

## **Abstract**

This thesis examines the effect of cooling of peripheral parts of lower limbs on postural stability. The introduction describes the mechanisms how cold effects the human organism and individual tissues exposed to cold, such as skin, muscles, tendons, ligaments and nerves. In addition, postural stability, etiology of balance disorders and their implications are described. The aim of the practical part of the thesis is to assess the impact of cooling of feet on postural stability and also to determine the duration of such an effect. Static stability was assessed on 26 healthy individuals with a Zebris FDT-H instrument. The cooling procedure was carried out with 10-12°C water over a period of 12 minutes. Postural stability was measured 3 times during the experiment: before the cooling, immediately after the cooling and 1 minute after the cooling. The measured variables were: the 95% COP (Centre of Pressure) confidence ellipse area, COP trajectory and COP average velocity and the distribution of weight on the soles. The impact of the cooling procedure on the 95% confidence area was statistically significant. The results of other measurements also demonstrated increased values of measured variables after the cooling procedure. The persistence of the cooling effect was evaluated by comparing the first (control) measurement with the measurement 1 minute after the cooling procedure. Even though the 95% confidence ellipse area increased, the difference was no longer statistically significant. The results thus indicate that the cooling effect dissipates relatively quickly. The impact of the cooling on weight distribution on soles was not confirmed.

Keywords: postural stability, cooling, static stability, Zebris FDH-T