath mints to contain real sugar) in his pocket, popping them during long meetings to outlast his colleagues. I applaud their enthusiasm for translating science into action and empathize with their sweet tooth. And I even confess that for years, I brought candy to every Introduction to Psychology class, hoping to get the undergraduate students focused and off Facebook.*

If sugar were truly the secret to more willpower, I'm sure I'd have a runaway bestseller on my hands and a lot of eager corporate sponsors. But as my students and I were trying our own willpower-replenishing experiments, some scientists—including Gailliot—started to raise some smart questions. How much energy, exactly, was getting used up during acts of mental self-control? And did restoring that energy really require consuming a substantial amount of sugar? University of Pennsylvania psychologist Robert Kurzban has argued that the actual amount of energy your brain needs to exert self-control is less than half a Tic Tac per minute. This may

*Did plying students with candy work? I'm not entirely sure, although it did pay off on the end-of-quarter course evaluations.
be more than the brain uses for other mental tasks, but it is far less than your body uses when it exercises. So assuming you have the resources to walk around the block without collapsing, the absolute demands of self-control couldn’t possibly deplete your entire body’s store of energy. And surely it wouldn’t require refueling with a sugar-laden 100-calorie drink. Why, then, does the brain’s increased energy consumption during self-control seem to deplete willpower so quickly?

**Energy Crisis**

To answer this question, it may be helpful to recall the American banking crisis of 2009. After the 2008 financial meltdown, banks received an influx of money from the government. These funds were supposed to help the banks cover their own financial obligations so they could start lending again. But the banks refused to lend money to small businesses and individual borrowers. They weren’t confident in the money supply, so they hoarded the resources they had. Stingy bastards!

It turns out that your brain can be a bit of a stingy bastard, too. The human brain has, at any given time, a very small supply of energy. It can store some energy in its cells, but it is mostly dependent on a steady stream of glucose circulating in the body’s bloodstream. Special glucose-detecting brain cells are constantly monitoring the availability of energy. When the brain detects a drop in available energy, it gets a little nervous. What if it runs out of energy? Like the banks, it may decide to stop spending and save what resources it has. It will keep itself on a tight energy budget, unwilling to spend its full supply of energy. The first expense to be cut? Self-control, one of the most energy-expensive tasks the brain performs. To conserve energy, the brain may become reluctant to give you the full mental resources you need to resist temptation, focus your attention, or control your emotions.

University of South Dakota researchers X. T. Wang, a behavioral economist, and Robert Dvorak, a psychologist, have proposed an “energy
They argue that the brain treats energy like money. It will spend energy when resources are high, but save energy when resources are dropping. To test this idea, they invited sixty-five adults—ranging in age from nineteen to fifty-one—into the laboratory for a test of their willpower. Participants were given a series of choices between two rewards, such as $120 tomorrow or $450 in a month. One reward was always smaller, but participants would get it faster than the larger reward. Psychologists consider this a classic test of self-control, as it pits immediate gratification against more-favorable long-term consequences. At the end of the study, the participants had the opportunity to win one of their chosen rewards. This ensured that they were motivated to make real decisions based on what they wanted to win.

Before the choosing began, the researchers measured participants' blood sugar levels to determine the baseline status of available "funds" for self-control. After the first round of decisions, participants were given either a regular, sugary soda (to boost blood sugar levels) or a zero-calorie diet soda. The researchers then measured blood sugar levels again, and asked the participants to make another series of choices. The participants who drank the regular soda showed a sharp increase in blood sugar. They also became more likely to delay gratification for the bigger reward. In contrast, blood sugar dropped among the participants who drank the diet soda. These participants were now more likely to choose the immediate gratification of the quicker, smaller reward. Importantly, it wasn't the absolute level of blood sugar that predicted a participant's choices—it was the direction of change. The brain asked, "Is available energy increasing or decreasing?" It then made a strategic choice about whether to spend or save that energy.

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*This is a little-known effect of diet soda that contributes to hunger, overeating, and weight gain. The sweet taste tricks the body into taking up glucose from the bloodstream in anticipation of a blood sugar spike. You're left with less energy and less self-control, while your body and brain wonder what happened to the sugar rush they were promised. This may be why recent studies show that diet soda consumption is associated with weight gain, not weight loss.*
People Who Are Starving Shouldn’t Say No to a Snack

The brain may have a second motivation behind its reluctance to exert self-control when the body’s energy levels are dropping. Our brains evolved in an environment very different from our own—one in which food supplies were unpredictable. (Remember our trip to the Serengeti, when you were scavenging for antelope carcasses?) Dvorak and Wang argue that the modern human brain may still be using blood sugar levels as a sign of scarcity or abundance in the environment. Are the bushes full of berries, or barren? Is dinner dropping dead at our feet, or do we have to chase it across the plains? Is there enough food for everyone, or do we have to compete with bigger and faster hunters and gatherers?

