Electrical stimulation for post stroke hand opening.

No registrations found.

Ethical review	Positive opinion
Status	Pending
Health condition type	-
Study type	Interventional

Summary

ID

NL-OMON28137

Source
NTR

Brief title
R2G

Health condition

Stroke

Sponsors and support

Primary sponsor: Roessingh Research & Development BV
Source(s) of monetary or material Support: Euregio European Union (Interreg IV A)

Intervention

Outcome measures

Primary outcome

The primary outcome of the present experiment is the Box and Block test which measures hand function of stroke patients. This functional measure is used to evaluate the influence of different types of electrical stimulation (EMG triggered and position triggered multichannel ES, single channel ES and none) on functional hand opening.

Secondary outcome

Secondary study parameters are muscle activation patterns (MAP) measured with electromyography and kinematics during reach-to-grasp movements.

Study description

Background summary

Rationale:

The majority of stroke patients have to cope with impaired arm and hand function after a stroke. Post stroke rehabilitation training aims to regain (partly) lost functions by stimulation of restoration or promoting compensational strategies, in order to increase the level of independence. During rehabilitation training movements are practiced preferably with high intensity, in a task-oriented way, with an active contribution of the stroke survivor in a motivating environment. An effective training modality that is commonly applied in post stroke upper extremity rehabilitation training is arm support by means of gravity compensation. In order to increase functional abilities of the affected arm, hand function should also be trained. A promising technique to train hand function, or more specifically hand opening, after stroke is electrical stimulation of wrist and finger extensors and thumb abductors/extensors.

Objective:

The primary objective of the present study is to study influence of different types of electrical stimulation on functional hand opening. The secondary objective of the study is to gain more insight in muscle activation patterns and kinematics during functional reach-to-grasp movements.

Study design:

The study has a cross-sectional design, with one measurement session (T1) for healthy elderly and two sessions (T1 and T2, spaced approximately 3 months apart) for stroke patients.

Study population:

20 healthy elderly and 20 stroke patients.

Study objective

Application of multichannel electrical stimulation on the wrist extensor, finger extensor, thumb abductor and thumb extensor will instanteneously increase functional handopening of stroke patients.

Study design

The experiment consist of two measurements, spaced approximately three months apart.

Intervention

Patients will receive different types of single and multichannel electrical stimulation. The instantaneous influence on functional hand opening of these types of electrical stimulation is addressed by the Box and Block Test.

Contacts

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Eligibility criteria

Inclusion criteria

1. A history of a single unilateral stroke in the medial cerebral artery (MCA) region resulting in single-sided hemiparesis;

2. The onset of the stroke was more than six weeks ago;

3. The ability to voluntarily generate 20 degrees excursions in the plane of elevation (horizontal ab-/adduction) and elevation angle (ab-/adduction, ante-/retroflexion) of the shoulder joint;

4. The ability to voluntarily generate an excursion of 20 degrees of elbow flexion/extension;

5. The ability to voluntarily extend the wrist 10 degrees from neutral flexion/extension;

6. Adequate cognitive function to understand the experiments, follow instructions, and give feedback to the researchers.

Exclusion criteria

1. A fixed contracture deformity in the (affected) upper limb was present;

2. Pain as a limiting factor for the subject's active range of motion;

3. The use of a pace-maker.

Study design

Design

Study type:	Interventional
Intervention model:	Parallel
Allocation:	Non-randomized controlled trial
Masking:	Open (masking not used)
Control:	N/A , unknown

Recruitment

NL

Recruitment status:	Pending
Start date (anticipated):	01-02-2011
Enrollment:	40
Type:	Anticipated

Ethics review

Positive opinion
Date: 05-12-2010
Application type: First submission

Study registrations

Followed up by the following (possibly more current) registration

ID: 38359
Bron: ToetsingOnline
Titel:

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

No registrations found.

In other registers

Register	ID
NTR-new	NL2520
NTR-old	NTR2638
CCMO	NL34868.044.10
OMON	NL-OMON38359

Study results

Summary results
N/A