March Is Brain Injury Awareness Month

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Each March, the Brain Injury Association of America (BIAA) leads a nationwide campaign to promote awareness, research, treatment and education to improve understanding and the quality of life for people who are affected by brain injury.

Photos by Cleveland FES Center

Focus on NUPOC Research to Improve Brain Injury

At NUPOC, Longitudinal Observation of Myoelectric Upper Limb Orthosis Use among Veterans with Upper Limb Impairment led by Principal Investigator Stefania Fatone, PhD, BPO(Hons), is a research project with special significance to Brain Injury Awareness Month. This Department of Defense (DoD) funded clinical trial examines therapy and function outcomes among veterans who use an arm brace with powered elbow motion and hand grasp. The DoD participates in Brain Injury Awareness Month and this project has great potential to improve the lives of veterans and civilians with traumatic brain injury (TBI).

Wearable Myoelectric Upper Limb Orthosis Can Help People with Brain Injury

This study documents functional outcomes over time in TBI patients who train with and use the MyoPro, a wearable, myoelectric elbow-wrist-hand orthosis. Study participants receive 9 weeks of therapy and training with the MyoPro orthosis, followed by 9-weeks of home use. During both phases of the study, researchers meet subjects every 2-3 weeks to conduct functional evaluations.

Preliminary Results Are Promising

Co-investigators Svetlana Pundik, MD, and Jessica McCabe, PT, the Louis Stokes Cleveland VA Medical Center, presented interim findings at the American Academy of Orthotists and Prosthetists Annual Scientific Meeting held on February 14-17 in New Orleans, LA. They reported that people with long-standing TBI have improved function when using a wearable myoelectric upper limb orthosis. Among three study subjects, Ms. McCabe reported a reduction of spasticity and motor impairment as measured by the Modified Ashworth Scale and Fugl-Meyer Assessment, respectively; and one subject's improvement in functional activity, as assessed by the Chedoke Arm and Hand Activity Inventory.

Dr. Pundik showed that these functional changes correlated with improvements in brain activity as measured using the H-reflex in two subjects and Transcranial Magnetic Stimulation (TMS) in one subject, who showed increased excitability of motor tracts when comparing TMS results pre- and post- participation in the study.

These favorable, early results suggest that using a myoelectric upper limb orthosis facilitates the repetitive functional tasks necessary to facilitate neuroplastic changes in the brain that lead to improvements in impairment and function. Ms. McCabe noted that wearing the MyoPro orthosis provided people with TBI the motivation to conduct repetitive task practice that generates small muscle signals that result in visible arm motion. Even subjects who had mild cognitive impairment were able to participate successfully in the study and show functional gains.

Additional research subjects are needed to continue this exciting work! For information about participating in this study, contact Ms. McCabe (216) 791-3800 x3830 or email jmccabe@fescenter.org.