

Improved System for Stroke Therapy and Rehabilitation

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Technology description

Each year approximately 780,000 Americans experience a new or recurrent stroke. Approximately 85 percent of these patients survive and require rehabilitation, making stroke the leading cause of long-term disability in the U.S.

The most common treatment for stroke is physical rehabilitation. Passive movement repetition from the afflicted limb can enable recovery of lost function. However, physical therapists can reasonably provide only a limited number of repetitions during a session, and also are limited in the number of patients that can be seen for therapy. Additionally, the recovery can be slow, painstaking and suboptimal. More automated methods of promoting rehabilitation have been developed, but they generally have been too costly, lack effectiveness or are invasive. UW-Madison researchers have developed an improved system for stroke therapy and rehabilitation. This system collects movement intention signals from the brain in real-time via EEG and initiates functional electrical stimulation (FES) of the appropriate muscle(s) to assist the neurons in regrowing their connections from the brain to the muscles along the correct pathways. Additional general sensory stimulation may be added to this therapy to further encourage proper neuron regrowth.

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a system for rehabilitation of sensory motor control following stroke.

Additional Information

View a story about this technology.

<http://www.uwhealth.org/news/advancements-in-stroke-recovery/43063>

Application area

Stroke therapy and rehabilitation

Advantages

Providing positive stimulation feedback encourages the pathways between the brain and the motor control neurons attached to individual muscles to reconnect properly, rather than improperly.

Recovery is faster because patients will not need to relearn how to control their movements under the new neural connections that often form after stroke.

Device is simple to implement and easy to use.

System works within the time constraints placed upon a physical therapist working with a patient.

Institution

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