The influence of instructions and expectations on a maximal fatiguing task

Published: 23-11-2011
Last updated: 28-04-2024

What is the influence of instructions and expectations on produced force and muscle activation during a fatiguing task?

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

Summary

ID

NL-OMON35469

Source
ToetsingOnline

Brief title
Maximal fatiguing tasks

Condition

- Other condition

Synonym
Muscle activation, muscle function

Health condition

Normale werking van menselijk lichaam

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: Central activation, Instruction, Motor fatigue

Outcome measures

Primary outcome

The primary parameters are the changes in maximal strength and central

activation during the fatigue task.

Secondary outcome

None

Study description

Background summary

In many studies, participants are asked to produce maximal force. This test can give information on for example muscular strength and endurance. In the past, several variables have been studied that can influence the outcome of a fatiguing task. It is shown that encouragement during the task leads to improved performance (Andreacci et al 2002). Also the instructor can influence the performance on a fatiguing task (Jung et al 2009) or the feedback about the duration of exercise (Morton 2009). In a study of Sahaly and colleagues (2001), subjects received two different instructions regarding force production; either as hard and fast as possible, or as fast as possible (after which the subjects were stimulated to reach the maximum). This study found a clear difference in performance between both instructions.
More evidence arises to support the notion that maximal performance is not only depending on muscular strength, but is also influence by non-physiological parameters.
However, it is still unclear whether the instruction to produce maximal force influences the performance. Such an instruction often leads to subjects preparing for the production of a large amount of force. Whether this component influences the maximal force or the activation of the muscle, will be examined in this study. We expect that the instruction to produce maximal force will lead to a different activation pattern of the muscles and a difference in performance compared to an instruction to produce force according to a given pattern.

Study objective

What is the influence of instructions and expectations on produced force and muscle activation during a fatiguing task?

Study design

During both sessions, the strength (using a force recorder) and muscle activity (using EMG-electrodes) of the abductor of the right index finger (FDI) are measured . Simultaneously, the nerve innervating the muscle will be electrically stimulated. The subjects will come for two sessions. During the first session, they will be instructed to produce maximal force for two minutes. The second session they will be instructed to keep the force similar to a presented force level, that (without the subjects being aware of this) corresponds to the maximal force of the first session.

Intervention

Fatigue task

Study burden and risks

No risk, time investment for the subject is 2*0.5 hours is 1 hour.

Contacts

Public
Universitair Medisch Centrum Groningen

A.Deusinglaan 1
9713 AV Groningen
NL
Scientific
Universitair Medisch Centrum Groningen

A.Deusinglaan 1
9713 AV Groningen
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

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

Inclusion criteria

18-60 years
Righthanded
Informed consent

Exclusion criteria

Neurological disorders
Muscular disorders

Study design

Design

Study type: Interventional

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

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	01-12-2011
Enrollment:	20
Type:	Actual

Ethics review

Approved WMO Date:	23-11-2011
Application type:	First submission
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	NL37839.042.11