Invloed van een amputatie van de onderarm op de aansturing van spieren in de onderarm

No registrations found.

Ethical review	Not applicable
Status	Recruiting
Health condition type	-
Study type	Observational non invasive

Summary

ID

NL-OMON28801

Source
Nationaal Trial Register

Health condition

Amputation, motor control

Sponsors and support

Primary sponsor: University Medical Center Groningen (UMCG)
Source(s) of monetary or material Support: The European Council

Intervention

Outcome measures

Primary outcome

The EMG signals of forearm muscles will be measured from both limbs using the electrode bands. To compare EMG patterns during movement execution between conditions and affected / un-affected limb, we will compute three indexes:

(1) SI (separability index): How distinct are EMG activity patterns for different movements?

(2) RI (repeatability index): How similar are patterns of the same movement if repeated?

(3) VI (variability index): How variable is each pattern over the time of one movement execution?

Secondary outcome

Questionnaire data

Study description

Background summary

Questions arise as to how the control strategy of the neuromotor system changes after amputation when muscles and other tissues are rearranged, degenerated, and when the feedback loop is heavily altered due to absence of a moving limb.

The findings of this study give a fundamental understanding of how neuromuscular plasticity, degeneration processes and altered feedback affect the production of an EMG signal to produce a movement.

Study objective

We hypothesise that the braced condition is significantly more similar to the affected side than the non-braced condition

Study design

N/A

Intervention

The participants will be fitted with two elastic bands. Each band is fitted with 8 equally spaced clinically used electrodes (Otto Bock 13E200=50). The first band is placed on the thickest part of the forearm of the affected side that does not have scarring. The second band is placed at the same place on the unaffected side. The participant will then be placed in front of a computer monitor on which prompts will be shown that instructs the participant to perform specific bimanual movements. The participant will be instructed to perform the movements with moderate strength for three seconds. The movements are

• Forearm supination

• Forearm pronation

• Wrist flexion

• Wrist extension

• Open hand

• Key grip

• Fine pinch

• Radial deviation

• Ulnar deviation

Each movement will be performed three times and the order of the movements will be presented in a randomised order. While performing the movements, the EMG signal measured from the electrodes on the elastic bands are saved on a computer. After the participant has performed all the movements, the same movements will be performed while wearing a wrist/hand brace on the unaffected side. The order of the brace condition is counterbalanced over participants.

After completing all the movements for both conditions (no brace and brace), the participant will fill out a short questionnaire.

Contacts

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Eligibility criteria

Inclusion criteria

The inclusion criteria for the participants are: individuals with acquired unilateral limb deficiency at the transradial level. The stump needs to be properly healed with sufficient reduction of stump oedema which can usually be expected 8 weeks after surgery. Participants should have a 2 cm broad region on the forearm with no scaring. Their understanding of the Dutch language needs to be sufficient to understand what they need to do in the experiment.

Exclusion criteria

Anyone who do not match the inclusion criteria

Study design

Design

Study type:	Observational non invasive
Intervention model:	Other
Masking:	Open (masking not used)
Control:	N/A , unknown

Recruitment

NL

Recruitment status:	Recruiting
Start date (anticipated):	21-02-2017
Enrollment:	15
Type:	Anticipated

Ethics review

Not applicable

Application type:	Not applicable

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
NTR-new	NL6724
NTR-old	NTR6935
Other	Ethische Commissie Bewegingswetenschappen, UMCG, Groningen (ECB) : ECB/2017.01.30_2

Study results