

Dual repetitive task with arm support training: a new strategy to understand and improve upper limb activity in stroke?

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To determine the magnitude of the cognitive-motor interference during a repetitive dual tapping task with arm support comparing with a single condition, without arm support and with a non-repetitive dual task. Also, to explore how segment kinematics...

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Central nervous system vascular disorders
Study type	Interventional

Summary

ID

NL-OMON46018

Source

ToetsingOnline

Brief title

The effect of a dual task on task performance after stroke

Condition

- Central nervous system vascular disorders

Synonym

CVA, stroke

Research involving

Human

Sponsors and support

Primary sponsor: Revalidatiecentrum Het Roessingh

Source(s) of monetary or material Support: niet gefinancierd door externe partijen

Intervention

Keyword: Dual tasks, stroke, upper limb

Outcome measures

Primary outcome

- * Movement time (seconds) during single and dual movements in different conditions.
- * Precision (distance in centimetres with respect to the centre of the target) during single and dual conditions.
- * Movement rate (coefficient of temporal variation between events, %) during repetitive single and dual task conditions.
- * Number of digits in a series recalled during single cognitive and dual task conditions.

Secondary outcome

Muscle activation patterns (timing and peak activity) as measured with surface EMG at the affected arm and hand (m. Deltoideus, m. Biceps en m. Triceps) during the tasks.

Movement excursion (in degrees) of the thorax, shoulder, elbow, wrist during the functional movement

Study description

Background summary

Dual tasks are affected after a stroke. They have been widely investigated in gait, however research about dual tasks in activities involving the upper limb

is scarce. Upper limb impairments have a great impact in activities of daily living and some of them need dual tasking. In a previous study, we have shown that people who have had a stroke and have upper limb impairments, showed cognitive motor-interferences during repetitive dual tasks with arm support. Interestingly, we saw that the cognitive task served as a strategy to pace movements. Since arm support and cueing during repetitive movement have demonstrated to be effective to decrease attentional demands and increase automaticity of movements, respectively, it would be interesting to know the magnitude of cognitive-interferences during dual tasks taking into account those variables.

Study objective

To determine the magnitude of the cognitive-motor interference during a repetitive dual tapping task with arm support comparing with a single condition, without arm support and with a non-repetitive dual task. Also, to explore how segment kinematics changes in a single or a dual task compared with a similar functional movement in people who have suffered a stroke.

Study design

Explorative cross-sectional study with one measurement session

Intervention

The tapping tasks will be performed with and without receiving gravity support from an arm support system

Study burden and risks

The burden and risk associated with participation is low, as participants are asked to perform movements that are likely to occur during daily life. Periods of rest can be taken during the measurement in case of fatigue. Participants will not benefit from participation,

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

- * Unilateral stroke, which much have occurred at least 6 months before the start of the study
- * 18 years or older of age
- * Have to display at least a limited arm function (not completed ROM, weakness and/or reduced velocity of movements) quantified with Fugl-Meyer score (*partial* score in volitional movements of shoulder and *slight $\leq$ 1* in speed item).
- * Active control of the elbow/shoulder of at least 15° and hand (at least a partial cylinder grasp)
- * Normal or corrected visual / hearing function
- * Able to give consent

Exclusion criteria

- * Other neurological impairment.
- * Inability to understand/perform instructions of at least two steps.
- * Co-morbidity affecting upper limb function (recent musculoskeletal injury, pain, etc.).

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): 09-08-2018

Enrollment: 10

Type: Actual

Ethics review

Approved WMO

Date: 28-06-2018

Application type: First submission

Review commission: METC Twente (Enschede)

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	NL65741.044.18

Register

Other

ID

Wordt na goedkeuring aangemeld bij NTR