Way back when the human brain was taking shape, dropping blood sugar levels had less to do with whether you’d been using your energy-guzzling prefrontal cortex to resist a cookie, and more to do with whether food was available at all. If you hadn’t eaten in a while, your blood sugar was low. To an energy-monitoring brain, your blood sugar level was an indicator of how likely you were to starve in the near future if you didn’t find something to eat, quick.

A brain that could bias your decisions toward immediate gratification when resources are scarce, but toward long-term investment when resources are plenty, would be a real asset in a world with an unpredictable food supply. Those who were slower to listen to their hunger, or too polite to fight for their share, may have found the last bone already scraped clean. In times of food scarcity, early humans who followed their appetites and impulses had a better chance of survival. He who takes the biggest risks—from exploring new land to trying new foods and new mates—is often the most likely to survive (or at least have his genes survive). What appears in our modern world as a loss of control may actually be a vestige of the brain’s instinct for strategic risk-taking. To prevent starvation, the brain shifts to a more risk-taking, impulsive state. Indeed, studies show that modern humans are more likely to take any kind of risk when they’re
hungry. For example, people make riskier investments when they're hungry, and are more willing to "diversify their mating strategies" (evolutionary psychologist--speak for cheating on their partner) after a fast.

Unfortunately, in modern Western society, this instinct no longer pays off. Internal changes in blood sugar levels rarely signal famine or the need to quickly pass on your genes in case you don't survive winter. But when your blood sugar drops, your brain will still favor short-term thinking and impulsive behavior. Your brain's priority is going to be getting more energy, not making sure you make good decisions that are in line with your long-term goals. That means stockbrokers may make some stupid buys before lunch, dieters may be more likely to "invest" in lottery tickets, and the politician who skips breakfast may find his intern irresistible.

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**WILLPOWER EXPERIMENT: THE WILLPOWER DIET**

Yes, it's true that a shot of sugar can give you a short-term willpower boost in an emergency. In the long run, though, mainlining sugar is not a good strategy for self-control. During stressful times, it's especially tempting to turn to highly processed, high-fat, and high-sugar "comfort" food. Doing so, however, will lead to a self-control crash and burn. In the long term, blood sugar spikes and crashes can interfere with the body's and brain's ability to use sugar—meaning that you could end up with high blood sugar, but low energy (as is the case for the millions of Americans with type 2 diabetes*).

A better plan is to make sure that your body is well-fueled with food that gives you lasting energy. Most psychologists and nutritionists recommend a low-glycemic diet—that is, one that helps you keep your blood sugar steady. Low-glycemic foods include lean proteins, nuts and beans, high-fiber grains and cereals, and most fruits and vegetables—basically, food that looks like its

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*In fact, type 2 diabetes is for all practical purposes the same as chronic low blood sugar, because the brain and body cannot efficiently use the energy that is available. This is likely one reason people with uncontrolled diabetes show impaired self-control and deficits in prefrontal cortex function.
THE WILLPOWER INSTINCT

natural state and doesn't have a ton of added sugar, fat, and chemicals. It may take some self-control to shift in this direction, but whatever steps you take (say, eating a hearty and healthy breakfast during the workweek instead of skipping breakfast, or snacking on nuts instead of sugar) will more than pay you back for any willpower you spend making the change.

TRAINING THE WILLPOWER MUSCLE

Any muscle in your body can be made stronger through exercise—whether you’re building your biceps by lifting barbells, or training your thumbs by text messaging. If self-control is a muscle (even a metaphorical muscle), it should be possible to train it, too. As with physical exercise, using your self-control muscle may be tiring, but over time, the workout should make it stronger.

