

## **Study: Sitting Up Straight Hurts Your Back**

<http://www.technewsworld.com/story/54446.html#>

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*Chicago Tribune*

11/28/06 8:49 AM PT

A study conducted by Scottish researchers has found that sitting upright with a straight back and thighs parallel to the floor increases the strain on lumbar discs in the lower back. "Really the best position is what you get in a La-Z-Boy, although that wouldn't work well for someone using a computer," said Dr. Waseem Amir Bashir, who led the study conducted at Woodend Hospital in Aberdeen, Scotland.

Your mother's advice to sit up straight in your chair could be a prescription for lower back pain.

Scottish researchers said Monday in Chicago that a look at the spine with new imaging technology reveals how sitting upright with a straight back and thighs parallel to the floor increases the strain on lumbar discs in the lower back.

In fact it's better to lean back a bit in a chair, even if looks like slouching.

### **A Universal Pain**

"Really the best position is what you get in a La-Z-Boy, although that wouldn't work well for someone using a computer," said Dr. Waseem Amir Bashir, who led a study conducted at Woodend Hospital in Aberdeen, Scotland.

Bashir's findings, which confirm what experts in ergonomics have believed, were presented at the McCormick Place meeting of the Radiological Society of North America. His conclusions come from getting a different view of the spine, using a newly designed magnetic resonance imaging machine that allows for a full view of the back while sitting.

Conventional MRI equipment requires the patient to lie down while images are taken, but this puts the spine in an unstressed position, Bashir said. By making images when people are upright in a chair, he said he was able to capture instabilities and deformations not otherwise seen.

Lower back pain is almost universal, afflicting eight out of 10 Americans at some point, the National Institutes of Health estimates. It is the second most common reason people visit a physician, after colds and the flu, and accounts for an estimated 93 million days of lost work annually, at an estimated cost of US\$11 billion.

### **Gamers at Greatest Risk**

Bashir said that people weren't designed to sit in front of computer screens for hours at a time, but by assuming a more open sitting position, one can minimize the risk of back pain.

"A 135-degree body-thigh sitting posture was demonstrated to be the best bio-

mechanical sitting position, as opposed to a 90-degree posture, which most people consider normal," Bashir said.

While a person cannot easily operate a computer from a recliner, it is possible to keep one's feet on the floor while raising the chair to open up the angle between the thighs and the back, he said.

Leaning forward as people commonly do while playing computer and video games is even more stressful to the spine than sitting upright, he said.

For Bashir's study, he made images of the spines of 22 healthy volunteers while they assumed various sitting positions. His conclusion reinforces the understanding of most ergonomists studying workplace issues.

"I would agree with their conclusion," said Bill Dowell, research director at Herman Miller of Zeeland, Mich., which makes chairs for office workers.

He noted that 30 years ago Gunnar Andersson, now chairman of orthopedics at Chicago's Rush University in Chicago, inserted needles into the backs of volunteers to measure pressures exerted in different sitting positions

"They found about 135 degrees is the most natural posture. That's also what you get when you're floating in water or astronauts are in a weightless environment," Dowell said.

### **No Long-Term Position Perfect**

Andersson said that his earlier research was intended to help Volvo design car seats. The MRI study confirms his results, he said.

"Getting a 135-degree posture is optimal to minimize stress to the discs, but when you're working, you cannot always achieve that," Andersson said. "You have to be practical."

Assuming any position for a long period is a bad practice, said Judy Lesse, an ergonomics consultant for Herman Miller.

"We design our chairs so that people can change positions regularly," she said. "You may find it difficult to lean back while using a computer, but you can lean back while talking on the phone."

Dave Trippany, corporate ergonomist for Steelcase, a Grand Rapids, Mich., maker of office furniture, said that "flexibility is the key. People should move around to increase circulation. Reclining is part of that."

To understand why reclining beats sitting up straight, you can think about what happens when you throw a hard snowball at a window, said Mark Grabiner, chairman of the movement sciences department at the University of Illinois in Chicago.

"If the window is perpendicular to the ground, there's a good chance the snowball will smash the glass," Grabiner said. "But if you tilt that window at an angle, there's a very good chance the snowball will glance off after hitting it and not smash the glass."

"By changing position, you send the forces in a different direction."

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