Reactieve voetplaatsing in balanshandhaving tijdens staan en lopen in gezonde jongeren en mensen met een cerebrovaculaire aandoening

No registrations found.

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

Summary

ID

NL-OMON25102

Source
Nationaal Trial Register

Brief title
Reactive stepping in balance control

Health condition

Stepping responses in healthy subjects and stroke survivors.

Dutch keywords:
Balans
Staan
Lopen
Reactieve voetplaatsing
CVA

Sponsors and support

Primary sponsor: University of Twente
Source(s) of monetary or material Support: European Union CORDIS Seventh Framework Programme

Intervention

Outcome measures

Primary outcome

Foot placement location and swing time

Secondary outcome

- Distance between center of mass and center of pressure

- Ground reaction forces

- Joint angles

- Joint torques

- Body angular and linear momenta

- Muscle (reflexive) activity levels

Study description

Background summary

In daily life the upright human body is continuously challenged by external disturbances, such as gravitational forces and forces originating from interactions with the environment. These disturbances can lead to a loss of balance, which must be acted upon accordingly to prevent a fall. Following a disturbance, proper foot placement is crucial for maintaining balance during both standing and walking. However it is unclear why humans place their foot at a certain location at a certain time following an unexpected balance disturbance. A model based prediction of a suitable foot placement location to maintain balance and prevent falls can have great value in both clinical and robotics fields of research. Investigating foot placement in stroke patients can lead to a better understanding how stroke related complications affect foot placement, and how these might be compensated using supportive devices such as exoskeletons.

Study objective

What is the relation between body states (e.g. center of mass position and velocity) following a change in externally applied pelvic force, and the resulting swing time and stepping location used to maintain balance in standing and walking.

Study design

All instances from perturbation onset up and including to the moment of first, second and possibly third subsequent foot contact.

Intervention

Forces applied at the pelvis during standing and walking to disturb balance and invoke a stepping response.

Contacts

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Eligibility criteria

Inclusion criteria

Healthy subjects :

- between 18 and 30 years of age

Stroke survivors :

- between 18 and 70 years of age
- diagnosed with a hemiparesis as the result of a first ever ischemic stroke

- > 6 months post-stroke (chronic stage)

- functional ambulation category (FAC) 4 : walk independently on level surfaces

- physical condition allows independent walking for at least 3 consecutive minutes

- stable medical condition

- sufficient cognitive abilities (mini-mental state examination >= 22)

- sufficient communication abilities (Utrechtse communicatie onderzoek >= 3)

Both :

- body weight < 100 kg

- has given written informed consent

Exclusion criteria

Healthy subjects :

- has current lower extremity problems or deficiencies (e.g. knee problems, disabilities in walking)

- has (a history of) neurological or balance related disorders

Stroke survivors :

- has (a history of) other neurological or balance related disorders not related to stroke

Both :

- is using medication that can affect balance control

- is pregnant, or has a chance of being pregnant

- has chronic joint pain

- has orthopedic problems

- has (a history of) cardiac conditions that interfere with physical load

- has (a history of) skin diseases that could result in irritation of the skin underneath the EMG electrodes

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):	01-11-2014
Enrollment:	60
Type:	Anticipated

Ethics review

Positive opinion

Date:	07-10-2014
Application type:	First submission

Study registrations

Followed up by the following (possibly more current) registration

ID: 44237

Bron: ToetsingOnline
Titel:

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

No registrations found.

In other registers

Register	ID
NTR-new	NL4412
NTR-old	NTR4841
CCMO	NL50450.044.14
OMON	NL-OMON44237

Study results