

One ideal spinal posture does not exist

Postural rehabilitation and/or ergonomic guidelines are frequently the base of both the revalidation from spinal pain as well as prevention strategies for low back pain. In ergonomic advices, people are frequently instructed to adopt a neutral spinal posture in different spinal positions because a neutral spinal posture is already demonstrated to be less associated with low back pain. This neutral posture is defined as a posture with a slightly forward tilted pelvis, a moderate hollowed lower back (= lumbar lordosis), a convex higher back (thoracic kyphosis) and a hollowed neck. Optimal pelvic orientation is mostly considered to automatically result in optimal orientation of the spine. However, alterations in the pelvic orientation may result in different changes on a spinal level: more forward tilt of the pelvis may result in both increased lumbar lordosis and thoracic kyphosis, backward rotation of the pelvis may be associated with a flat back and a more anterior shift of the pelvis may result in a sway-back position (Fig. 1). These altered positions of the spine may, according to some researchers, be more associated with spinal pain. However, these findings are often contradicted by other researchers. Secondly, above mentioned spinal correlations only describe the spinal behavior in standing, while nowadays lots of people are spending more and more time in sitting and this sitting position is often considered by patients as the most pain provoking position for lumbar and cervical pain.

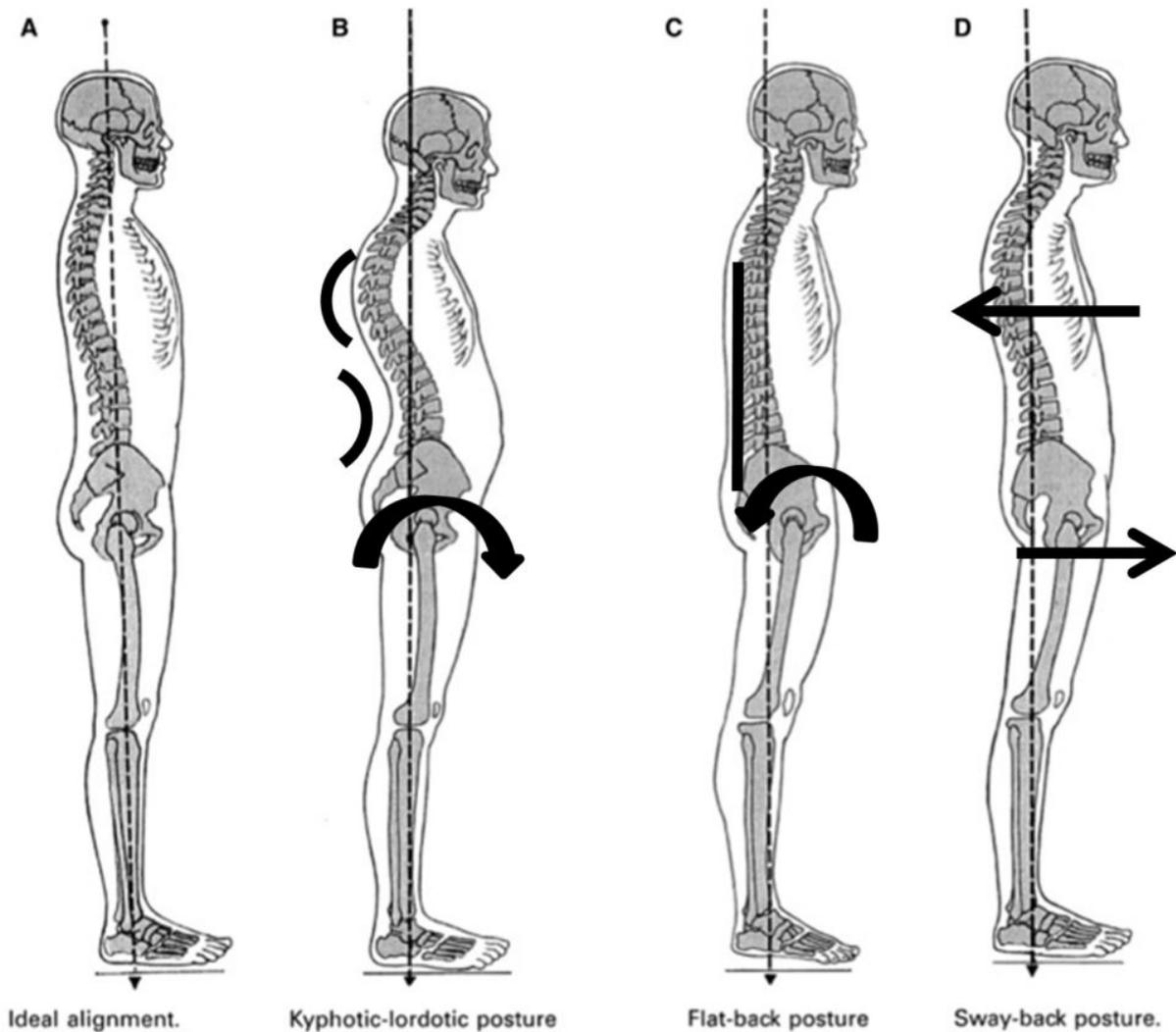


Fig. 1. The 4 postural types defined according to the classification of Kendall. (A) Ideal alignment. (B) Kyphotic posture. (C) Flat-back posture. (D) Sway-back posture. (Reprinted from Kendall FP, McCreary EK, Provance PG, Rodgers MM, Romani WA. *Muscles: testing and function, with posture and pain*. 5th ed. Baltimore, MD: Lippincott Williams & Wilkins; 2005)

Sitting and standing are two completely different postures. During standing, the support base of the body are both feet, with mobile joints under the pelvis such as the ankles, the knees and the hips. In contrast, in sitting, the pelvis is the support base which may result in other strategies to keep upright position compared to standing. Current study evaluated postural behavior of the spine in 99 healthy young