

# Southwestern Ontario Stroke Rehabilitation Forum

## Time is Function: Making It Real

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**Knowledge Exchange Idea:** Functional Electrical Stimulation - FES

**Key Contact Information:** Janet Brown, [jbrown@uwo.ca](mailto:jbrown@uwo.ca)

**Facility Name:** School of Physical Therapy, University of Western Ontario

### Exploring opportunities to increase therapy intensity

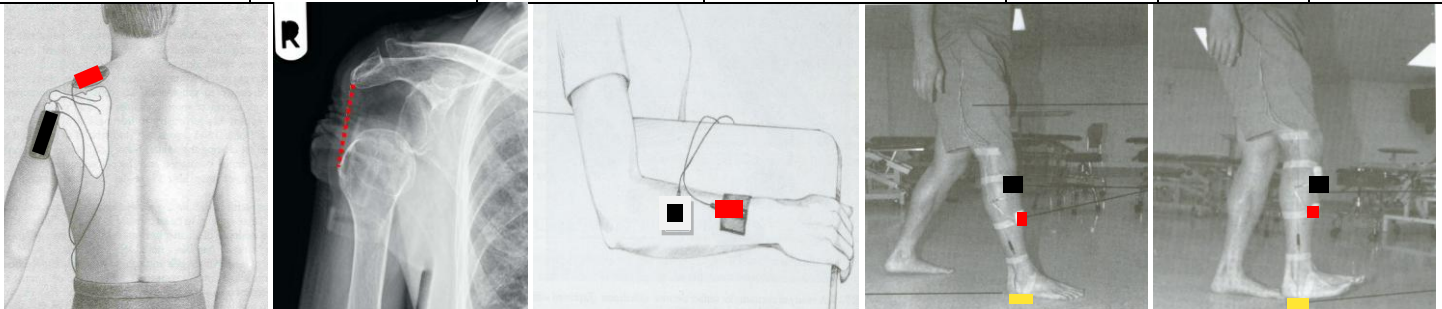
#### What we did and why:

FES for hemi shoulder subluxation reduction, wrist & hand function, & gait retraining with dorsiflexion stimulation. E-Stim to these areas allows client extended time to practice repetitive functional tasks to build volitional motor control. Coupling FES with volitional control builds descending pathways to perform gross movement replicating functional tasks in ADL. Therapist can enhance building new motor pathways within the task by changing the weight, range, size, speed of objects & task demands and diminishing the ramp & frequency of the stimulation parameters. Progressions like these build small to large axons use, while the e-stim utilizes large to small axons. fMRI reveals topographical growth with enriched environ therapy & estim.

#### Outcomes and feedback:

Level 1A evidence in BPGs for Stroke that estim is an effective adjunct to therapy to regain motor control of wrist, hand and ankle. Parameters are as follows:

	Waveform	Cathode	Anode	Freq (pps)	Ramp	Rx Time
<b>Hemi Sh Sublux</b>	Assym Biphasic	Post deltoid motor point	Supraspinatus fossa avoid trapezius	25-35	1-3sec	30m/d up to 6-8h/d
<b>Wrist &amp; Hand</b>	Assym Biphasic	Wrist extensor motor point	Distal forearm extensor surface	25-35	1-3sec	60m/dx5d/wk x3mos or 1.5h/dx8wks
<b>Ankle Dorsiflexion</b>	Assym Biphasic	Anterior Tibialis motor point	Mid tib to distal1/3 tibia	25-35	NO ramp with heel switch	15min sitting; progress to 1h/day up to continuous when walking



#### Lessons Learned:

E-Stim or FES can safely & independently extend the therapy to critically affected areas by hours/week using the portable e-stimulator to perform repetitive functional tasks