

## **Abstract**

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**Title:** Effect of Barefoot shoes on the footprint loading

**Objectives:** The aim of this experiment is to evaluate if barefoot shoes affect the size of vertical component of contact force during walking on a smooth non-abrasive surface during normal conditions. Furthermore to find out which parameters can be used to monitor the degree of convergence foot behaviour during the stance phase of gait cycle with the barefoot and barefoot shoes.

**Methods:** Seven probands (4 women, 3 men) aged 23 to 25 years participated at the study. The dynamic gait parameters (reaction forces from the pad) were measured using Kistler force plates in the extreme load laboratory at FTVS UK. Proband after introduction to the experiment went repeatedly over the power plate subjectively comfortable speed. The first measurement were done while walking in the barefoot type of shoes. The second measurement was barefoot walking. It was a one-time measurement. The obtained data were exported from BioWare® program into MS Excel. The final data processing was carried out in the MatLab program, where the necessary graphs of reaction forces and their evaluation were created.

**Results:** All contact forces and their resultant and CoP coordinates were recorded during measurements. Only the vertical contact force component was used for the final evaluation. After comparing the data, it was found out that the magnitude of the vertical force component is basically same when compare barefoot and barefoot shoes walking. So it can be said that barefoot shoes almost does not affect the load foot in comparison with barefoot walking.

**Keywords:** barefoot walking, barefoot shoes, dynamics of walking