Influence of second-degree flatfoot on spinal and pelvic mechanics in young females

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Abstract

Objective: To investigate the effect of bilateral flexible second-degree flatfoot on pelvic and spinal mechanics in young females.

Methods: A case-control trial was conducted at the Faculty of Physical Therapy, Cairo University, Egypt, on 60 female participants who were assigned into two groups. Group A (the control group) included 31 healthy subjects, and group B (the study group) included 29 subjects with bilateral flexible second degree of flatfoot deformity. For each subject in both groups, using lateral weight-bearing radiographs, foot assessments were performed bilaterally to measure the talus–first metatarsal angle. Using the formetric-II device, 3D assessments of the pelvis were performed on the frontal and sagittal planes in addition to lumbar and thoracic curvatures on the sagittal plane. Outcome measures were pelvic inclination, pelvic tilt, and lumbar lordotic and thoracic kyphotic angles.

Results: There was a significant difference in pelvic inclination and in lumbar and thoracic angles (P=0.012, 0.009, and 0.028, respectively) between both groups. There was no significant difference between both groups in pelvic tilt (P=0.688).

Conclusion: Subjects with bilateral flexible second-degree flatfoot demonstrated increased pelvic inclination, lumbar lordotic and thoracic kyphotic angles than normal subjects. Foot assessments should be performed as an essential part of the evaluation of female patients with spine and pelvic problems. Bilateral flexible second-degree flatfoot may act as a predictor for pelvic organs prolapse in their later lives.

Key words: n Flatfoot, Pelvic mechanics, Pelvic tilt, Pelvic inclination, Spinal curvatures, Pelvic organ prolapse