

Abstract

Title: The Effect of Thermotherapy on Postural Stability assessed via NeuroCom SMART Equitest

Objective: The aim of this study is to determine whether a one-time application of positive or negative thermotherapy has a positive or negative effect on the postural stability and/or balance in a sample of healthy young adults. The tool for achieving this goal will be statistical analysis of the results of the computerized dynamic posturography before and after application of thermotherapy. And further a comparison with the results of the control examination.

Methods: In this study we have used one-time application of positive and negative thermotherapy in the form of water immersion. A total of ten women and ten men with average age 24 years (sd = 2,18), average height 174,45 centimeters (sd = 7,72) and average weight 78,10 kilograms (sd = 18,10) took part in our study. We assessed postural stability via the NeuroCom SMART Equitest test battery. The assessment was carried out without the use of head tracker accessory. We tested each participant three times in three different days. During each day one condition was applied. Conditions consisted of positive thermotherapy (temperature of 40 °C), cryotherapy (temperature of 4 °C) and control condition. Within each session two examination were made, divided by fifteen minute break or application of thermotherapy.

Results: Warming produced no statistically significant changes in any of the used tests. On the other hand cooling produced statistically significant changes in the Sensory Organisation test, Motor control test and Rhythmic Weight Shift test. Our results suggest that cooling of the lower extremities improves the level of postural stability and thus reduces the risk of falling.

Keywords: Postural stability, postural control, balance, positive thermotherapy, cryotherapy, computerized dynamic posturography