



ERGONOMIC STRATEGIES SEATING

Facts about Prolonged Sitting Postures

- Research has shown that joint forces in the lower back are significantly higher when in a prolonged seated position as opposed to a prolonged standing position.
- Additionally, seated work increases the risk for low back pain due to sustained static loads imposed on the spine.
- Sitting for prolonged periods of time also causes continuous compression on the intervertebral discs, which hampers the flow of fluid and decreases joint nutrition.

Why is Office Seating Problematic?

- When sitting, it is very easy to slump into a posture which significantly changes the shape of the spine and drastically increases the pressure on the intervertebral discs in the low back.
 - This slumping posture can result in low back pain and over a prolonged period of time can cause more serious back problems.
- Many office chairs have traditional, padded, fixed-height lumbar (low back) supports that are unlikely to provide a comfortable or appropriate seat for people of various body types.
- People do not always prefer chairs that correspond to their body's characteristics and therefore fail to adjust their chairs accordingly.

What Type of Office Chair is Optimal?

- Using a dynamic (adjustable) chair as opposed to a fixed chair is an easy way to help prevent low back pain associated with sitting.
- Dynamic chairs allow opposite movements of the seat and back support, which accommodate a reclining posture, allowing for relaxation of the back muscles.
- Office chairs should have a lumbar (low back) support positioned between the second and fifth lumbar vertebrae (lower four vertebrae of the spine).
- A chair should allow for easily varied sitting postures, in order to allow the spine to move rather than attempting to constrain people to an 'ideal' sitting position.

QUESTIONS? Contact Rachel Neuman: raneuman@bu.edu or Karen Jacobs: kjacobs@bu.edu

Callaghan, JP, and McGill, SM. (2001). Low back joint loading and kinematics during standing and unsupported sitting. *Ergonomics*, 44(3): 280-294.

Coleman, N, Hull, BP, et al. (1998). An empirical study of preferred settings for lumbar support on adjustable office chairs. *Ergonomics*, 41(4): 401-419.

Van Dreën, JH, De Looze, MP, et al. (2001). Effects of dynamics office chairs on trunk kinematics, trunk extensor EMG and spinal shrinkage. *Ergonomics*, 44(7): 739-750.