Identifying the neural mechanisms underlying inhibitory processes: a TMS study

Published: 30-07-2012 Last updated: 26-04-2024

The goal of the current study is to investigate the functional relevance of higher order cortical areas for cognitive task execution involving inhibitory and emotional processes by means of TMS.

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Other condition
Study type	Interventional

Summary

ID

NL-OMON37590

Source ToetsingOnline

Brief title TMS RESIN

Condition

• Other condition

Synonym

not applicable

Health condition

In many scientific publication it is stressed that TMS can lead to a much better understanding of brain function. This is because it allows revealing causal relationships. Our research will convey deeper insights into the neuronal mechanisms underlying inhibitory processes and to which extent the dysfunction of such processes can lead to dysfunctional emotional processing.

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Research involving

Human

Sponsors and support

Primary sponsor: Universiteit Maastricht Source(s) of monetary or material Support: NWO Hersenen & Cognitie

Intervention

Keyword: Emotion, Inhibition, TMS, Virtual lesions

Outcome measures

Primary outcome

TMS-induced behavioral changes assessed via reaction times (measured by button

presses), and error rates (computed from the percentages of correct and false

responses).

Secondary outcome

not applicable

Study description

Background summary

TMS is able to reveal causal patterns of brain function and human behaviour. Transcranial magnetic stimulation (TMS) will be used to disrupt neuronal activity in well-defined brain areas prior to the execution of various tasks requiring inhibitory and emotional processing. Our main interest is the interaction between the classical higher-order executive frontoparietal areas, response inhibition and emotions.

Study objective

The goal of the current study is to investigate the functional relevance of higher order cortical areas for cognitive task execution involving inhibitory and emotional processes by means of TMS.

Study design

The participant will have to fill in a screening questionnaire. This will take approximately 20 minutes and will happen in the first session. Thereafter the medical supervisor will decide on whether the participant is allowed to take part in the experimental sessions. If this is the case, the participant will come back for 5 experimental sessions. In three of the sessions, the participant will receive real TMS, on three brain sites before performing a task requiring inhibitory and/ or emotional processing. In the other sessions, the participant will receive placebo (Sham) TMS or TMS on a task-irrelevant control site before performing the same task which serves as a control condition. Each session will take approximately 1.5 hours, including 15 minutes preparation time.

Intervention

Transcranial Magnetic Stimulation (TMS) prior to task execution.

Study burden and risks

The total time amount a participant has to invest in the experiment does not exceed 7.5 hours. In the beginning a medical screening will take place. Afterwards 5 sessions of around 1.5 hours each will take place. During each of these sessions maximally 1750 TMS pulses will be applied.

Contacts

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Trial sites

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Listed location countries

Netherlands

Eligibility criteria

Age Adults (18-64 years) Elderly (65 years and older)

Inclusion criteria

Healthy vonlunteers, aged 18-45 years.

Exclusion criteria

(Family)background of mental health issues or epilepsy, and metal or medical implants in the body. You can find a detailed overview of all exclusion criteria in the attached TMS screening questionnaire. The medically responsible physician Dr. C. J. van Leeuwen will check whether or not a candidate is suited for participantion in the experiment.

Study design

Study type: Interventional

Design

Masking:	Single blinded (masking used)
Control:	Uncontrolled
Primary purpose:	Other
Recruitment	
NL	
Recruitment status:	Recruitment stopped
Start date (anticipated):	29-10-2012
Enrollment:	100
Туре:	Actual

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Medical products/devices used

Generic name:	Transcranial magnetic stimulation
Registration:	Yes - CE intended use

Ethics review

Approved WMO	
Date:	30-07-2012
Application type:	First submission
Review commission:	METC academisch ziekenhuis Maastricht/Universiteit Maastricht, METC azM/UM (Maastricht)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register CCMO ID NL39572.068.12