

Abstract

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Diploma thesis: The Application of Robot-Assisted Therapy of Hand after Stroke: Follow-Up Trial of Application of AMADEO Instrument

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In recent years, western countries noted a gradual increase in stroke survivors. Stroke can cause motor activity impairment and also sensoric and cognitive disorders which lead into restriction of participation of activities of daily living and also reduction of social and community activities. Functional improvement of upper and lower extremity after stroke is a very complex process which has to be solved in multidisciplinary and multifactorial approach in result of every stroke survivor to live in the most independent way as possible.

Robot-assisted therapy for motor recovery could be a successful way to improve motor activity of stroke survivors. Amadeo Instrument is one of robot-assisted therapy for hand rehabilitation of stroke survivors. This instrument can be described as final effector without exoskeleton which allows functional motor therapy for fingers and also a motivational feedback. Amadeo therapy can be passive, assisted, active and also interactive.

The aim of this thesis is to evaluate the long-term effect of improvement of motor function after (one month of intensive Amadeo therapy, one month follow-up). Range of motion, grip muscle strength and functional motor activity of hand were investigated as primary outcomes of motor improvement.

Twelve chronic stroke survivors were assigned into this follow-up study. The changes in motor function were measured with standardized assessment – Jebsen Taylor Hand Function Test, grip muscle strength with Jamar Dynamometer, range of motion of fingers with goniometry. The

assessments was done before and after intensive robot-assisted therapy (one month, three times a week), and also after one month of discharge.

The long-term effect (one month after discharge) of motor recovery of fingers range of motion, fingers muscle strength and functional outcome of hand was not significantly evaluated. However, chronic stroke survivors of this study were subjectively describing robot-assisted therapy with Amadeo instrument as and explicitly visualized motivation feedback for hand rehabilitation of motor activity.