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TAKE A STAND

Sitting for long periods of time can lead to a host of diseases, but the solution is simple

By Kavita Devgan

Too much sitting—in the car, on long-haul flights, in office, in front of the TV—does not not just make us lazy, or bestow us with a fat middle. Research shows it can have the kind of adverse effects on health we may not have imagined before.

More and more research is pointing to the fact that the simple act of sitting, especially if a person spends a lot of time doing it, can lead to a host of diseases.

A study published in January in the journal *Circulation: Heart Failure* reported that men who sat 5 or more hours a day were 34% more likely to develop heart failure than men who spent 2 hours or less sitting, regardless of how much they exercised. Whereas men with hypertension and coronary artery disease who exercised regularly and sat less were found to have lower levels of heart failure. For the study, the researchers followed more than 82,000 men in California, US, aged above 45, for up to 10 years.

"The muscle activity needed for standing and other movements seems to trigger important processes related to the breakdown of fats and sugars within the body. When we sit, these processes stop and our health-related risks increase," explains Abhishek Kumar Mishra, senior consultant, orthopaedics, spine surgery and joint replacement, Fortis Flt Lt Rajan Dhall Hospital, Vasant Kunj, New Delhi. "The good news though is that not sitting for too long delivers solid health benefits."

It's not just the heart that suffers from a sedentary lifestyle—the more time you spend sitting, the more insulin-resistant your body becomes.

"Insulin produced by the pancreas is a hormone that carries glucose to cells to meet their energy needs," says Richa Chaturvedi, consultant diabetologist and endocrinologist, Pushpawati Singhania Research Institute (PSRI) Hospital. "But when we sit idle, the metabolism becomes sluggish and the cells in muscles don't respond optimally to insulin levels in blood. So the pancreas produces more and more, which can lead to diabetes."

A 2012 study published in the journal *Diabetes Care* showed that interrupting sitting time, with short bouts of light or moderate-intensity walking, lowers postprandial glucose and insulin levels in overweight/obese adults. Different research led by the UK's University of Leicester, in association with colleagues at Loughborough University, found that sitting for long periods increases the risk of diabetes, heart disease and death. The researchers analysed 18 studies that together included nearly 800,000 people, and concluded that people who sat for the longest periods of time were twice as likely to have diabetes or heart disease than those who sat the least, and that while prolonged sitting was also linked to a greater risk of death from all causes, the strongest link was to diabetes. The research was published in the journal *Diabetologia* in 2012.

Enter cancer

Research has linked prolonged sitting to increased inflammation and other cancer markers in the body as well. In women, the risk of breast cancer and ovarian cancer increases and in men, the chances of prostate cancer have been shown to increase.

"While the reason the risk goes up is not clear, one explanation could be that regular movement helps boosts natural antioxidants that kill cell-damaging (and cancer-causing) radicals," says Ullas Batra, consultant, medical oncology, Rajiv Gandhi Cancer Institute and Research Centre, New Delhi. An analysis presented in 2011 by epidemiologist Christine Friedenreich of the Alberta Health Services in Calgary, Canada, cited that 49,000 cases of breast cancer and 43,000 of colon cancer occur every year in the US, possibly due to physical inactivity and prolonged periods of sitting. The finding was presented at the annual conference of the American Institute for Cancer Research in Washington, DC, US.

The most immediate effects of sitting, of course, are felt in the muscles and joints. Long periods of sitting lead to a muscular imbalance known as "upper crossed syndrome", where a shortening of the pectoralis (chest) muscles and a weakness of the shoulder blade retractors occurs, leading to a round upper back. This leads to a protraction (forward hold) of the neck and stiffness of the neck muscles—literally, a pain in the neck.

> Prolonged sitting increases the risk of developing osteoporosis, cancer, obesity and heart disease

"This then radiates to the shoulders, sometimes one-sided, often both sided, and sometimes headache too," says Gerd Mueller, an orthopaedic specialist and chairman and managing director of AktivOrtho, an orthopaedic rehabilitation centre in Delhi.

Sitting requires your glutes to do absolutely nothing, and they get used to it. "Weak glutes compromise stability, and most functional movements like walking and running. Sitting does the same to your core muscles, making them stiffer and weaker," says Aditi Bhatia, department in-charge, physiotherapy, ANH Multispecialty Hospital, New Delhi. "Also, when we slump in chair for long, tight muscles of the back make the abdominal muscles weak and hence, protruded abdomen," she adds.

"The muscles of the anterior shoulders and hip become shortened and less flexible and the muscles of the upper back and the lower abdominal region become lengthened and weakened," says Dr Mishra. "These muscular imbalances can lead to permanent changes to the alignment of the spine, leading to chronic neck and back pain over time," he adds.

"Prolonged sitting increases the risk of developing osteoporosis as well, as a decrease in weight-bearing activities leads to decreased bone density and bone strength," says Bhatia.

The good news

In a 2011 study published in the *European Heart Journal*, researchers measured waist circumference, inflammation, and other indicators of heart disease and cancer risk and reported that even breaks (from continual sitting) as short as 1 minute could lower these bio-markers. The study found that even in people who spent a long time sitting down, the more frequent the breaks, the smaller their waists and the lower the levels of C-reactive protein (CRP), a marker of inflammation, which is linked to cancer risk. CRP is produced by the liver; its level increases when there is inflammation in the body.

Here are a few steps that doctors suggest you can take to ensure you sit less:

▶ Get up intermittently throughout the day as it helps to break up sitting time. If you have something to say to a colleague in the same office, don't call or mail, walk up to the person and have a conversation.

▶ Stand up for 2 minutes every 20 minutes you spend sitting down.

▶ Stand up during commercials when watching TV, or walk to the kitchen to get a glass of water, and have that standing up.

▶ To counteract the effects of prolonged sitting, it is important to train those muscles that are weak and stretch those that are shortened. Visit an expert for help to target those muscles when you exercise.

▶ Stand up to take phone calls.

▶ Have standing meetings with colleagues.

▶ Take the stairs instead of the lift or an escalator wherever possible.

▶ Keep moving your ankles and toes even while sitting.

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SIT RIGHT

▶ At work choose a chair that supports the upper and lower back. Do not sit on the edge of the chair. Keep your shoulders against the chair back. A rolled-up towel or small pillow at the lower back can provide extra support. Do not lean over the desktop. Change sitting positions frequently.

▶ When driving, try to keep the knees slightly higher than your hips. Frequently reposition your hands on the wheel to take some strain off the upper back and neck muscles.

—Aditi Bhatia, department in-charge, physiotherapy, ANH Multispecialty Hospital, New Delhi.