Abstract

Title: The immediate effect of Russian electrical stimulation on m. abductor hallucis on postural stability in women with dysfunction of hallux valgus

Objectives: The aim of this diploma theses is to investigate the immediate effect of Russian eletrical stimulation on *m. abductor hallucis* on postural stability in women with mild or moderate dysfunction of hallux valgus.

Methods: This is an experimental pilot study in which 16 women aged 23-28 years participated. The entry criteria for participation in the research were: mild or moderate dysfunction of hallux valgus according to the Manchester scale, angle of hallux valgus $\geq 15^{\circ}$ at least on one lower limb. Probands could not participate in the research if: they completed a rehabilitation program to affect hallux valgus deformity, underwent surgery for hallux valgus deformity, suffered an injury of the lower limbs in the last six months before the start of the research or if they were pregnant. The examination of postural stability took place in the Kinesiology Laboratory of FTVS UK on the NeuroCom SMART EquiTest System posturograph. The following tests were selected: Sensory Organization Test, Motor Control Test, Weight Bearing Squat and Limits of Stability test. Russian stimulation was applied on the abductor hallucis muscle of both lower limbs with a PhySys device from Zimmer, using self-adhesive electrodes.

Results: There was no statistically significant change in any part of the Sensory Organization Test, after application of Russian stimulation to the abductor hallucis muscle of both lower limbs. In the Motor Control test, there was a statistically significant deterioration in the left lower limb, when the measuring platform moved backwards with low intensity ($p = 0,014$). In the Limits of Stability test, there was a statistically significant improvement in the Reaction Time parameter in the backward direction ($p = 0,029$), the Directional Control parameter in the left direction ($p = 0,043$) and the Endpoint Excursion parameter in the backward right ($p = 0,025$) and backward left ($p = 0.027$).

Key words: hallux valgus, therapy, electrical stimulation, abductor hallucis muscle, postural stability