An Evidence and Clinical based Approach to Electrotherapy in Hemiplegia

Stroke is the leading cause of upper limb disability and poor quality of life worldwide. Outcomes following stroke are often poor; 3 months after stroke: 40% of stroke survivors suffer from significant upper extremity (UE), dysfunction of their affected arm, 40% have minor impairment, and only 20% retain full functionality (Buma et al., 2015). Dysfunction in the upper extremity includes pain, motor and functional deficit impacting performance in ADLs. Traditional therapeutic techniques often include repetitive training, bilateral upper limb training, and constraint induced therapy to facilitate neuroplasticity and recovery.

Research related to motor learning, neuroplasticity, and functional recovery following stroke or brain lesions has increased. Advances in neuroscience have provided an impetus for research in motor rehabilitation (Hara, 2015). Researchers have articulated that focus should be on motor retraining including electrotherapy. However, Chae (2005) found clinician's used compensatory techniques for treatment following a stroke.

Research suggests that electrical stimulation should be used as a part of stroke rehabilitation to improve the ability to perform activities. Repeated motor practice and motor activity in the patient's contextual environment have a positive effect on motor recovery in stroke patients (Noma, 2014). Electrical stimulation can be applied in a variety of ways to the hemiparetic upper extremity. Patients receiving NMES demonstrate greater improvements in upper extremity function. Combined modulation of voluntary movement, proprioceptive sensory feedback, and electrical stimulation play a critical role in improving impaired sensory-motor integration through power-assisted FES therapy (Page, Levine, & Basobas, 2016).

Patients with chronic stroke-affected motor involvement suffer from weakness, spasticity, atrophy, and stiff joints due to stroke and learned non-use. Neuromuscular electrical stimulation (NMES) could be beneficial for such individuals (Lew, Alavi, Randhawa, & Menon, 2016). In the new healthcare paradigm, clinicians can no longer utilize the same interventions and approaches such as compensation, but need to adopt evidence based interventions including electrotherapy to facilitate outcomes and demonstrate the value of OT.

This workshop will provide clinicians with a foundation for adjunctive clinical use of electrotherapy outlining the biophysiological impact on client factors and motor performance. Understanding systems and the effect of electrical force applied to tissue and movement is a critical component undergirding occupational performance. This workshop will provide a review of the literature, discuss the basic fundamental concepts of electricity and discuss the therapeutic parameters of stimulation and clinical application. This workshop will include an experiential lab component allowing participants to apply single and dual channel applications in the upper extremity based

on clinical case studies in order to facilitate clinical reasoning and integration into the therapeutic process.

Course Objectives: Following completion of the workshop, clinicians will be able to:

1. Apply a physiological systems model approach to the use of electrotherapy in occupational therapy.
2. Identify recent trends, developments and issues related to electrotherapy and evidence based practice.
3. Articulate the integration of electrotherapy as part of the occupational therapy process and its impact on occupation and performance.
4. Demonstrate clinical reasoning in the use and clinical application of electrotherapy.

References:

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