Bimanual coordination in young adults, older adults and MS patients

Published: 01-11-2016
Last updated: 15-05-2024

We aim to determine the difference in uni- and bimanual coordination between young adults, older adults and MS patients. Additionally we want to determine the relation between the different measures of cortical inhibition and task performance.

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

Summary

ID

NL-OMON42944

Source
ToetsingOnline

Brief title
Bimanual coordination

Condition

- Demyelinating disorders

Synonym
Multiple sclerosis

Research involving
Human

Sponsors and support

Primary sponsor: Universitair Medisch Centrum Groningen
Source(s) of monetary or material Support: Ministerie van OC&W

Intervention

Keyword: aging, bimanual coordination, multiple sclerosis, transcranial magnetic stimulation

Outcome measures

Primary outcome

We will determine the deviation in delivered force from the target line during

unimanual, bimanual and hand-foot coordination tasks. Inhibition measures:

SICI, IHI, iSP and the associated force will be measured.

Secondary outcome

Not applicable.

Study description

Background summary

Normally, motor tasks performed with the right hand are controlled by motor areas in the left, contralateral hemisphere. However, if the task requires more effort also the right, ipsilateral hemisphere becomes active. This phenomenon is seen in older adults and patients with multiple sclerosis (MS) in less effortful tasks. Whether this ipsilateral activation functions as a compensation mechanism or this is a mere effect of decreased inhibition in control subjects and patients is unknown. If this activation is functional, this could implicate that when MS patients become older that they have less resources left to compensate for age-related deficits. Therefore we would like to study the difference in uni- and bimanual performance in young adults, older adults and patients with MS. We use a hand-leg task to control for effort-related differences in the tasks.

Study objective

We aim to determine the difference in uni- and bimanual coordination between young adults, older adults and MS patients. Additionally we want to determine the relation between the different measures of cortical inhibition and task performance.

Study design

This is an intervention study during which subjects perform multiple motor tasks with one or both hands and one foot. During the tasks TMS responses will be evoked.

Intervention

Subjects will perform different coordination tasks with one hand, two hands and one hand and one foot during which the motor cortex is stimulated with magnetic stimulation.

Study burden and risks

Subjects visit the department of Neuroscience twice for 2 hours. During the experiments, subjects receive electrical stimulation of the ulnar nerve and magnetic stimulation of the motor cortex. There are no known risks to either stimulation method. Subjects also need to fill in a questionnaire (Oldfield questionnaire) to determine their handedness.

Contacts

Public
Universitair Medisch Centrum Groningen

Hanzeplein 1
Groningen 9700AV
NL
Scientific
Universitair Medisch Centrum Groningen

Hanzeplein 1
Groningen 9700AV
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

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

Inclusion criteria

Relapsing remitting multiple sclerosis
righthandedness

Exclusion criteria

Migraine
Epilepsy
Pregnancy or suspicion of pregnancy
Metal implants in the head

Study design

Design

Study type:	Interventional
Intervention model:	Other
Allocation:	Non-randomized controlled trial
Masking:	Open (masking not used)
Control:	Active
Primary purpose:	Other

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	07-11-2016
Enrollment:	70
Type:	Actual

Ethics review

Approved WMO Date:	01-11-2016
Application type:	First submission
Review commission:	METC Universitair Medisch Centrum Groningen (Groningen)
Approved WMO Date:	07-12-2016
Application type:	Amendment
Review commission:	METC Universitair Medisch Centrum Groningen (Groningen)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

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

ID: 25379
Source: NTR
Title:

In other registers

Register	ID
Other	25269
CCMO	NL58144.042.16
OMON	NL-OMON25379