

## **Abstract**

**Title:** Comparative analysis of pelvic girdle muscles and body muscles activation during walking in different types of shoes and barefoot

**Objectives:** The aim of this thesis is to compare EMG signal chosen muscles of pelvis girdle and trunk while walking barefoot, shod in barefoot shoes or in conventional sport shoes.

**Methods:** In our research there were 9 healthy participants who are used to walking in barefoot shoes attending. Using surface electrodes, the EMG activity of 5 muscles was recorded. The observed movement was walking on grass in conventional shoes, in barefoot shoes and barefoot. The data obtained from the experiment were imported and statistically processed in the MS Excel program with the XLSTAT software installed and in the Jamovi statistical program. ANOVA and unpaired t-test were used for statistical data analysis.

**Results:** Data from the statistical comparison revealed a significant statistical difference in 75 % comparison of maximal muscle activity between walking in conventional sport shoes, barefoot shoes and barefoot in measurement of differences in one subject in all chosen muscles. A statistical significant difference was also found in comparison of maximal muscle activity in 81,43 % measurements between subjects in all chosen muscles while walking barefoot. There was no statistically significant difference in comparison to the overall average maximal muscle activity, in onset of muscle activity and in mean duration of muscle activity of chosen muscles while walking in conventional shoes, walking in barefoot shoes and walking barefoot across subjects.

**Keywords:** surface electromyography, minimalist shoes, bipedal locomotion, gait cycle