

Abstract

The theoretical part focuses on vestibular system – the formation and role of vestibular information in the control of bipedal locomotion, and processes issues of gait control with respect to walking speed and the use of sensory feedback. The experimental part deals with the effect of rotational stimulation of labyrinth on the ability to maintain straight walking direction with the exclusion of visual control at various speeds – slow walking, fast walking and running. Two groups were tested – younger group aged 21 – 30 years (29 people) and older group aged 41 – 55 years (15 people). The difference between deviations from a straight direction before stimulation (with the exclusion of visual control) and after stimulation appeared to be significant ($p < 0.05$) for slow walking, fast walking and running, but only in the younger group. In the younger group there was also a statistically significant difference between deviation for slow walking after rotational stimulation and deviations for fast walking and running after stimulation. In the older group there were statistically insignificant differences between deviations before and after stimulation and between various speeds. Younger and older group differed statistically significantly in response to rotational stimulation at slow walking. The results suggest that the use of vestibular information differs at slow walking pace from fast walking pace and running in the younger group and that within the group there is a different response to the rotational stimulation of labyrinth during walking with the exclusion of visual control. Deviations between younger and older group differed stastically significantnly only at slow walking speed after rotation.