

# Sitting at work is bad, but is standing actually better?

By Deborah Kotz

GLOBE STAFF NOVEMBER 03, 2014

If too much sitting is the modern health equivalent of smoking and more people are spending longer hours sitting in front of their office computers, are standing desks the solution to rising rates of diabetes, heart disease, and obesity? Or does simply replacing sitting all day with standing all day miss the mark?

The makers of standing desks — which cost a few hundred to several thousand dollars — have sold many consumers and companies on the notion that their products will reverse “sitting disease” and the health ills caused by spending an average of nine of our 14 waking hours in an office chair or on the couch.

More than a dozen studies conducted over the past decade suggest that too much sitting leads to more disability as we age, doubles the risk of diabetes and heart disease, and could even shorten our lifespan. For example, Harvard researchers found in a February study involving more than 92,000 women that the more time participants spent sitting at work, driving, or watching TV, the greater their risk of dying from heart disease, cancer, or strokes.

Such news may have contributed to a 50 percent rise in the sales of standing desks over the past year as more companies invest in them for their employees.

HubSpot, an inbound marketing software company in Cambridge, purchased sit/stand desks that raise and lower with the push of a button for all 650 employees this year after staffers started asking for them.

But occupational health specialists worry that office workers may have gotten the wrong message that standing in one place, rather than sitting at their desk, will help them shed extra pounds, improve their hearts, or stave off other negative effects of too much sitting.

“Standing all day isn’t the answer,” said Alan Hedge, a design and ergonomics professor at Cornell University. “That’s where we were 100 years ago, and we needed to develop chairs to prevent curvature of the spine, backaches, and varicose veins.”

While standing still burns a few more calories as our hearts work harder to circulate blood upward, it also puts more strain on our veins, backs, and joints, especially if we’re overweight.

“Studies haven’t yet determined how much standing helps healthwise,” said Dr. I-Min Lee, an associate epidemiologist at Brigham and Women’s Hospital who has studied the risks of sedentary behavior. In population studies, researchers haven’t been able to determine whether the health benefits of reduced sitting time stem from moving around more or from standing still. And results on whether exercise reduces the health risks of sitting are conflicting.

A May study of nearly 17,000 Canadian adults found that those who reported the most time standing had a 33 percent lower risk of dying from any cause over 12 years compared to those who stood the least. But those who exercised at least two hours each week — even if they sat the rest of the time — enjoyed the same life-extending benefits as those who stood the most. The Harvard researchers, on the other hand, found in their study that regular exercise didn’t erase the increased death risk associated with prolonged sitting.

In terms of calorie burn and physical exertion, standing in one place is equivalent to 1.3 MET (a physiological measure expressing the energy cost of physical activities) compared to 1 MET for sitting. Walking at a 3 mile-per-hour pace is a 3.3 MET activity, while jogging is a 7 MET, which means it burns 7 times the energy than the body at rest.

“The calorie burn difference between standing and sitting is so small, it probably won’t make much difference in terms of weight loss,” Lee said.

But some obesity experts argue that standing at a workstation encourages us to move around more and, hence, burn significantly more calories.

In a June study, 28 office workers who were given a sit/stand desk for a month reduced their time spent in a sedentary position by 38 minutes a day compared to when they used a traditional desk. They also reported a mood boost, increased energy, and reduced fatigue.

“I think it’s correct to say we’re in the middle of a ‘stand up movement,’ but the emphasis needs to be on movement,” said the study author Dr. James Levine, director of the Mayo Clinic/Arizona State University Obesity Solutions Initiative. “I don’t want people to think that they should stand up like still soldiers. That is not a good idea.”

Kerem Shuval, a senior research specialist at the American Cancer Society who uses a standing desk, agrees. “I find when I stand, I’m more likely to walk out of my office to talk to a colleague than call or e-mail.”

Animal studies suggest that levels of a fat-burning enzyme called lipoprotein lipase rise not from standing but when muscles get activated by moving around. “That’s why non-exercise activity is so important throughout the day,” Shuval said. Keeping the body in a fat-burning metabolic mode also helps improve cholesterol, blood sugar, and high blood pressure.

For this reason, Levine decided to write his new book “Get Up: Why Your Chair is Killing You and What You Can Do About It” and two novels while strolling at 1.2 miles per hour on a treadmill desk he invented several years ago.

Levine’s ability to do this without suffering an ankle sprain or pulled muscle, however, may not be typical. Many people may find it too difficult to write computer code or edit copy while walking on a moving conveyer belt.

“Sure, you’ll burn more calories, but it will likely slow down your typing and increase the errors you’ll make,” Hedge said. “A treadmill desk is fine for making phone calls, reading, or dictating e-mails, but I don’t recommend one for keyboard work.”

Luke Leafgren, a Harvard resident dean and Arabic language instructor, occasionally uses a treadmill desk while composing e-mails, but not for his dissertation. “It took so much mental energy to write that I couldn’t get distracted by the physical exertion.”

Leafgren recently invented a portable computer stand, called StandStand, that fits flatly into his backpack and which he uses to prop his laptop on a library desk or dining hall table. (StandStand will be sold online for \$70 next year.)

Higher priced sit/stand desks that can be easily adjusted or using a standing desk with a high-rise chair makes the most sense to provide comfort and prevent back and joint problems. Alison Elworthy, vice president of operations at HubSpot who is seven months pregnant, adjusts her desk height from sitting to standing a few times an hour throughout the day. “Staying in one position for a long period of time isn’t comfortable,” she said.

Hedge said changing positions regularly is a good idea for all office workers.

What’s best for your muscle and joints and your mind’s productivity? Sit for no more than 20 minutes at a time, Hedge recommended, and stand in one position for no more than 8 minutes. You should also take a two-minute moving break at least twice an hour to stretch or walk around.

*Deborah Kotz can be reached at [dkotz@globe.com](mailto:dkotz@globe.com). Follow her on Twitter [@debkotz2](https://twitter.com/debkotz2).*