

**MetroHealth Medical Center**

**RESEARCH DAY 2023**

**Abstract Submission Form**

**Poster Title:** Contralaterally Controlled Functional Electrical Stimulation of Triceps and Finger Extensors Improves Reachable Workspace and Hand Function after Stroke: A Randomized Controlled Trial

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**Location of Laboratory:** Old Brooklyn Campus, MetroHealth Center for Rehabilitation Research

**Category:** Physical Medicine and Rehabilitation

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**Objective:** Different methods of neuromuscular electrical stimulation (NMES) may be used for post-stroke upper limb rehabilitation. This study evaluated the effects of contralaterally controlled functional electrical stimulation (CCFES) of the triceps and finger extensors.

**Design:** Randomized controlled trial of 67 participants <2 years post-stroke assigned to: (a) Arm+Hand CCFES, (b) Hand CCFES, or (c) Arm+Hand cyclic NMES (cNMES). Participants were prescribed 10 sessions/week of assigned electrical stimulation at home plus 24 sessions of functional task practice in the laboratory for 12 weeks. Outcome measures included Box and Blocks Test (BBT), Reachable Workspace (RW), Upper Extremity Fugl-Meyer (UEFM), Stroke Upper Limb Capacity Scale (SULCS), and Arm Motor Abilities Test (AMAT).

**Results:** At 6 months post-treatment, Arm+Hand CCFES improved RW more than Hand CCFES, between-group difference of 264 (95% CI, 28–500) cm<sup>2</sup>, and more than Arm+Hand cNMES, between-group difference of 281 (95% CI, 22–540) cm<sup>2</sup>. Arm+Hand CCFES improved UEFM score more than Hand CCFES, between-group difference of 6.7 (95% CI, 0.6–12.7). The between-group differences on the BBT, SULCS, and AMAT were not significant.

**Conclusion:** Arm+Hand CCFES improves reachable workspace more than Hand CCFES and Arm+Hand cNMES, indicating that the method of delivering neuromuscular electrical stimulation influences recovery from stroke.