



## Ergo Tip of the Month - April 2007

### Consequences to the Lumbar Spine During Prolonged Sitting

Several occupations and work environments allow the worker to sit while performing his/her tasks. The common belief is that when compared to standing, sitting is less taxing to the spine and may assist in reducing the risk of low back pain.

Consider for example, that bank tellers, cashiers, and lab technicians are often provided with stools or tall seats at their workstation. In some cases, these may have back rests/supports, but not always. Furthermore, consider your own working posture while at your desk or computer... do you always utilize your back rest? Workers can often be seen leaning (slouching) forward in an unsupported spine posture.



Research from the University of Waterloo (Waterloo, Ontario, Canada) suggests that for those of us who do not have a supported sitting posture, standing when used alternatively as a rest from sitting, may aid in injury reduction. Because of the change in posture, standing can alter the loading patterns of the passive and active tissues in the lumbar spine, to reduce the risk of overloading any one tissue. To aid a worker in achieving variation in sit/stand postures, an adjustable work surface is ideal. If this is not possible, tasks which do not require the use of a computer should be performed while standing away from your primary workstation. Furthermore, breaks could be spent taking a walk or standing in the lunch room as opposed to sitting.



It is important to note that static (holding the same posture for an extended period of time) sitting as well as standing can contribute to fatigue. Varying between sit-stand postures is valuable; however it is important to vary your posture even when standing in order to give your muscles a break. Maintaining one stance for a prolonged period of time, even as a break from sitting, can induce fatigue. Therefore, when both sitting and standing, it is important to adjust your position multiple times thereby spreading the load and maintaining blood flow across the spinal tissues. To enhance cyclic muscular activation, which will promote blood flow and offer rest breaks to the various spinal tissues, brisk walk breaks are also recommended.



The next time you are tasked with a workstation design or evaluation (even your own workstation!), consider the use of a sit-stand regime with active breaks to reduce the risk of spinal injury.

#### References:

Callaghan J.P. & McGill S.M. (2001). Low back joint loading and kinematics during standing and unsupported sitting. *Ergonomics*, Vol. 44, pp.280-294.

Callaghan, J.P., Patla, A. E., & McGill, S.M. (1999). Low back 3-dimensional joint forces, kinematics, and kinetics during walking, *Clinical Biomechanics*. Vol. 14, Pp. 203-216.

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