Researchers have put this idea to the test with willpower-training regimes. We’re not talking military boot camp or Master Cleanses here. These interventions take a simpler approach: Challenge the self-control muscle by asking people to control one small thing that they aren’t used to controlling. For example, one willpower-training program asked participants to create and meet self-imposed deadlines. You could do this for any task you’ve been putting off, such as cleaning your closet. The deadlines might be: Week 1, open the door and stare at the mess. Week 2, tackle anything that’s on a hanger. Week 3, throw out anything that predates the Reagan administration. Week 4, find out if Goodwill accepts skeletons. Week 5—well, you get the picture. When the willpower trainees set this kind of schedule for themselves for two months, not only did closets get cleaned and projects completed, but they also improved their diets, exercised more, and cut back on cigarettes, alcohol, and caffeine. It was as if they had strengthened their self-control muscle.

Other studies have found that committing to any small, consistent act of self-control—improving your posture, squeezing a handgrip every day to
Too Tired to Resist

exhaustion, cutting back on sweets, and keeping track of your spending—can increase overall willpower. And while these small self-control exercises may seem inconsequential, they appear to improve the willpower challenges we care about most, including focusing at work, taking good care of our health, resisting temptation, and feeling more in control of our emotions. One study, led by a team of psychologists at Northwestern University, even tested whether two weeks of willpower training could reduce violence against a romantic partner.* They randomly assigned forty adults (ages eighteen to forty-five, all in romantic relationships) to one of three training groups. One group was asked to use their nondominant hand for eating, brushing their teeth, and opening doors. The second group was told to avoid swearing and to say “yes” instead of “yeah.” The third group received no special instructions. After two weeks, participants in both self-control groups were less likely to respond to typical triggering events, like jealousy or feeling disrespected by their partner, with physical violence. The third group, in contrast, showed no change. Even if you don’t personally struggle with physical violence, we all know what it’s like to lose our cool and do something out of anger that we later regret.

The important “muscle” action being trained in all these studies isn’t the specific willpower challenge of meeting deadlines, using your left hand to open doors, or keeping the F-word to yourself. It’s the habit of noticing what you are about to do, and choosing to do the more difficult thing instead of the easiest. Through each of these willpower exercises, the brain gets used to pausing before acting. The triviality of the assignments may even help this process. The tasks are challenging, but they’re not overwhelming. And while the self-restraints require careful attention, they’re unlikely to trigger strong feelings of deprivation. (“What do you mean I’m

*The same research team is responsible for one of the most creative studies of interpersonal aggression I’ve seen. Scientists can’t invite participants to beat up their romantic partners in the laboratory (thank goodness), but they still need to be able to observe acts of physical aggression. So in one study, these researchers asked participants to choose what uncomfortable yoga pose their partners would have to do, and how long they would have to hold it.
not allowed to say ‘yeah’?!?!? That’s the only thing that gets me through the day!”) The relative unimportance of the willpower challenges allowed participants to exercise the muscle of self-control without the internal angst that derails so many of our attempts to change.

### WILLPOWER EXPERIMENT: A WILLPOWER WORKOUT

If you want to put yourself through your own willpower-training regime, test the muscle model of self-control with one of the following willpower workouts:

- **Strengthen “I Won’t” Power:** Commit to not swearing (or refraining from any habit of speech), not crossing your legs when you sit, or using your nondominant hand for a daily task like eating or opening doors.

- **Strengthen “I Will” Power:** Commit to doing something every day (not something you already do) just for the practice of building a habit and not making excuses. It could be calling your mother, meditating for five minutes, or finding one thing in your house that needs to be thrown out or recycled.

- **Strengthen Self-Monitoring:** Formally keep track of something you don’t usually pay close attention to. This could be your spending, what you eat, or how much time you spend online or watching TV. You don’t need fancy technology—pencil and paper will do. But if you need some inspiration, the Quantified Self movement (www.quantifiedself.com) has turned self-tracking into an art and science.

For any of these willpower-training exercises, you could choose something related to your main willpower challenge. For example, if your goal is to save money, you might keep track of what you spend. If your goal is to exercise more often, you might decide to do ten sit-ups or push-ups before your morning shower. But even if you don’t match this experiment to your
biggest goals, the muscle model of self-control suggests that exercising your willpower each day, even in silly or simple ways, will build strength for all your willpower challenges.

**A Candy Addict Conquers His Sweet Tooth**

Jim, a thirty-eight-year-old freelance graphic designer, had what he called a lifelong addiction to sweets—he never met a jelly bean he didn’t like. He was intrigued by a study I mentioned in class that found that leaving candy out in a visible place can increase people’s general self-control (if they routinely resist the temptation). Jim worked from home, and often moved between his office and other rooms in his house. He decided to put a glass jar of jelly beans in the hallway that he would have to pass every time he left or returned to his office. He didn’t ban all sweets, but did institute a “no candy from the candy jar” rule to challenge his self-control muscle.