people in both standing and sitting. A first important finding is that standing and sitting show a different postural behavior of the spine in relation to the pelvis. Sitting is demonstrated to be a pelvic steered position with strong postural correlation between the pelvis and the lumbar lordosis: more forward tilt of the pelvis results in more lumbar lordosis, more backward

rotation of the pelvis results in more flattening of the lower back. Also correlations between the pelvis and higher spinal regions (higher back and neck) are very manifest. However, these correlations are not visible in an upright standing position. Standing may not be considered as a pelvic steered position, in contrast to what several authors claimed before.

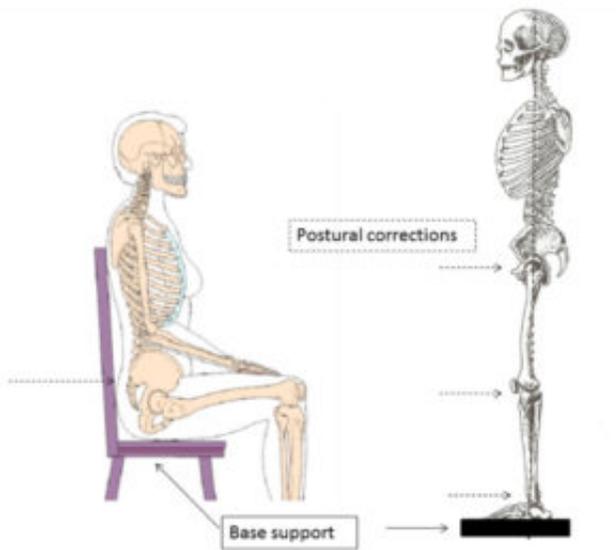


Fig. 2. Postural correction possibilities in standing and sitting are based on the base support.

In conclusion, standing and sitting are two different postural positions. During standing, postural corrections to keep equilibrium and to prevent falling could be made at several levels such as the ankles, the knees, the hips, the pelvis and the spine. In sitting, these postural corrections could only be performed departing from the pelvis, which reduces the postural options for the body resulting in a more important role for the pelvis (Fig. 2). As a result, sitting could be considered as a pelvic steered position which is not the case for the standing position. More mobile parts (joints at the lower limbs) are available to people to keep upright standing and to prevent falling, which may result in a less important role of the pelvis compared to the sitting position. Standing is a postural position with a lot of postural variability. People must be able to select from several possible options to choose the optimal posture upon the condition. Furthermore, they must be able to adapt to the postural condition: standing or sitting. Future studies must identify the postural behavior in other positions such as lifting or kneeling. General conclusion: one correct ideal spinal postural position does not exist. Prevention programs and ergonomic advices should be adjusted (read: updated).

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Publication

[Sagittal evaluation of usual standing and sitting spinal posture.](#)

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