SUMMARY

The thesis focuses on the study of the impact of visual stimuli from virtual reality scenes and on influencing and training postural stability in patients after brain damage. It endeavours to inform comprehensively about the substantial facts related to this topic and widen the possibilities of an objective evaluation of postural stability and this eliminate the risk of a subjective mistake made by a physiotherapist.

In the course of the work I have used a number of virtual reality scenes through which I measured and evaluated both static and dynamic labour of the tested people with their own centre of mass. The process of positioning was scanned by Wii Balance Board and the data were recorded with the help of a specially designed computer application "Rehabilitation in virtual reality".

It was necessary to create two groups of people tested. A group of healthy probands of 50 in number and a group of patients comprising 3 members. In one part, the recorded data represented the figures of centre deflection (in millimetres), and in the other part, the number of points gained during the measuring. The results of both parts were then processed into well-arranged tables which also involve the basic statistic quantities, and they are presented in the form of graphs.

In the conclusion, the thesis verifies and confirms the possibility of using this system to objectively evaluate postural stability. This conclusion is supported by the fact that all measuring went without any complications and brought valid results.

I carried out optimization and standardization of the measuring process during which I suggested a change of the virtual scene sequence.

Last but not least, I defined the borders between the sizes of physiological and pathological deflections in postural regulations on the basis of the measured deflections.

Key words: Virtual reality, posturography, postural regulation, Wii Balance Board