

Abstract:

The thesis evaluates the immediate effect of one therapeutic unit that using Dynamic Neuromuscular Stabilization (DNS) on the foot support function. The aim of the experiment was to verify effect of a single DNS therapeutic unit would to the determined parameters. The main expected effect was the optimization of the dynamic function of the foot and achieving better stability during the stance phase of a gait cycle.

Methods: For the study, the asymptomatic group of 30 probands aged 24–36 years, 10 men and 20 women was selected. Fifteen probands were randomly divided to two groups - fifteen experimental group and fifteen to the control group. Subjects enrolled in the experimental group were measured before and after one forty minute therapeutic unit of DNS concept. The control group underwent two measurements at the same time interval, but without the therapeutic unit. The Senno Gait instrument was used for measuring. It contains insoles with motion sensors. It collects the data at a 100 Hz sampling rate for 1 minute while walking at its own normal speed.

Results: Compared to initial examination, the significant shortening of the standing phase in the left lower limb ($p = 0.003$) and in the right lower limb ($p = 0.034$) was observed. The gait rate was unchanged after the DNS therapy in the experimental group. No significant changes were observed between experimental and control (left $p = 0.5329$; right $p = 0.5876$). There was also no significant change in the percentage distribution of the stance phase (impact, middle standing phase, and push off). In addition, no deviations were detected at optimization of foot movement in three planes. Stability index was statistically increased for the left lower limb ($p = 0.024$), but not for the right ($p = 0.1548$). Compared to the control group, the change for the left lower limb was not significant ($p = 0.0580$).

Conclusion: We did not observed any significant changes in the gait cycle after one therapeutic unit of DNS between the experimental and control group.