

Flexed Posture and Walking in Seniors

De Groot et al. (2014) defined flexed posture (FP) as some combination of forward head or upper cross syndrome, thoracic kyphosis (TK), and knee flexion as a result of compensating for severe TK. Such FP usually becomes more pronounced over time due to several factors including age, weakened muscles involved with spinal extension, osteoporosis, and vertebral fractures (VF) (de Groot et al., 2014). The presence of these FP characteristics tend to cause a person's center of gravity to be more forward and off the "normal". Falls and instability during ambulation is a concern especially when hyperkyphosis was found in 20-40% of seniors (Kado, Prenovost, & Crandall, 2007). De Groot et al. (2014) examined postural control in elderly patients exhibiting FP.

Patients from a geriatric clinic (at least 70 yrs old and without any asymmetrical mobility problems) were recruited for the study. Their walking time and trunk accelerations (medio-lateral and anterior-posterior using an accelerometer) were recorded while they walked down a 80 meter hallway as part of the gait analysis (de Groot et al., 2014). Other measurements included age, gender, body mass index (BMI), prescriptions, lateral X-rays, Cobb angle, grip strength (as an indicator of overall limb strength), and FP relative to occiput-to-wall (de Groot et al., 2014). Occiput-to-wall (OWD) measurements 5.0 cm or greater indicated FP for this study (de Groot et al., 2014).

Thirty-one patients were classified as having normal FP and posture while 25 patients were classified as having FP (de Groot et al., 2014). The FP patients also had a higher Cobb angle (greater TK) than those patients without FP (de Groot et al., 2014). There were no significant differences between the groups (FP and normal posture) in VFs or the other characteristics.

While the walking speed was similar between groups, the stride time variability was higher in FP patients as was the phase between foot strikes. Their gait pattern was less symmetrical, less consistent, and less structured (de Groot et al., 2014) than the non-FP patients. The FP patients exhibited less trunk accelerations than the non-FP patients, and the FP patients' trunk accelerations were also more irregular. Due to the FP and increased TK, trunk and arm mobility may be limited in walking for those FP patients. Trunk and arm mobility are important for balance in walking and avoiding falls. The results from de Groot's et al. (2014) study showed a correlation with the FP patients and impairments with postural stability/control during walking.

This study by de Groot et al. (2014) helped to clarify and give a more detailed example of some of the issues that Kado et al. (2007) had touched upon. It never occurred to me before that posture (something I take for granted sometimes) could affect so many things such as walking which is an everyday feat. This article gave me a better appreciation for avoiding falls and obstacles, being able to navigate uneven ground, and running. The demands of running are so much greater and more complicated than walking. It reminds me that being able to move well is really a gift.

References

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Kado, D. M., Prenovost, K., & Crandall, C. (2007, September 4). Narrative review: Hyperkyphosis in older persons. *Annals of Internal Medicine*, *147*(5), 330-338.