The first day, the instinct to pop a few jelly beans in his mouth was automatic and difficult to stop. But over the week, saying no got easier. Seeing the candy reminded Jim of his goal to exercise his won’t power. Surprised by his success, he started stepping away from his desk more often just to get some extra “exercise” in. Though Jim had initially worried that the visible temptation would exhaust his willpower, he found the process energizing. When he returned to his office after resisting the candy jar, he felt motivated. Jim was astonished that something he thought was completely out of his control could change so quickly when he set a small challenge for himself and committed to it.

*When you’re trying to make a big change or transform an old habit, look for a small way to practice self-control that strengthens your willpower, but doesn’t overwhelm it completely.*
HOW REAL ARE THE “LIMITS” OF SELF-CONTROL?

Whether you look to science or your own life for evidence, it is clear that we humans have a tendency to run out of willpower. But one thing that isn’t clear is whether we run out of power, or whether we just run out of will. Is it really impossible for a smoker to stick to a budget when she’s trying to give up cigarettes? Is the dieter depriving himself of his favorite foods really too weak to resist an illicit affair? There is always a difference between what is difficult and what is impossible, and the limits of self-control could reflect either. To answer this question, we need to step back for a moment from the metaphorical muscle of self-control and take a closer look at why actual muscles—such as the ones in your arms and legs—get tired and give up.

MAKING THE FINISH LINE

Halfway through the 26.2-mile run of her first Ironman triathlon, thirty-year-old Kara felt great. She had already survived the 2.4-mile swim and the 112-mile bike ride, and running was her best event. She was going faster than she had expected she’d be able to at this point in the race. Then she hit the turnaround point of the run, and the physical reality of what she had done hit her body hard. Everything hurt, from her aching shoulders to the blisters on her feet. Her legs felt heavy and hollow, as if they didn’t have the strength to go on. It was as if a switch in her body had been flipped, telling her, “You’re done.” Her optimism deflated, and she began to think to herself, This is not going to end as well as it began. But despite the feeling of exhaustion that made it seem as though her feet and legs would not cooperate, they did. Whenever she thought, I can’t do this, she said to herself, “You are doing this,” and just kept putting one foot in front of the other, all the way to the finish line.

Kara’s ability to finish the triathlon is a perfect example of how decep-
tive fatigue can be. Exercise physiologists used to believe that when our bodies give up, it is because they literally cannot keep working. Fatigue was muscle failure, pure and simple: The muscles run out of energy stores. They can’t take in enough oxygen to metabolize the energy they have. The pH level of the blood becomes too acidic or too alkaline. All these explanations made sense in theory, but no one could ever prove that this was what was causing exercisers to slow down and give up.

Timothy Noakes, a professor of exercise and sports science at the University of Cape Town, had a different idea. Noakes is known in the athletic world for challenging deeply held beliefs. (For example, he helped show that drinking too many fluids during endurance competitions could kill an athlete by diluting the essential salts in the body.) Noakes is an ultramarathon competitor himself, and he became interested in a little-known theory put forth in 1924 by Nobel Prize–winning physiologist Archibald Hill. Hill had proposed that exercise fatigue might be caused not by muscle failure, but by an overprotective monitor in the brain that wanted to prevent exhaustion. When the body was working hard, and putting heavy demands on the heart, this monitor (Hill called it “the governor”) would step in to slow things down. Hill didn’t guess at how the brain produced the feeling of fatigue that led athletes to give up, but Noakes was intrigued with the implication: Physical exhaustion was a trick played on the body by the mind. If this was true, it meant that the physical limits of an athlete were far beyond what the first message from the body to give up suggested.

Noakes, with several colleagues, began to review evidence of what happens to endurance athletes under extreme conditions. They found no evidence for physiological failure happening within the muscles; instead, it appeared that the brain was telling the muscles to stop. The brain, sensing an increased heart rate and rapidly depleting energy supply, literally puts the brakes on the body. At the same time, the brain creates an overwhelming feeling of fatigue that has little to do with the muscles’ capacity to keep working. As Noakes puts it, “Fatigue should no longer be considered a physical event but rather a sensation or emotion.” Most of us interpret exhaustion as an objective indicator that we cannot continue. This theory says it is
just a feeling generated by the brain to motivate us to stop, in much the same
way that the feeling of anxiety can stop us from doing something dangerous,
and the feeling of disgust can stop us from eating something that will make
us sick. But because fatigue is only an early warning system, extreme athletes
can routinely push past what seems to the rest of us like the natural physical
limits of the body. These athletes recognize that the first wave of fatigue is
never a real limit, and with sufficient motivation, they can transcend it.

