

# Is your desk a death trap?

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**Our sedentary, office-bound lives are slowly killing us. Luckily, one British scientist thinks he has the answer. But will the 'treadmill desk' catch on? John Preston finds out.**

In 2006, James Levine, a British scientist based at the Mayo Clinic in Minnesota, conducted a very strange experiment. He wanted to measure something which goes by the cumbersome title of Non-Exercise Activity Thermogenesis - or NEAT. Essentially, this examines how people move about during an average day - not when they're exercising, but when they're making no special effort to keep fit.

The big problem was just how to do the measuring - and here Levine hit upon a radical plan. He decided to put his volunteers into specially sensed underwear. This would measure their every waking and sleeping moment. It's true, he concedes, that the sensed underwear was a bit on the bulky side, but no one seemed to mind.

Levine, incidentally, is no stranger to weird experiments. Aged 10, he'd placed 15 pond snails in a glass tank and tracked their movements every hour across a piece of wax paper. Twelve months and 200 wax paper trials later, he came to the same conclusion that he reached 23 years later in his sensed underwear experiment. All creatures have a biological imperative to move - and movement, perhaps more than anything else, is good for us.



By the same token, lack of movement is very bad indeed. The NEAT experiment revealed that lean people burn around 350 more calories a day just by fidgeting, pacing about, or walking to the coffee machine. As for the non-lean ones - or fatties as they used to be known - they just sat there, getting ever more bloated and unfit.

Sitting down, Levine concluded, is not just bad for people - it's a killer. This may seem a bit drastic, but Levine isn't the only scientist who reckons that being sedentary offers an accelerated route to an early grave. A survey conducted by the University of Hong Kong concluded that you'd actually be better off walking about and smoking than sitting down and doing nothing. Twenty per cent of all deaths of people aged 35 and over were attributable to a lack of physical exercise. As for the likelihood of dying from cancer, that increased by 45 per cent for men and 28 per cent for women if they happened to be inactive.

And consider, for a moment, the case of the Amish. Earlier this year a group of 98 Amish in Ontario, Canada, were fitted with pedometers for a week. This revealed that Amish men averaged around 18,000 steps a day while Amish women clocked up 14,000. The average for most Britons is 3,000-4,000, with 1,000 steps representing about 10 minutes of brisk walking.

The Amish also had staggeringly low obesity rates - a mere four per cent compared with 31 per cent in the general United States population. Yet they didn't necessarily have a healthier diet than anyone else. Far from it - they put away fearsome amounts of fat, calories and refined sugar. All they did was move about a lot.

However, the vast majority of us move about less and less. As labour-intensive jobs disappear, we live in an increasingly sedentary world, spending our working lives stuck in a chair and ever larger amounts of our leisure time too. I, for instance, am sitting down as I write this - and barring occasional crouched-back darts to the loo or the kitchen, I probably won't stand up for the next few hours.

What's more, you, I suspect, are sitting down as you read it. Technology seems hell-bent on ensuring that our limbs move as little as possible. While it's just possible that you've managed to get by this far without a Lexus LS460 self-park car, a robotic lawnmower, a self-twirling spaghetti fork, or a self-stirring coffee mug (all genuine gadgets) other tacit invitations to indolence are harder to avoid.

It's rumoured that one of Steve Jobs's last projects before he died was working on a voice-activated Apple television - that's television for people who can't be bothered to lift a remote control.

Not everyone, of course, will succumb to sedentary obesity. Some people will try their hardest to stay fit whatever the temptations to do otherwise. All this means, though, is that an increasing divide is opening up between the fat and the lean, between the healthy and the unhealthy.

"We have created such a sedentary society and it's so deleterious to our physical and psychological health that people tend to go one of two ways," says Levine. "Either they succumb to ill health, or else they find a means of becoming healthy." We know that exercise is good for us and that sitting on our bums all day isn't - we just choose to ignore it. But what's remarkable is just how recent the correlation between exercise and health is.

Soon after the end of the Second World War, a British health researcher called Jerry Morris set up a study to examine why record numbers of people were dying of heart attacks. The first results Morris got in were from London busmen. Immediately, he saw that there was a striking difference: drivers were twice as likely to suffer a heart attack than conductors.

To begin with, this didn't make sense. After all, they were much the same age, ate much the same food and so on. There was only one key difference. Whereas the drivers spent their days behind the wheel, conductors spent theirs running up and down the stairs.

Morris thought he might be on to something, but it was still too early to say: he had to wait for other data to arrive. Then came the figures for postal workers. These were strikingly similar to the bus drivers: the postmen who delivered the mail by bike and on foot had markedly fewer heart attacks than the ones who served behind counters.

His paper, "Coronary Heart-disease and Physical Activity of Work", was published in The Lancet in 1953 - and greeted with hoots of derision by his peers. But Morris, as people slowly began to concede, was onto something.

