

# HEALTH & FITNESS

by LISA MARSHALL

WHEN YOU SIT THE MAJORITY OF THE DAY ...

## DIABETES RISK DOUBLES

regardless of how much you exercise

## INSULIN SENSITIVITY PLUNGES

up to 40 percent

## BLOOD FLOW SLOWS

when red blood cells in your legs begin to clump together

## GOOD CHOLESTEROL FALLS

more than 20 percent

## HEART DISEASE RISK SOARS

up to two and a half times higher

## CHRONIC INFLAMMATION RISES

and can stay elevated even after you start moving

# Sitting: The Most Unhealthy Thing You Do

Too much time behind the desk has far worse consequences for your health, performance, and energy than you thought.

**U**LTRA-RUNNER Adam St. Pierre thought he had training down to a science. An exercise physiologist and running coach in Boulder, Colorado, he ran 40 to 70 miles a week, stretched 15 minutes twice a day, and saw a massage therapist twice a month. But at the peak of the 2014 racing season, the 33-year-old athlete was nearly sidelined by tight hip flexors. "The muscles run from your femur up to the pelvis. When

they're tight, you lose range of motion and considerable speed, and you feel like you have to pee all the time," he says. That's untenable for an average day, let alone a 100-mile race.

St. Pierre hunted for a solution. He tried Pilates, stretching more, strengthening his core. Still, the pain persisted. Finally, he realized that he'd overlooked one crucial part of his daily routine: The six hours he spent sitting at his desk. "I was doing everything

I could to keep my hip flexors loose enough to allow me to run, but I neglected this small, obvious change," says St. Pierre.

He converted his office desk to a standing station and cut his sedentary time in half. In weeks, his hip muscles released. Two months later, he raced a 50-miler in Vermont in his personal-best time of eight hours, 18 minutes. "I felt great," he says. "Since, I've even noticed my chronic low-back pain fade away."

If too much time behind a desk can mess up a hard-core athlete like St. Pierre, imagine the impact it has on the typical guy. That's exactly what experts in the emerging field of inactivity physiology are exploring, and their conclusions may surprise you. Most of us sit 10-plus hours a day: more than we sleep. While we're seated, a lot of bad things happen. Blood sugar rises; muscles become tighter; and blood flow to the heart slows, even in those who exercise regularly. "This is one reason why, year after year, so many frustrated people can't make big changes in their health," says Marc Hamilton, a professor at Louisiana's Pennington Biomedical Research Center, who has studied inactivity physiology for 20 years. According to Hamilton, your good habits, like working out and eating well, aren't enough. "Something extremely potent is happening in your body in the hours you sit idle," he says.

Imagine a long day in your desk chair. That moment you start to feel lethargic? That's when red blood cells in your legs begin to clump together, thickening inside your vessels and slowing circulation. If later, you notice a further drop in energy, it's because your body's insulin production is down: The sugars from your morning oatmeal linger in your bloodstream, rather than being ushered into your muscles for energy. Soon a key enzyme (lipase) responsible for vacuuming fat out of the blood deactivates. Small amounts of fat begin to accumulate in your blood; your body will store said fat in an easy-to-access, central location — your gut. (One reason it may be tough to shed extra pounds, despite those morning runs.) You may also have hunger cravings, even though you haven't moved. That's because your appetite-regulating hormones leptin and ghrelin have gone off-kilter. Meanwhile, a more subtle physiological change occurs: Deep within your leg muscles, a gene (LPP1) critical for suppressing clotting and inflammation switches off. By the end of the day, even with a lunch break and trips to the water cooler, your good cholesterol and insulin sensitivity may have fallen 20 to 40 percent.

A day, even a week, of this isn't much of

a problem. But repeat the process for years and it's easier to understand this stat: Those who sit the majority of their waking hours — even if they do take breaks and regularly exercise — have two-and-a-half times the risk of developing cardiovascular disease, according to a 2012 meta-analysis of nearly 800,000 people.

Gym rats don't get a pass, either. In fact, studies consistently show that people who work out often spend more time on their butts than non-exercisers. A recent study found that marathoners sit nearly 11 hours on days they train. Perhaps that's because they believe a workout grants them the right to lounge. (Exercisers are twice as sedentary on the days they hit the gym, research shows).