What does this have to do with our original problem of college students
cramming their heads with knowledge and their mouths with junk food?
Or with dieters cheating on their spouses, and office workers losing their
focus? Some scientists now believe that the limits of self-control are just
like the physical limits of the body—we often feel depleted of willpower
before we actually are. In part, we can thank a brain motivated to conserve
energy. Just as the brain may tell the body’s muscles to slow down when it
fears physical exhaustion, the brain may put the brakes on its own energy-
expensive exercise of the prefrontal cortex. This doesn’t mean we’re out of
willpower; we just need to muster up the motivation to use it.

Our beliefs about what we are capable of may determine whether we
give up or soldier on. Stanford psychologists have found that some peo-
ple do not believe the feeling of mental fatigue that follows a challenging
act of self-control. These willpower athletes also do not show the typi-
cal deterioration in self-control that the muscle model predicts—at least,
not during the types of moderate willpower challenges that researchers
can ethically test in the laboratory. Based on these findings, the Stanford
psychologists have proposed an idea as jarring to the field of self-control
research as Noakes’s claims were to the field of exercise physiology: The
widely observed scientific finding that self-control is limited may reflect
people’s beliefs about willpower, not their true physical and mental limits.
The research on this idea is just beginning, and no one is claiming that
humans have an unlimited capacity for self-control. But it is appealing to
think that we often have more willpower than we believe we do. It also
raises the possibility that we can, like athletes, push past the feeling of
Too TIRED to RESIST

willpower exhaustion to make it to the finish line of our own willpower challenges.

UNDER THE MICROSCOPE:  
IS YOUR EXHAUSTION REAL?

All too often, we use the first feeling of fatigue as a reason to skip exercise, snap at our spouses, procrastinate a little longer, or order a pizza instead of cooking a healthy meal. To be sure, the demands of life really do drain our willpower, and perfect self-control is a fool’s quest. But you may have more willpower than the first impulse to give in would suggest. The next time you find yourself “too tired” to exert self-control, challenge yourself to go beyond that first feeling of fatigue. (Keep in mind that it’s also possible to overtrain—and if you find yourself constantly feeling drained, you may need to consider whether you have been running yourself to real exhaustion.)

WHEN THERE’S A WANT, THERE’S A WILL

When Kara, the first-time triathlete, felt too exhausted to continue, she remembered how much she wanted to finish and imagined the crowd cheering her across the finish line. It turns out that the metaphorical “muscle” of willpower can also be coaxed into persevering longer with the right inspiration. University at Albany psychologists Mark Muraven and Elisaveta Slessareva have tested a number of motivations on willpower-drained students. Not surprisingly, money helps undergraduates find a reserve of willpower, and they will do for cash what moments earlier they had been too exhausted to do. (Imagine someone offering you $100 to say no to a package of Girl Scout cookies. Not so irresistible now, huh?) Self-control also surged when students were told that doing their best would help researchers discover a cure for Alzheimer’s disease, not unlike endurance
athletes who race for a cure. Finally, the mere promise that practice would improve performance on a difficult task helped the students push past willpower exhaustion. While this is a less obvious motivator, it’s one that plays a big role in determining whether or not people stick with difficult changes in real life. If you think that not smoking is going to be as hard one year from now as it is that first day of nicotine withdrawal, when you would claw your own eyes out for a cigarette, you’re much more likely to give up. But if you can imagine a time when saying no will be second nature, you’ll be more willing to stick out the temporary misery.

**WILLPOWER EXPERIMENT:**
**WHAT’S YOUR “WANT” POWER?**

When your willpower is running low, find renewed strength by tapping into your want power. For your biggest willpower challenge, consider the following motivations:

1. *How will you benefit from succeeding at this challenge?* What is the payoff for you personally? Greater health, happiness, freedom, financial security, or success?

2. *Who else will benefit if you succeed at this challenge?* Surely there are others who depend on you and are affected by your choices. How does your behavior influence your family, friends, coworkers, employees or employer, and community? How would your success help them?

