

## **DIPLOMA THESIS ABSTRACT**

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**Title:** Driving Simulator and Its Use in the Rehabilitation of People with Acquired Brain Injury

### **Abstract:**

The diploma thesis describes the utilization of a driving simulator for manual control in the rehabilitation of individuals with acquired brain injury.

The main objective of this thesis is to determine the feasibility of using a driving simulator and its potential to increase the likelihood of returning to driving by clients with acquired brain injury in the chronic stage. The first sub-objective is to investigate the influence of driving simulator training on attention and the potential to increase the likelihood of returning to driving by clients with acquired brain injury in the chronic stage. The second sub-objective is to determine whether the proposed set of tests is appropriately designed as a criterion for inclusion in the driving simulator research.

The theoretical part summarizes the knowledge about acquired brain injury and its consequences, cognitive functions, impairments, car driving, and legislative regulations or possibilities for driving skills testing. Furthermore, this section provides information about rehabilitation by acquired brain injury with a focus on cognitive functions and driving skills, as well as a description of the driving simulator used in the diploma thesis.

The practical part of the thesis includes four case studies of clients who underwent several-week training on the driving simulator. Changes in their performance were objectively evaluated using a selected battery of tests, and subjective assessment was conducted through interviews with the participants.

The results of the thesis demonstrate improvements in overall maneuverability on the driving simulator for three out of four clients, including attention. The driving simulator manual reasonably determined the proposed set of tests, but it would be beneficial to supplement it with further examinations.

The diploma thesis describes the findings from the practical utilization of a driving simulator developed in the Czech Republic, which can contribute to the integration of this field into standard occupational therapy practice in our country.

**Key words:** acquired brain injury, driving simulator, driving a car, occupational therapy, rehabilitation