

Optimizing transcranial magnetic stimulation protocols for the treatment of pharmaco-resistant depression

Record number : OPR-1099

Overview

RESEARCH DIRECTION

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INFORMATION

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ADMINISTRATIVE UNIT(S)

Faculté de médecine et des sciences de la santé
Département de pédiatrie
Département de médecine nucléaire et radiobiologie
Département de pharmacologie-physiologie

LEVEL(S)

2e cycle
3e cycle

LOCATION(S)

Campus de la santé

Project Description

Overview:

Through successive stimulations, Repetitive transcranial magnetic stimulation (rTMS) can be used to modulate brain activity non-invasively and painlessly in humans. A particular class of rTMS, intermittent theta burst TMS (iTBS), is commonly used to modulate cortical excitability and induce plasticity for therapeutic purposes, notably for treatment-resistant depression. Although, different iTBS stimulation parameters can be used to induce plasticity, current clinical applications rely on outdated stimulation protocols and underpowered studies, leaving room to improve iTBS for psychiatric care.

This study will focus on two parameters, namely the form and duration of the electromagnetic stimulation. The shape of the electromagnetic pulse refers to how the electromagnetic wave is configured over time, while the duration is simply the period during which this electromagnetic pulse remains active. These parameters are expected to influence the effectiveness of iTBS in modulating cortical activity

The main aim of this study will be to compare the effectiveness of different stimulation parameters in the induction of plasticity, which will then make it possible to improve the rTMS protocols used for treatment-resistant depression.

Study Design and Method:

30 healthy adults will participate in a single-blind, cross-over study in which TMS measures of cortical activity will be obtained before and after different iTBS intervention.

Role of the Student:

The student will be in charge of the project, including participant recruitment, acquisition of TMS data, data analysis, and preparation of scientific communications (posters and articles).

Requirements:

This project is open to individuals with a bachelor's/master's degree in neuroscience, psychology, pharmacology, kinesiology, or any other relevant fields. The person must demonstrate good organizational skills, show initiative, and have a strong academic record in their prior studies.

Bursary available.

Discipline(s) by sector	Funding offered
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Sciences de la santé	Yes
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Administration de la santé, Anatomie, Biochimie, Biologie cellulaire, Kinanthropologie, Kinésiologie, Neurosciences, Pharmacie, Pharmacologie, Physiologie, Psychiatrie, Sciences de l'imagerie médicale

Sciences naturelles et génie	
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Biologie et autres sciences connexes

Sciences sociales et humaines	
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Psychologie

The last update was on 13 September 2024. The University reserves the right to modify its projects without notice.