3. *Imagine that this challenge will get easier for you over time if you are willing to do what is difficult now.* Can you imagine what your life will be like, and how you will feel about yourself, as you make progress on this challenge? Is some discomfort now worth it if you know it is only a temporary part of your progress?

As you face your challenges this week, ask yourself which motivation holds the most power for you in that moment. Are you willing to do
something difficult for others, when you might not for yourself? Is the dream of a better future—or the fear of a terrible fate—the only thing that keeps you going? When you find your biggest want power—the thing that gives you strength when you feel weak—bring it to mind whenever you find yourself most tempted to give in or give up.

A FRUSTRATED MOM FINDS HER WANT POWER

Erin was a stay-at-home mom of twin boys going through the terrible twos. She was exhausted by the demands of parenting, and frazzled by the boys' discovery of the word “No!” She frequently found herself pushed to her breaking point, losing her cool with the twins over minor but endless battles. Her willpower challenge for the class was learning how to stay calm when she was ready to erupt.

When Erin thought about her biggest motivation for controlling her temper, the obvious answer seemed to be, “To be a better parent.” In the moment of frustration, however, this motivation wasn’t working. She would remember that she wanted to be a better parent, but this made her even more frustrated! Erin realized that an even bigger motivation was the desire to enjoy being a parent—which is not exactly the same thing as being a better parent. Erin was yelling out of frustration not just for what the boys were doing, but also for the many ways she felt she wasn’t living up to her ideal of the perfect mom. Half the time, she was angry at herself, but she was taking it out on her sons. She also resented giving up her job—where she felt very effective—for something that made her feel so out of control. Reminding herself that she wasn’t a perfect mom did nothing to give her more self-control—it just made her feel worse.

To find the willpower not to explode, Erin had to realize that staying calm was as much for herself as it was for her sons. It wasn’t fun to yell, and she didn’t like who she was when she lost control. She was getting so frustrated by the gap between her ideals and the reality of daily life that she had started to question whether she even wanted to be a parent. And
Erin *wanted* to want to be a parent. Taking the effort to stop, breathe, and find a less stressful response was not just about giving her sons a better mom. It was about enjoying being with her sons, and feeling good about what she had given up to be a stay-at-home mom. With this insight, Erin found that it was easier to keep her cool. Not yelling at her boys became a way of not yelling at herself, and of finding the joy in the messy reality of mommyhood.

*Sometimes our strongest motivation is not what we think it is, or think it should be. If you’re trying to change a behavior to please someone else or be the right kind of person, see if there is another “want” that holds more power for you.*

**EVERYDAY DISTRACTIONS AND THE COLLAPSE OF A CIVILIZATION**

We’ve seen ample evidence that the self-control demands of everyday life can drain the willpower we need to resist ordinary, everyday temptations like cookies and cigarettes. This, of course, is not good news. But as much as these temptations threaten our personal goals, they are small potatoes compared with the collective consequences of a society in which most people are chronically drained of willpower. One of the most troubling studies of willpower fatigue raised the stakes by using a “public goods” measure of self-control called the “Forest Game.” In this economic simulation, players became owners of a timber company for a game period of twenty-five years. They were given 500 acres the first year, and were told that the forest would grow at a rate of 10 percent each year. In any given year, each owner could cut down up to 100 acres. For every acre a player cut down, they
would be paid six cents. Don’t worry about the exact math, but under these terms, it makes the most economic (not to mention environmental) sense to allow the forest to grow rather than to cut it down and sell it off quickly. However, this strategy requires patience and the willingness to cooperate with other players, so no one tries to chop down the whole forest to make a quick buck.

Before the game, some groups of players completed a self-control task that required blocking out mental distractions—a classic willpower-depletion setup. They came to the game a bit willpower-exhausted. In the game, these players went on to decimate their forests for short-term financial gain. By the tenth year in the simulation, they were down from 500 to 62 acres. By year fifteen, the forest was completely destroyed, and the simulation had to be ended early. The players had not cooperated with each other; they had defaulted to a take-what-you-can-get-before-the-others-sell-it strategy. In contrast, players who had not performed the distraction task still had a forest when the simulation ended at twenty-five years, and they had made more money while saving a few trees. Cooperation, economic success, environmental stewardship—I don’t know about you, but I know which players I’d put in charge of my forest, business, or country.

