



MAY 12-16 2025 · CHICAGO, IL USA · REHABWEEK.ORG



Category: Application and clinical integration

Workshop Title: Gamified Electromyographic Biofeedback for Treating Neural Movement Impairments

Organizer(s): R. James Cotton

Speaker(s): R. James Cotton

Derek Kamper

Marc Slutzky

Douglas Weber

Dailyn Despradel Rumaldo

Workshop Time: 13:45 - 15:15

Attendee Engagement: hands on demonstration of EMG biofeedback games

Abstract: This 90 minute workshop will delve into how advancements in wearable sensors, electromyography (EMG) biofeedback and gaming technologies are opening new horizons in the rehabilitation of individuals with neural movement impairments by enhancing engagement and increasing and/or refining muscle activation.

Dr. R. James Cotton will present a portable, wearable EMG biofeedback system with tablet games. This produces high dosages of therapy that are enjoyable for people with tetraplegia and can improve muscle activation.

Dailyn Despradel will share her work with Dough Weber controlling games and extended reality interfaces with a wearable high-density EMG (HD-EMG) system that detects and interprets myoelectric signals from extremely weak muscles in individuals with tetraplegia.

Dr. Marc Slutzky will show results from clinical trials of home based, wearable myoelectric interface for neurorehabilitation (MINT) conditioning to help stroke survivors move outside of synergy patterns and improve movement and function in both the arm and leg.

Dr. Derek Kamper will share his work employing EMG-controlled computer games for therapeutic training of muscle activation patterns in stroke survivors or for learning to drive an assistive device through EMG signals.

The workshop will explore integrating these technologies into clinical practice and discuss challenges/solutions for implementation, patient adherence, and data interpretation. It will include live demonstrations of the EMG biofeedback systems and hands-on opportunities for attendees to experience the technologies firsthand.

By bringing together experts in EMG biofeedback and rehabilitation gaming, this session will equip clinicians, researchers, and engineers with practical knowledge and tools to enhance muscle activation therapies for individuals with neuromotor impairment. Attendees will learn the potential of these technologies to improve patients' outcomes.