The relationships between plantar pressure distribution and lumbar multifidus muscle thickness were investigated in 40 healthy young adults aged 18 to 25 years. Our aim is to examine whether the plantar pressure distribution affects the lumbar multifidus muscle thickness.

Background: Lumbar multifidus is a muscle which is responsible for lumbopelvic stability. Plantar pressure measurement can change due to foot-ankle postural disorders. The aim is to examine whether the plantar pressure distribution affects the lumbar multifidus muscle thickness.

Methods: 40 healthy young adults aged 18 to 25 years were included in the study. Static and dynamic pedobarographic assessments were performed to determine the plantar pressure distribution, on a 3x1 meter sensored walking platform. Peak pressures (N/cm²) of 9 zones of the foot (medial of heel, lateral of foot, 5 metatarsals, thumb and 2, 3, 4, and 5 digits) were recorded. Ultrasonographic imaging was used to assess lumbar multifidus muscle thickness.

Results: There was statistically significant correlation between lumbar multifidus muscle thickness and peak pressure medial of heel and 1. metatarsal bone in static pedobarographic analysis (p<0.05). As the peak pressure on the medial part of foot increased, the lumbar multifidus muscle thickness was reduced. There was statically significant correlation between lumbar multifidus muscle thickness and pressure medial of heel and 2.3.4, and 5. digits in dynamic pedobarographic analysis (p<0.05). As the peak pressure on the medial part of foot increased, the lumbar multifidus muscle thickness was reduced.

Conclusions: Plantar pressure distribution affects lumbar multifidus muscle thickness. Based on these results, the lumbopelvic region and foot posture should be considered together in therapeutic interventions.

References:

Disclosure of Interest: None declared

The Effect of Foot Orthoses on Balance in Individuals with Idiopathic Scoliosis

Objectives: The aim of this study was to investigate hand functions in individuals with idiopathic scoliosis.

Methods: Ninety-four individuals with mild or moderate idiopathic scoliosis (Cobb angle range: 10° – 45°) were included. Curves were classified as single thoracic (n=18), single thoracolumbar (n=33), single lumbar (n=22) and double curves (n=21). Assessments included hand dexterity with Minnesota test, hand reaction time with Nelson test, hand-eye coordination with finger-to-nose test, throwing accuracy with Functional Throwing Performance Test, and upper extremity stability with the Closed Kinetic Chain Upper Extremity Stability Test. One-way ANOVA was used to compare continuous variables between different curve pattern groups and a Tukey’s hsd means comparison was used to examine the nature of the significant difference found by ANOVA. In addition, Student’s t test was used to compare the parameters between the convex and concave side of the curve for each group.

Results: Hand-eye coordination and throwing accuracy was significantly worse in thoracic curve pattern group than lumbar ones for both convex and concave sides of the curve. There was no difference between curve pattern in terms of hand dexterity, hand reaction time and upper extremity stability. When compared with concave side, hand dexterity was greater in the convex side for thoracic curves (p<0.05). For double curves, convex side had better hand dexterity and reaction time than concave side (p<0.05). But there was no difference between convex and concave side for thoracolumbar and lumbar curve patterns (p>0.05).

Conclusions: This study showed that hand function is affected, depending on the curve pattern in idiopathic scoliosis. There is no knowledge about how hand function is affected in patients with scoliosis in the literature. Further research following these findings may lead to an understanding of the change in hand functions and its relation with scoliosis-related characteristics, such as age, curve magnitude and trunk deformity.

REFERENCES:

Acknowledgements: This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2018-eular.2156