The Forest Game is just a simulation, but one cannot help being reminded of the eerily similar demise of the Easter Island forest. For centuries, the lush, densely forested island in the Pacific Ocean supported a thriving civilization. But as the population grew, the island’s inhabitants started cutting down trees for more land and wood. By the year 800 C.E., they were cutting down trees faster than the forest could regenerate. By the 1500s, the forest was wiped out, along with many species the inhabitants depended on for food. Starvation and cannibalism became widespread. By the late 1800s, 97 percent of the population had died or left the barren island.

Since then, many people have wondered, what were the residents of Easter Island thinking as they destroyed their forests and society? Couldn’t
they see the long-term consequences of what they were doing? We can't imagine ourselves making such obviously shortsighted decisions, but we shouldn't be so sure. Humans have a natural tendency to focus on immediate gains, and changing course to prevent future disaster takes enormous self-discipline from all members of a society. It's not just a matter of caring; change requires doing. In the Forest Game study, all the players expressed the same values of cooperation and the desire to protect the long-term good. The willpower-depleted players just didn't act on those values.

The psychologists who ran this study suggest that people who are willpower-depleted cannot be counted on to make good decisions for society. This is a troubling claim, given what we know about how easy it is to exhaust willpower, and how many minor decisions in our daily lives demand self-control. We are not going to solve national or global crises like economic growth, health care, human rights, and climate change if we are exhausted by grocery shopping and dealing with difficult coworkers.

As individuals, we can take steps to strengthen our personal self-control, and this will make no small difference in our personal lives. Knowing how to strengthen the limited self-control of a nation is a trickier thing. Rather than hope that we as a nation develop more willpower in order to meet our biggest challenges, our best bet might be to take self-control out of the equation whenever possible—or at least reduce the self-control demands of doing the right thing. Behavioral economist Richard Thaler and legal scholar Cass Sunstein have argued persuasively for "choice architecture," systems that make it easier for people to make good decisions consistent with their values and goals. For example, asking people to become organ donors when they renew a driver's license or register to vote. Or having health insurance companies automatically schedule annual check-ups for their members. These are things most people mean to do, but put off because they are distracted by so many other more pressing demands.
Retailers already use choice architecture to influence what you buy, although usually not for any noble purpose but to make a profit. If there were sufficient incentive, stores might more prominently feature healthy or environmentally friendly products. Instead of lining the checkout area with indulgent impulse purchases like candy and gossip magazines, stores could use that real estate to make it easier for people to pick up dental floss, condoms, or fresh fruit. This kind of simple product placement has been shown to dramatically increase healthy purchases.

Choice architecture designed to manipulate people's decisions is a controversial proposition. Some see it as restricting individual freedom or ignoring personal responsibility. And yet, people who are free to choose anything most often choose against their long-term interests. Research on the limits of self-control suggests that this is not because we are innately irrational, or because we are making deliberate decisions to enjoy today and screw tomorrow. Instead, we may simply be too tired to act against our worst impulses. If we want to strengthen self-control, we may need to think about how we can best support the most exhausted version of ourselves—and not count on an ideal version of ourselves to show up and save the day.

The Last Word
The limits of self-control present a paradox: We cannot control everything, and yet the only way to increase our self-control is to stretch our limits. Like a muscle, our willpower follows the rule of “Use it or lose it.” If we try to save our energy by becoming willpower coach potatoes, we will lose the strength we have. But if we try to run a willpower marathon every day, we set ourselves up for total collapse. Our challenge is to train like an intelligent athlete, pushing our limits but also pacing ourselves. And while we can find strength in our motivation when we feel weak, we can also look for ways to help our tired selves make good choices.
**CHAPTER SUMMARY**

**The Idea:** Self-control is like a muscle. It gets tired from use, but regular exercise makes it stronger.

**Under the Microscope**

- *The highs and lows of willpower.* Keep track of your self-control strength this week, with special interest in when you have the most willpower, and when you are most likely to give in or give up.

- *Is your exhaustion real?* The next time you find yourself “too tired” to exert self-control, examine whether you can go beyond that first feeling of fatigue to take one more step.

**Willpower Experiments**

- *The willpower diet.* Make sure that your body is well fueled with food that gives you lasting energy.

- *A willpower workout.* Exercise your self-control muscle by picking one thing to do (I will power) or not do (I won’t power) this week, or keeping track of something you aren’t used to paying close attention to.

- *Find your “want” power.* When you find your biggest want power—the motivation that gives you strength when you feel weak—bring it to mind whenever you find yourself most tempted to give in or give up.