



It's a fact...

An exercise ball should be used for exercise and not as a desk chair.

DoD Ergonomics Working Group Fact Sheet

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Exercise balls are designed for exactly that—exercise. The instability of the ball forces the use of the core muscles of the midsection. As an exercise tool, this is a positive feature because it is important to strengthen the musculature of the low back and abdomen. However, as is true of any exercise, muscles fatigue over sustained work. This decreases the ability of the user to maintain neutral postures.



Research Has Shown

There has been little research done on this type of product as a full time seat. One study's results suggest that prolonged sitting on a dynamic, unstable seat surface does not significantly affect the magnitudes of muscle activation, spine posture, spine loads, or overall spine stability. Sitting on a ball appears to spread out the contact area, possibly resulting in uncomfortable soft tissue compression which could explain the reported discomfort.¹

Another study's results found an increase in muscle activation in the thoracic erector spinae muscle, decreased pelvic tilt, and increased perceived discomfort while sitting on the stability ball. The authors concluded that the small biological responses when sitting on a ball compared with an office chair, combined with the increased discomfort while on the ball and the potential safety issues associated with sitting on an unstable surface, question the use of a stability ball as an office chair and that its use for prolonged sitting may not be advantageous.²

Low Back Pain

From an ergonomics perspective, stability balls are not an effective solution for reducing low back pain in the workplace because:

- Active sitting increases the rate of fatigue due to constantly challenging your balance. In addition to fatigue, continuously maintaining your balance throughout the day may be an issue for some individuals and people with previous back injuries who have decreased postural control.
- Balls do not have armrests or back supports, key features in supporting the body.
- A reclined sitting position produces the least amount of disc pressure and muscle activity; this cannot be achieved with an exercise ball.

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Safety Concerns

There are also safety concerns if someone is not using the ball properly. Balls do not have a stable balance and present a potential safety risk of falling off of them or the ball may pop causing the user to fall. In addition, a general user may not realize that a fully inflated ball is going to be much more difficult to sit on than a less inflated ball.

Exercise Balls for Exercise

The only situation recommend for an exercise ball is as a form of exercise. Perhaps an exercise ball could be used for a few minutes interspersed throughout the day for an exercise break, but not as a full-time desk chair. Exercise balls are a great addition to a comprehensive exercise/health program; however, they are not a great addition to a comprehensive ergonomic computer workstation.

Best Solution for Prolonged Sitting

Finally, the best way to reduce low back fatigue and discomfort from sitting is to limit prolonged exposure to sitting to one hour and to choose a chair that allows you to change your sitting posture frequently throughout the day.

References

1. Drake, JDM, Fischer, SL, Brown, SHM, Callaghan, JP. 2006. "Do exercise balls provide a training advantage for trunk extensor exercises? A biomechanical evaluation." *J Manipulative Physiol Ther* 29(5):354-362.
2. McGill, SM, Kavcic, NS, Harvey, E. 2006. "Sitting on a chair or an exercise ball: various perspectives to guide decision making." *Clin Biomech* 21(4):353-60.



This DoD Ergonomics Working Group fact sheet provides information on ergonomics for both workers and supervisors. For more information, visit the working group's website: www.ergoworkinggroup.org