

# Summary

**Title:** The influence of running shoes on leg and pelvis kinematics during the stance phase of run

## **Objectives:**

The main objective of this thesis is to detect whether there exists a connection between the type of shoes used and changes in pelvis and legs kinematics in sagittal plane while running.

## **Methology:**

For a purpose of the thesis research 12 active sportsmen (6 men and 6 women) participated in lab tests. Each of them was running on a tread mill for three time sequences – each counting 20 seconds – with changes in conditions applied as follows: barefoot run, minimalistic shod run, classic shod run. The 3D analysis was analysed using the Qualisys system (200 Hz). Data analytics was executed using the Qualisys Track Manager programme, where a comparative method was applied. Further statistical procedures ANOVA a Tukey test were performed in a programme called OriginPro 8.

## **Key findings:**

The executed lab tests proved influence of running shoes on legs and pelvis kinematics during a stance phase of run. The main changes in kinematics were found in an angle during touchdown, where the angle significantly increased while running barefoot rather than classic shod running. An analysis of pelvis kinematics parameters has proven that there are no changes in pelvis movements while running in different types of shoes. There was no statistical difference found for pelvis movements for any of the participants. The period of stance phase decreased while running barefoot. Statistically significant difference was found for 5 participants while comparing barefoot to classic shot running.

## **Key words:**

Running, running shoes, minimalistic shoes, kinematics, pelvis, legs