Category: FES, Brain Stimulation and Neurophysiology

Workshop Title: Emerging Technologies: Non-invasive Spinal Cord Stimulation (niSCS) Combined with Functional Electrical Stimulation (FES)

Workshop Organizer(s): Gad Alon

In person Speaker(s):

Tamsyn Street

Prof Anand D Pandyan

Workshop Time: 16:00 - 17:30

Attendee Engagement:

"Hand On" demonstration how to apply non-invasive spinal cord stimulation + FES

Abstract:

Damage to the upper motor neurone results in multitude of impairments and functional deficits that impact the sensory-motor system as well as internal organs. It can occur at any moment and any age. The damage to the upper motor neurone can occur at any level of the spinal column or the brain and result in sensory-motor paralysis from, and below the damaged area and may impair the entire body. Clinical presentation can be complete or incomplete paralysis, and the severity could be bilateral, unilateral or combination. Robust peer-reviewed clinical data support the premise that different approaches of non-invasive electrical stimulation can be used therapeutically as standard of care for millions of patients seeking rehabilitation. Regrettably these treatment options are rarely used. Further, recent exploration of non-invasive neuromodulation provided evidence that non-invasive spinal cord stimulation (niSCS) and functional electrical stimulation (FES) yield partial restoration of sensory, motor, and internal organ functions. This workshop will offer a review of the latest findings utilizing niSCS and FES applied to patients with a history of spinal cord damage, and also describe protocols that can be used for the therapeutic applications of electrical stimulation in the management of patients with damage to the brain. Following a review of the major impairments and functional deficits these patients endure, the presenters will review the different niSCS and FES/ES technologies' options and the mechanism by which they may help to resolve the impairments and functional deficits. The presentation will include video-based examples of how niSCS and FES/ES are being utilized in current research-based protocols and clinical practice. Finally, there will be a "hand-on" demonstration on workshop participants who wish to learn how to apply it to patients with damage to the spinal cord as well as patients with damage to the brain including stroke and cerebral palsy.