Abstract

The rehabilitation of patients with brain damage is an interprofessional, complex, intensive, long-lasting and individually oriented process.

One frequent consequence of brain damage is hemiparesis, which also causes a disorder of the upper extremity movement pattern. The movement ability of the upper extremity is essential for an individual's self-sufficiency, the performance of common daily activities, and thus for an independent life in a family setting.

Special therapeutic rehabilitation approaches should involve the training of new activities, including the motor learning mechanism that activates brain plasticity. A functional reorganization of the motor cortex occurs along with the activation of reserve neurons and the replacement of damaged synapses.

One of the aims of this work was to demonstrate, using objective function methods, the possibility of influencing the movement patterns of a paretic upper extremity by means of intensive interprofessional rehabilitation even several years after the brain damage. The second aim was to demonstrate that the monitoring of motor functions in patients after brain damage leads to improved motivation, thereby improving motor functions.

A study was conducted among 55 selected patients after brain damage with central hemiparesis who participated in the 4-week stay in a rehabilitation day care centre. Two groups of patients were studied, one group with an accelerometer (30 patients - Group A) and one group without an accelerometer (25 patients - Group B). The parameter studied with the accelerometer was daylong physical activity of the upper extremities, paretic extremity and non-paretic extremity.

Two functional tests were used to objectify the efficacy of rehabilitation: FIM test (Functional Independence Measure) and JT test (Jebson-Taylor test). The tests were used in both groups A and B, at baseline and after four weeks of rehabilitation during the final tests. The movement therapy was indicated in the same quality and quantity for all study patients.

The results obtained confirmed that brain plasticity can be activated by intensive interprofessional rehabilitation even several years after brain damage, rather than just one or two years after the injury or disease.

It was also demonstrated that the monitoring of movement functions during the intensive interprofessional rehabilitation in patients with hemiparesis contributes to greater improvement of the movement patterns in paretic upper extremities. The most important

positive parameters of the monitoring are the increased motivation of patients for physical therapy and the use of the principles of a feedback accelerometer.

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