

Abstract

Rehabilitation of patients after brain damage is an multidisciplinary, complex, intensive, long-term and individual process. Standardized functional instruments for the assessment of the degree of disability and functional abilities of patients are not usually used in rehabilitation in the Czech Republic. Often, motor disorder post brain damage results in hemiparesis and causes impairment of upper arm movement pattern. Movement ability of the upper arm is vital for self-sufficiency, activities of daily life and maintaining an independent family life.

Special rehabilitation therapeutic techniques must involve the training of new activities including the mechanism of motor learning which is responsible for functional reorganization of the motor cortex regions, and the activation of reserve neurons for reparation.

The aim of the study is to demonstrate that an accelerometer is a suitable instrument for objective monitoring of impairment of the upper arm movement pattern.

Another aim of the study is to demonstrate if the FIM test (Functional Independence Measures) and Jebsen-Taylor (JT) test are appropriate instruments for detecting changes of the upper arm movement pattern after intensive, individual and multidisciplinary rehabilitation brain damage patients. Clinical study was undertaken with selected patients after brain damage with central hemiparesis. The patients attended a rehabilitation day care center for 4 weeks.

The parameter of an all-day movement activity of the upper arm was detected by an accelerometer measurement. The FIM and JT tests were applied at the beginning and after 4 weeks during the final examination.

The results confirmed the hypothesis that an accelerometer is a suitable instrument for detecting movement activity of the upper arm. Analysis of the results confirmed also our hypothesis that functional tests, the FIM test and JT test, are sensitive to changes of functional abilities of patients after brain damage.

Key words: multidisciplinary rehabilitation, movement pattern, accelerometer, functional objective assessment, brain damage, central hemiparesis, brain plasticity