ContraStroke:

Contralesional Inhibitory Repetitive Transcranial Magnetic Stimulation (rTMS) Improves Recovery of Arm Function Post-Stroke

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A Prospective Multicenter Feasibility Trial

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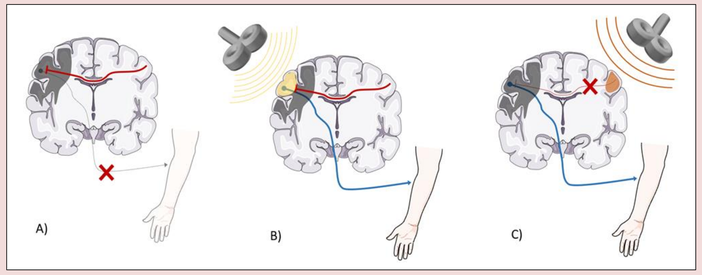
SCAN ME

Hildesheim FE, Silver AN, Dominguez-Vargas A, … Thiel A. Predicting Individual Treatment Response to rTMS for Motor Recovery After Stroke: A Review and the CanStim Perspective. *Frontiers in Rehabilitation Sciences*, 2022.

BACKGROUND

- Repetitive Transcranial Magnetic Stimulation (rTMS) is a safe, non-invasive method of brain stimulation
- ↑ rTMS enhances the brain's ability to re-learn specific functions post-stroke through neuromodulation
- ↓ rTMS reduces the amount of standard therapy required for functional gains
- **CanStim:** **Can**adian Platform for Trials in Non-Invasive Brain **Stim**ulation
- **ContraStroke:** National multicenter feasibility trial



A: Direct damage to the primary motor cortex (M1) and inhibitory signaling from the contralesional M1 are involved in lack of functional recovery.

B: High-frequency rTMS over ipsilesional M1 strengthens descending motor pathway.

C: Low-frequency rTMS over contralesional M1 reduces inhibitory signals from contralesional M1, promoting cortical reorganization.

OBJECTIVE

- Implementation gaps:

Lack of standardized protocol for the clinical application of rTMS in the stroke population	Lack of large-scale clinical trials demonstrating the efficacy of rTMS for post-stroke functional motor recovery

- To develop consensus recommendations for the use of rTMS as an adjunct intervention for upper extremity motor recovery in stroke rehabilitation trials
- To identify potential weaknesses of study protocol

- Initiate national multicenter feasibility trial
- Recruit a total of 96 patients at 8 sites across Canada

DATA ACQUISITION

Inclusion criteria

- Stroke patients 2 weeks - 3 months post-stroke
- Cortical or subcortical stroke
- Between 18 and 90 years
- English or French as language of daily use
- Must be able to participate in a standard of care upper extremity therapy program
- Must have a minimum functional deficit that they can improve (i.e. ≤ 56 on Fugl-Meyer Assessment)

Intervention

- Randomization to real vs. sham rTMS
- Suprathreshold rTMS (120% RMT) once daily for 15 sessions (1800 pulses over 30 min)
- MRI-guided stereotaxic neuronavigation to identify M1
- Effects of rTMS last for approx. 60 minutes
- 60 minutes of GRASP (Graded Repetitive Arm Supplementary Program) given immediately after rTMS

Primary outcome measures

- Modified Rankin Scale
- Fugl-Meyer
- Action Reach Arm Test (ARAT)

Secondary outcome measures

- Canadian Occupational Performance Measure (COPM)

CURRENT STUDY STATE (as of June 2022)

- Patients consented: n=15
- Patients completed: n=6
- Patients active: n=1
- Patients not completed: n=8
- Active study sites: n=5/8

CSC CNC Canadian Stroke Consortium / Consortium Neurovasculaire Canadien

Heart&Stroke Cœur+AVC TM/MC

HEART & STROKE FOUNDATION Canadian Partnership for Stroke Recovery

FONDATON DES MALADIES DU CŒUR ET DE L'AVC Partenariat canadien pour le rétablissmeent de l'AVC