

PP028

ROBOTIC GLOVE WITH VIRTUAL REALITY BIOFEEDBACK IN SPASTICITY MANAGEMENT ON ACUTE AND CHRONIC PATIENTS WITH SPASTIC HAND PARESIS: IMPACT ON GOAL ORIENTED FUNCTIONAL THERAPY AND ROUTINE MASS THERAPY

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Introduction-Functional restraint of upper extremity is a frequent complication after Stroke, Spinal Cord Injury and Traumatic Brain Injury, with significant impact on quality of life and self-independence for tens of thousands of citizens per year in Czech Republic.

Purpose-Hand therapy needs more time and more focused therapy. Manual therapy is performed one to one; it usually provides the continuous presence of a therapist and it is time consuming. Patients need frequently hand therapy, so many therapy tasks can be performed by modern technologies, with higher treatment intensity and reliability.

Methods-Automated intervention was part of Specific Intensive Repetitive Utility Program. Patients inclusion criteria was ability of focusing at least 20 minutes on the screen, no Neglect syndrome, no fixed contracture. Protocol aims was to monitor and detect the effects of automated movement therapy on short-term and long term. Evaluation timing before the 1st and after the 15th application. Sessions duration: 30 minutes per session.

Results-Therapy was applied on 103 patients. Positive functional outcome was seen on 31 patients; for 72 patients therapy effect was seen on the level of ROM improvement. The best result was found on patients with least minimal active fingers movement or twitch, and fingers spasticity graded at maximum level 2 Modified Ashworth Scale.

Discussion-To achieve optimal therapeutic long-term results was important follow up with practical daily tasks after automated therapy. Short-term benefit from automated treatment is related pain alleviation, swelling reduction. No side effect was reported.

Conclusions-Gloreha glove therapy is feasible and can be applied in acute and chronic phase if there is no evidence of fixed contracture. Robotic glove doesn't pose timing increase for therapist and it can be applicable in mass therapy in rehab clinics with limited therapists to maintain focus on hand therapy.



ROBOTIC GLOVE WITH VIRTUAL REALTY BIOFEEDBACK IN SPASTICITY MANAGEMENT ON ACUTE AND CHRONIC PATIENTS WITH SPASTIC HAND PARESIS: IMPACT ON GOAL-ORIENTED FUNCTIONAL THERAPY AND ROUTINE MASS THERAPY

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BACKGROUND

Functional restraint of upper extremity is a frequent complication after Stroke, Spinal Cord Injury and Traumatic Brain Injury, with significant impact on quality of life and self-independence for tens of thousands of citizens per year in Czech Republic. It is generally known that hand therapy needs more time and more focused therapy compared to locomotion therapy for lower extremity.

METHODS AND DESIGN

Gloreha robotic glove intervention is part of Kladruby Neurorehabilitation Program „SIRUP” (Specific Intensive Repetitive Utility Program).

Patients inclusion criteria: ability of focusing at least 20 minutes on the screen, no Neglect syndrome, no fixed contracture.

Evaluation timing: before the 1st and after the 15th app.

Sessions duration: 30 minutes per session



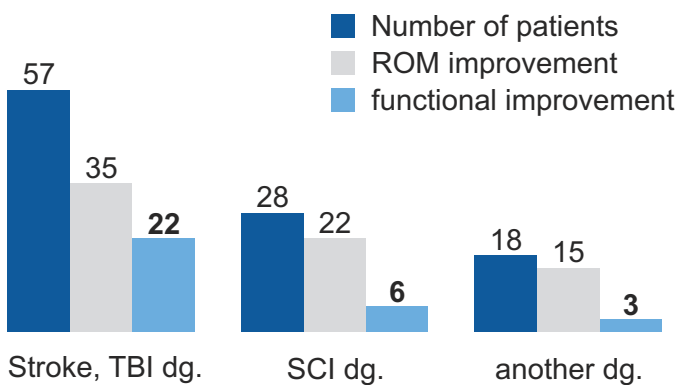
GLOREHA | www.gloreha.com

Max. fingers extension before 1st / after 15th application



GLOREHA EFFECTS

Diagnosis	Total number of patients	With ROM improvement after Gloreha application	With functional improvement after Gloreha application
Stroke, TBI	57	35	22
SCI	28	22	6
another	18	15	3
TOTAL	103	72	31



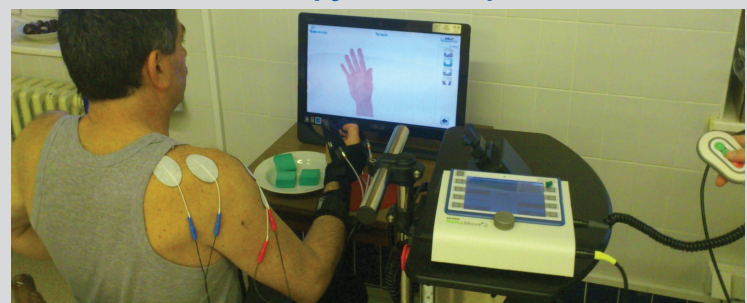
OUTCOMES

Within 12 months therapy was indicated for 103 patients (Stroke, TBI, SCI, another diagnosis).

Positive functional outcome was seen on 31 patients; for 72 patients therapy effect was seen on the level of ROM improvement. The best result was found on patients with least minimal active fingers movement or twitch, and fingers spasticity graded at max. level 2 on MAS (Modified Ashworth Scale). In order to achieve optimal therapeutic long-term results it was important to follow up with practical daily tasks after Gloreha app.

Patients short-term evaluation after Gloreha therapy: pain alleviation, less swollen, decreased hypertonia with improved AROM/PROM (active/passive range of movement), improved grip quality and better awareness about the hand.

Gloreha combination with patients self-triggered FES to promote increased muscle tension and boost therapy effect on paretic hand



AIM OF GLOREHA APPLICATION

ROM improvement	72
Functional improvement	31

