Investigating the role of the Extrastriate Body Area in motor planning - an explorative TMS-study

Published: 29-12-2011
Last updated: 29-04-2024

Here, we want to investigate the role of EBA in planning and control of goal-directed actions using transcranial magnetic stimulation (TMS) and investigate whether EBA plays a crucial role in planning of goal-directed action by providing an early...

Ethical review	Approved WMO
Status	Pending
Health condition type	Other condition
Study type	Interventional

Summary

ID

NL-OMON36135

Source
ToetsingOnline

Brief title
Role of EBA in motor planning: an explorative TMS study

Condition

- Other condition

Synonym
not applicable

Health condition

nvt

Research involving
Human

Sponsors and support

Primary sponsor: Radboud Universiteit Nijmegen
Source(s) of monetary or material Support: Vici grant (#453-08-002) from NWO to dr. Ivan Toni

Intervention

Keyword: extrastriate body area, goal-directed action, motor planning, TMS

Outcome measures

Primary outcome

The effect of single-pulse TMS will be assessed using behavioural measures (RT,

accuracy, movement kinematics) during planning and execution of

reaching-grasping movements.

Secondary outcome

n/a

Study description

Background summary

There*s debate on the function fulfilled by the extrastriate body area (EBA). It has been suggested that EBA*s function is to process structural limb and body information for (Downing et al., 2001), but that it is not, as suggested by others, directly involved in higher-level cognitive functions concerned with for example motor control, action understanding and identity recognition (for a review see Downing and Peelen, in press). This information, according to Downing and colleagues, is made explicit by other brain areas, based on the information about a bodies shape provided by EBA. We propose that, with respect to motor control, EBA provides a visual representation of a body posture suitable to achieve an actions goal, which is used by the fronto-parietal motor network to evoke a motor plan towards that particular goal posture.

Study objective

Here, we want to investigate the role of EBA in planning and control of goal-directed actions using transcranial magnetic stimulation (TMS) and

investigate whether EBA plays a crucial role in planning of goal-directed action by providing an early visual representation of the desired goal-state. Therefore we want to show that stimulation of EBA modulates overt motor behaviour.

Study design

experimental within-subject design with healthy volunteers.

Intervention

We plan to use single-pulse TMS over three brain regions (EBA, intraparietal sulcus (IPS), vertex). We will assess effects of TMS behaviourally, we plan to use a regular intensity (120 V/m).

Study burden and risks

TMS is not painful, especially not at the low intensities used in the present study. However, TMS may lead to feelings of discomfort from the stimulation of the scalp and associated nerves and muscles. The volunteers are requested to come to the Donders Institute for four sessions. In the first session participants undergo structural and functional MRI and we will establish their active motor threshold for TMS. The next three sessions will be TMS sessions (one for each stimulation site) separated at least by a week from each other.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

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

Inclusion criteria

Right-handed individuals, with normal or corrected-to-normal vision and no history of neurological or psychological disorders.

Exclusion criteria

Contraindications for transcranial magnetic stimulation (TMS) or magnetic resonance imaging (MRI)

Study design

Design

Study type:	Interventional
Intervention model:	Parallel
Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Other

Recruitment

NL

Recruitment status:	Pending
Start date (anticipated):	01-12-2011
Enrollment:	25
Type:	Anticipated

Ethics review

Approved WMO Date:	29-12-2011
Application type:	First submission
Review commission:	CMO regio Arnhem-Nijmegen (Nijmegen)
Approved WMO Date:	12-07-2012
Application type:	Amendment
Review commission:	CMO regio Arnhem-Nijmegen (Nijmegen)

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	ID
CCMO	NL36444.091.11