In a lot of respects, his conclusions were the same as Levine's: as a species we are meant to keep active - and yet technology, and the way in which so many of us now work, encourages us to be slothful.

The obvious implication to be drawn from this is that if we stay active then we'll all live as long as Morris - he died last year aged 98. But sadly, it's more complicated than that. Indeed, if you think going to the gym three times a week is going to keep you healthy, then you'd better think again.

A recent study conducted by the University of South Carolina looked at a group of men, all of whom exercised regularly. Some sat down to work for most of their working days, while some didn't. The ones who spent more than 23 hours a week sitting down had a 64 per cent greater likelihood of dying from a heart attack.

Two hundred years ago, people may have led much less sedentary lives, but they still had an inkling that sitting down wasn't doing them any good. No one seems to know exactly when the standing desk was invented, but by the mid 19th century, they were a regular fixture in the offices and homes of the rich.

But if people could get used to working standing up, could they go one step further? One evening in 2007, Levine was in his office at the Mayo Clinic thinking about the relationship between exercise and fitness when he had an idea. Instead of people nipping off to the gym and then coming back to slump at their desks, maybe they could exercise at the same time as working.

Sliding a hospital tray on top of a treadmill, Levine set it to a modest 2mph. To his surprise, he found he could work perfectly easily while he was walking along. He could type, make phone calls and do almost everything that he normally did sitting down. Yet after an hour, he'd burned off more than 100 calories.

It was, as he admits, an eccentric invention. "There was a notion floating about that I had completely flipped." But television stations began doing news reports, and all at once people didn't think he was so nutty after all. Soon, the treadmill desk, or Walkstation as it was called, had gone into commercial production - with each one costing around \$US4000. Levine claims that using one during your working day, even set at a pace of less than 1mph, can help you lose about 4st.

Then Levine had another idea. If people could work while they were walking, why couldn't they have meetings as well? And so the concept of the walking meeting was born. His plan was that a designated walking track could be marked out in an office using carpet tape. Two people walking together could both wear coloured badges so that everyone else knew they were in a private meeting and shouldn't be disturbed.

This, you might reasonably assume, was the point at which Levine was carried off screaming and frothing by men in white coats. But remarkably a Minnesota financial recruitment company called Salo heard about his ideas and decided to put them into practice.

"We installed our first treadmill desks back in 2007," Salo's director of operations, Craig Dexheimer tells me. "We put four in a conference room that can be used for walking meetings and six that can be used by anybody." There was, he acknowledges, an initial degree of scepticism among the employees. "When you see a treadmill in an office environment for the first time, it's kind of strange." Soon, though, there was a queue to get onto them. "We tend to have between two and eight people at a time, but as there are only four treadmills in the conference room, people take it in turns and rotate every 10 minutes." And you're saying that they really do this, without tripping over, or fainting from embarrassment?

"Oh sure," says Dexheimer. So are you standing at your treadmill desk now, as you're talking to me? I ask.

"Er no," he says. "Not exactly... I do use it, but to be honest I find the volume of use has declined. It's good for some things, but not so good for others. Handwriting can be quite awkward.

"But we do a lot of walking meetings - some of them on the treadmills and some of them outside. In fact, we found that walking meetings not only tended to be more productive than sedentary ones, they're also, on average, 10 minutes shorter." There are signs that walking meetings may be catching on over here.

Living Streets, "the national charity that stands up for pedestrians", has put out a guide on how to hold a walking meeting. This includes handy advice such as "Avoid busy roads that might make it challenging for everyone to hear" and "Assign someone to scribe and take along a small notepad to jot down any actions." According to Living Streets' chief executive, Tony Armstrong, "The response has been very gratifying; it's really turned into quite a popular thing. People have this idea that you need to be hot and bothered before any physical exercise counts, but that's simply not true. The more you can minimise how sedentary they are, the better it is for them." But while treadmill desks are proving increasingly popular in the States, people in the UK seem much more sceptical. Possibly this has something to do with innate British conservatism, or it may simply be that they don't want to look silly.

"Do you know anyone with a treadmill desk in the UK?" I ask Levine. There is a long pause.

"I don't think I do," he says. "Not at the moment." Yet this, it turns out, is not entirely true.

Up in Edinburgh a 38-year-old software engineer called Tim Beattie has recently made his own - prompted by a recent medical software engineer called Tim Beattie has recently made his own - prompted by a recent medical which revealed he had high blood pressure. Not being prepared to spend \$4,000, Beattie knocked his up out of an old treadmill and an IKEA desk. Total cost: pounds 260.

"It was quite tricky taking the handlebars off the treadmill," he says, but now he spends several hours a day at his treadmill desk packing along at one kilometre per hour and insists that he's already feeling the benefits. "Although I've only had it for a couple of weeks, I really do feel better - much more awake and brighter." But is he worried that the novelty might soon wear off? "Not really," he says. "Besides, I've already sold my old desk and chair, so I couldn't slip back even if I wanted to.

**The Sunday Telegraph, London**

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