

Kenmore, WA December 5, 2006
RSNA study sheds new light on sitting up straight

Scottish and Canadian researchers presented important data at this year's Radiological Society of North America (RSNA) conference regarding how seated posture affects back strain. In a study titled *Alterations of Lumbosacral Curvature and Intervertebral Disc Morphology in Normal Subjects in Variable Sitting Positions Using Whole-body Positional MRI*, researchers scanned twenty-two volunteers to determine how trunk-thigh angle affected back strain.

Sonography professionals report significant work-related musculoskeletal disorder (WRMSD) symptoms of the spine, with 58% reporting upper and lower back involvement, and 33% reporting mid back pain.¹ Poor trunk support has been shown to result in instability of the shoulder girdle, affecting the risk for WRMSD of the shoulder.²

In 2001, Sound Ergonomics, LLC, introduced the saddle seat chair design of the Capisco ergonomic chair for use in the sonography work environment. Among the many benefits, such as increased height range and options for supporting the scanning arm, the sonography version of the Capisco chair allows the user to position themselves with their knees lower than their hips, increasing the hip angle. This improved posture restores the normal curvature of the spine by rolling the pelvis forward, whereas a traditional chair with a flat seat results in the knees being at the same level as the hips, rolling the pelvis backwards and increasing the strain on the spine. The Capisco is a practical solution with significant ergonomic benefit.

Dr. Waseem Bashir of the Department of Radiology and Diagnostic Imaging at the University of Alberta Hospital, Canada led the study. The research was carried out at Woodend Hospital in Aberdeen, Scotland using a positional MRI machine, which allows patients the freedom to move during the exam. Study participants assumed three different sitting positions: a forward slouched position with a trunk-thigh angle of less than 75 degrees, an upright 90 degree trunk-thigh angle sitting position, and a semi-reclined position with a thigh-trunk angle of 135 degrees. Spine angles and disk height and movement were measured in each position. Disk movement increases with increasing strain on the spine and its associated muscles and tendons. The shift in disk position was least pronounced with the 135-degree posture, suggesting that this open trunk-thigh angle results in improved anatomic position of the spine, reducing the risk for pain and chronic conditions of the spine.

Dr. Bashir concluded, "Sitting in a sound anatomic position is essential, since the strain put on the spine and its associated ligaments over time can lead to pain, deformity and chronic illness." Previous studies in occupational biomechanics have established that a seated hip angle of approximately 120 degrees preserves the normal curvature of the spine.³ Working in a semi-reclined position as was demonstrated in the study would not be practical for most work environments, however, what is most important is that the hip

angle is open. This same open hip angle can be achieved using a "saddle seat" type of chair, a more practical application that allows free movement to accomplish tasks.

Additional information may be obtained by contacting Sound Ergonomics, LLC by phone (877) 417-8151 or through their website www.soundergonomics.com

References:

1. Pike I, Russo A, Berkowitz J, Baker J, Lessoway V; *The prevalence of musculoskeletal disorders among diagnostic medical sonographers*; JDMS; 13(5); Sept.-Oct. 1997: 219-27.
2. *Compute in Comfort: Body Awareness Training: A day-to-day guide to pain-free computing*. Prentice Hall, 1995.
3. Engdahl (1978) "Sitting Work Postures"; Chaffin, D.B. and Andersson, G., "Occupational Biomechanics"