INVESTIGATION OF THE RELATIONSHIP BETWEEN PLANTAR PRESSURE DISTRIBUTION AND LUMBAR MULTIFIDUS MUSCLE THICKNESS

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Background: Lumbar multifidus is a muscle which is responsible for lumbopelvic stability primarily. Foot-ankle posture and function disorders affecting the lumbopelvic region muscles and biomechanics, cause increased stress in the lumbopelvic region and may cause low back pain in many studies [1,2,3]. However, it is not known whether the lumbar multifidus muscle is affected by this condition (4,5).

Objectives: Plantar pressure distribution can change due to foot-ankle postural disorders. Our 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 sensed walking platform with the DASU Digital Analysis System®. Peak pressures (N/cm²) of 9 zones of the foot (medial of heel, lateral of foot, 5 metatarsal, 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, m. lumbar multifidus muscle thickness was reduced. There was statistically 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, m. lumbar multifidus muscle thickness was reduced.

Conclusions: Our results show that plantar pressure distribution affected lumbar multifidus muscle thickness. Based on these results, the lumbopelvic region and foot posture should be considered in therapeutic interventions.

REFERENCES:

Disclosure of Interest: None declared