# Interaction between motor fatigue and cognitive functioning in patients with multiple sclerosis

Published: 23-06-2010
Last updated: 01-05-2024

How does motor fatigue influence the cognitive functioning of patients with MS and how does this interaction compare to that in healthy controls?

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

## Summary

### ID

NL-OMON38018

**Source**
ToetsingOnline

**Brief title**
Motor fatigue and cognitive performance in MS patients

### 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:** Cognitive function, Motor fatigue, MS

## Outcome measures

### Primary outcome

The primary parameters are the number of accurate responses to the CRT and the

reaction times of these reactions.

### Secondary outcome

Maximal voluntary contraction (MVC), decrease in force during fatigue.

# Study description

### Background summary

Fatigue is one of the most common complaints in MS and can influence the execution of daily tasks. The cause of the fatigue is not yet known (Tartaglia, 2004). In healthy people, fatigue of the central nervous system can be induced by repetitive activation of a small hand muscle. (Zijdewind et al, 1998, 1999 en 2001). This fatigue also results in secundary cognitive problems (Lorist et al, 2002; van Duinen et al 2005, Zijdewind et al, 2006). The study of the underlying central mechanisms of fatigue has been given relatively little attention. The goal of this research is to investigate the interaction between motor and cognitive functioning during a fatiguing motor task with a double-task paradigm. Previous research has shown that increasing fatigue causes a decrease of performance on the secundary (cognitive) task (Lorist et al, 2002; van Duinen et al, 2005; Zijdewind et al, 2006). The current study will investigate whether this is true for MS patients as well. We expect that patients, just as controls, will perform worse as a result of the dual-task paradigm, and that patients will have a longer recovery period in comparison to the healthy controls.

### Study objective

How does motor fatigue influence the cognitive functioning of patients with MS and how does this interaction compare to that in healthy controls?

### Study design

The research consists of three sessions. During the first session, the strength (using a force recorder) and muscle activity (using EMG-electrodes) of the abductor of the right index finger (FDI) are measured . De subject is asked to perform a cognitive 2-choice reaction time task (CRT), alone or simultaneously with a motor task.

### Intervention

Fatigue task

### Study burden and risks

No risk, time investment for the subject 3*1.5 hours is 4,5 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

Relapsing-remitting multiple sclerosis
EDSS < 5,5
Sufficient hand function to operate the force recorder
Righthandedness
Informed consent

## Exclusion criteria

Psychiatric disorder
Depression
Neurological disorder other than MS
EDSS >= 5,5
Hearing disorder
Medication that influences (subjective) fatigue or force production (Amantadine, Amytryptiline, Pemoline, Tizanidine, Baclofen, Benzodiazepines, Potassium channel blockers, or modafinil. Or use of prednisolon in the past 6 weeks).

# Study design

## Design

**Study type:** Interventional

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| Masking: | Open (masking not used) |
| Control: | Uncontrolled |
| Primary purpose: | Other |

## Recruitment

NL

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|---|---|
| Recruitment status: | Recruitment stopped |
| Start date (anticipated): | 13-05-2011 |
| Enrollment: | 60 |
| Type: | Actual |

# Ethics review

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| Approved WMO Date: | 23-06-2010 |
| Application type: | First submission |
| Review commission: | METC Universitair Medisch Centrum Groningen (Groningen) |
| Approved WMO Date: | 24-10-2012 |
| 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

No registrations found.

## In other registers

| Register | ID |
|---|---|
| CCMO | NL32399.042.10 |