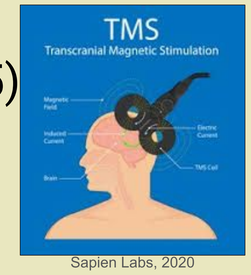
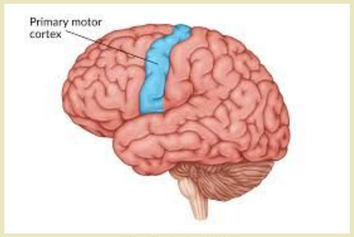
This is Your Brain on Magnets - Evan Carleton-Sniff

What is rTMS?(1,5)

- Repetitive transcranial magnetic stimulation
- Magnetic waves stimulate action potentials in specific brain regions



Sapien Labs, 2020



Flint Rehab, 2021

Current Stroke Rehab(1,5)

- Exercise intervention based

Mirror Therapy

Limb-Constraint

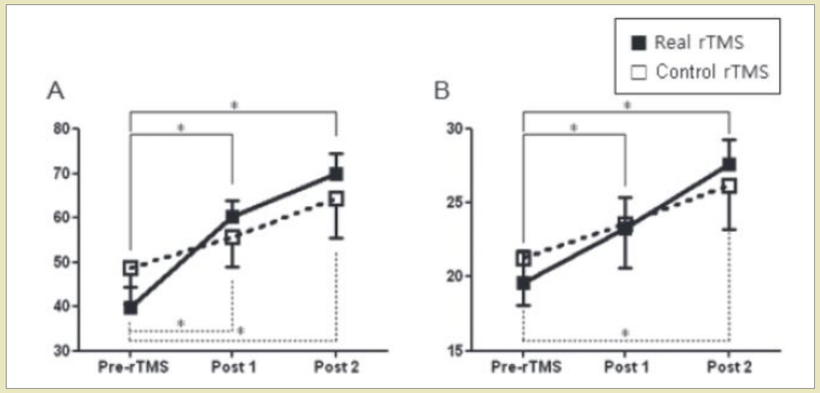
Tang et al. 2024

Methods

- Search Engines - Google Scholar, PubMed, EBSCO
- Search terms-rTMS, stroke contralesional hemisphere, ipsilesional hemisphere, motor cortex, motor function

Affected Cortex(1,4)

- Using ≥3Hz stimulation to increase affected motor cortex activation

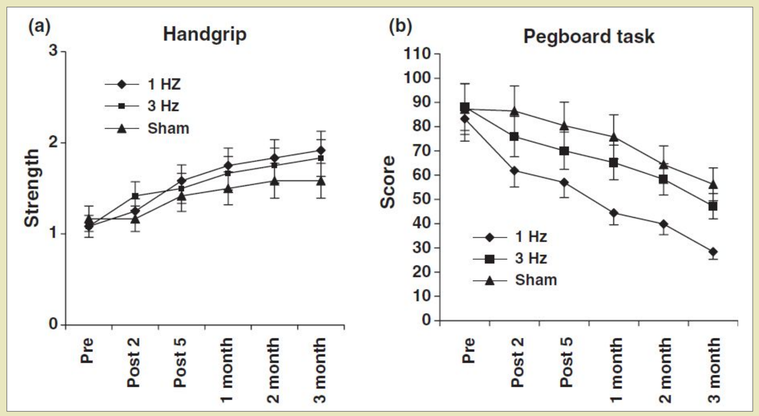


(Kim et al. 2010)

- Found to increase function of both upper and lower limbs

Unaffected Cortex(2,6)

- Using ≤1Hz stimulation to reduce unaffected motor cortex activation

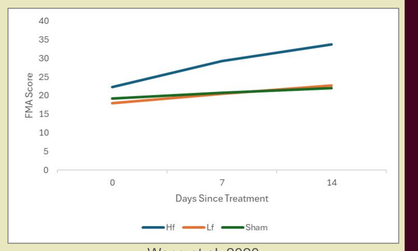


(Khedr et al. 2009)

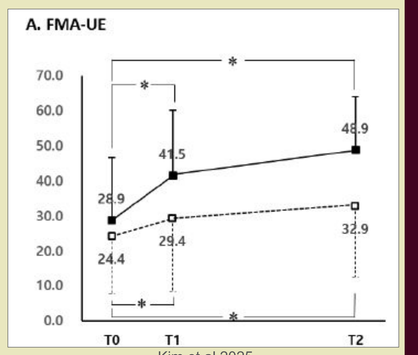
- Broadly benefited patients, but factors such as dominance and chronicity may limit application

New applications(3,7)

- Applying ≥3Hz stimulation to unaffected cortex
- Targeting the cerebellum alongside or in the place of the cortex



Wang et al. 2020



Kim et al 2025

Conclusions

- rTMS has shown multiple uses in stroke rehabilitation
- Risk factors have been minimal, and no studies have reported any worsening of symptoms
- Factors such as dominance or chronicity could change which technique is most helpful for each patient

References →