Brain activity during mental and physical tasks in stroke patients

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Ethical review	Approved WMO
Status	Completed
Health condition type	Neurological disorders NEC
Study type	Observational non invasive

Summary

ID

NL-OMON31012

Source
ToetsingOnline

Brief title
Brain activity in Stroke

Condition

- Neurological disorders NEC
- Vascular disorders NEC

Synonym
cerebro vascular accident, stroke

Research involving
Human

Sponsors and support

Primary sponsor: Hogeschool Zuyd
Source(s) of monetary or material Support: Ministerie van OC&W

Intervention

Keyword: information processing, mental practice, psychomotor performance, stroke

Outcome measures

Primary outcome

The outcome of QEEG of stroke patients will be compared to the results of

healthy matched subjects.

Secondary outcome

Not applicable

Study description

Background summary

In the Netherlands each year approximately 36,000 inhabitants have to cope with the consequences of a stroke. While it is reasonably established that the overall process of neurological rehabilitation is effective, there is little evidence to support many specific rehabilitation therapeutic techniques. Currently it seems that task orientated practice is the most effective single therapeutic technique. Mental practice (MP) is a promising, task orientated approach that has been evaluated as treatment techniques in neurological rehabilitation. It is however difficult to determine whether or not the patient is actually mentally rehearsing or imagining the movement (MI). Although it is presently not possible to measure the content of thoughts, it would be very useful if what the patient is doing during imagery could be quantified more specifically. Quantified electroencephalographic measurements (QEEG) provide a way for assessing brain states in relation to movement imagery. The suppression of mu wave activity (QEEG) during MI is so powerful, that it is currently used as central parameter for the development of brain computer interfaces. MI is thought to be related to neural activity of mirror neurons, a subpopulation of visuomotor neurons that execute analogous information processing in motor output tasks and the imagination of the same tasks.
To our knowledge, no studies in stroke patients to explore mu wave activity behaviour during observation, execution and imagery of motor tasks have been undertaken or published.
It is hypothesized, that mu wave suppression could be a marker for the ability to consciously imagine and observe movements.

Study objective

The main aim of the study is therefore to examine mu wave activity during observation, execution of movements and during movement imagery in comparison to a passive resting state and active relaxation condition in stroke patients and matched healthy subjects.

Study design

The research design can be described as a cross-sectional study, which will take place over a one year period from February 2007 until February 2008. The outcome of QEEG of stroke patients will be compared to the results of healthy matched subjects.

Study burden and risks

As there are no invasive interventions, nor any untested experimental measurement instruments used in this study, there is no additional risk to the assessment of the patient. The measurements will be carried out in one session of 1,5 hours.

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

- Clinically diagnosed adult stroke patients
- Sufficient cognitive level and communication skills to engage in mental practice

Exclusion criteria

Severe additional impairments prior to stroke

Study design

Design

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

Recruitment

NL

Recruitment status:	Completed
Start date (anticipated):	01-05-2007
Enrollment:	60
Type:	Actual

Ethics review

Approved WMO Date:	23-04-2007
Application type:	First submission
Review commission:	METC Z: Zuyderland-Zuyd (Heerlen)

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	NL17029.096.07