"It is foolish to think that 30 to 45 minutes of exercise every other day will immunize you from the effects of being sedentary 70 to 80 hours a week," Hamilton says.

Of course, even a focused office drone gets up from his desk to grab food or run an errand. Those things help. A recent Indiana University study compared people who sat for three hours straight with those who got up and walked for five minutes every hour. In the continuous sitters, circulation fell by half, while the walkers saw no dips in blood flow. But five minutes of moving in an hour won't counteract the physiological impacts — lower insulin sensitivity, higher inflammation — of sitting for the rest of it. That's like trying to undo a fast-food diet by eating healthy snacks. "Your body is responding to what you're doing over the whole day," Hamilton says.

Sitting's effects can be dramatic on the outside as well, says corrective-exercise specialist Elizabeth Pongo. According to Pongo, here's what happens to the typical nine-to-five: The shoulders round and the head settles into a forward tilt; this makes it harder for the lungs to expand and take in air when sprinting down a basketball court or running a 5K. That classic office-worker hunch means the humerus (the upper bone in your arm) may be tilted in and lightly grinding into the shoulder socket; now, when you lift weights, you're causing excessive wear and tear on

your rotator cuff, cartilage, and joint capsule. All day, your body is "learning" this repetitive slumped-over posture; hip flexors and pecs shorten and tighten, and the glutes weaken, decreasing power and range of motion during squats, lunges, and any activity that requires explosive movement.

Fortunately, the solution is fairly simple. In addition to thinking, "How much will I exercise this week?" ask yourself, "How little will I sit?" Small movements can have a big impact. The experts call it non-exercise activity thermogenesis, or NEAT — think flexing your calves, stretching, even fidgeting in your chair. All of those movements require energy, and the calories add up, says Mayo Clinic researcher James Levine. Levine tracked workers who wore ultra-sensitive movement sensors. His finding: When all other variables were accounted for, the leanest people sat 2.25 fewer hours per day, and engaged in thousands more minor movements that helped them burn 350 more daily calories. "This supports the idea that there is a direct relationship between your NEAT and your ability to stave off weight gain," says Levine.

Companies from Facebook to Charles Schwab have invested in standing desks and others have shrunk the size of cubicles to create wider hallways for "walking meetings." In one study by Levine, employees who were outfitted with sit-stand units lowered their sitting time by 91 minutes per day, and boosted NEAT movements by 33 percent. In a classic case of "you don't know how bad you felt until you feel better," many also reported being more alert and less depressed not only at work, but after they clocked out.

That was the intent of John Folkestad, co-founder of Minneapolis-based financial staffing firm Salo LLC, when he outfitted employees with standing desks. "Frankly, we didn't go into this saying, 'For the sake of our health, we need to stand more,'" says Folkestad. "It was about energy." Which is something he says he has a lot more of now. Before the switch, Folkestad would rise at 5 AM five days a week to work out. By 3 PM, he'd hit a wall, and he spent evenings on the couch. Now, having cut his sitting time in half, Folkestad churns through 16-hour days. "It makes sense to me," he says. "A body at rest stays at rest. A body in motion stays in motion." ■

## IN ADDITION TO THINKING "HOW MUCH WILL I EXERCISE?" ASK YOURSELF "HOW LITTLE WILL I SIT?"

## A Simple Strategy to Sit Less

### PLAN BY MINUTES

Cornell ergonomist Alan Hedges recommends 20 minutes sitting, 8 minutes standing, 2 minutes walking. Repeat. The formula also improves productivity and posture, studies show.

### DEFAULT TO A WALK

Instead of mulling at your desk when you're drawing a blank, get up and take a 5-minute walk. Research suggests that you'll be 60 percent more creative when you return.

### STAND WHEN TIRED

Make this automatic: If you yawn, stand up. Rising fires the Ascending Reticular Activating System, a network of neurons in the cerebral cortex that enhances alertness.

### SHIFT YOUR MIND-SET

Before you take a seat, think of this quote from Mayo Clinic researcher James Levine: "The goal of sitting should be singular: to give our bodies a break from moving."