Age related adaptations in postural control after balance perturbations by simulating a ‘near fall’

No registrations found.

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

Summary

ID

NL-OMON23172

Source
NTR

Health condition

Postural Control, Balance, Fall Prevention, Elderly
Houdingscontrole, balans, valpreventie, ouderen

Sponsors and support

Primary sponsor: University Medical Centre Groningen (UMCG)
University of Groningen (RUG)
Source(s) of monetary or material Support: SPRINT SNN tender

Intervention

Outcome measures

Primary outcome

Age-related differences in postural control:

- Response types: in-place response or stepping response; single step, multiple steps and ‘fall’

- Balance recovery in terms of bodily displacement: step length, step width, presence of an APA (anticipatory postural adjustment), COM displacement, COP displacement and accelerations.

- Balance recovery in terms of reaction times: onset latency (time to initial response), time to foot-off, time to foot-contact

Secondary outcome

Clinical Balance test: The Narrow Ridge Balance Test (NRBT) to assess balance performance in elderly.

The adapted Dutch version of the Incidental and Planned Exercise Questionnaire (IPEQ) for older people to measure average weekly physical activity over the past 3 months of the elderly.

Study description

Background summary

The aim of this study is to gain insight into factors that indicate an improved postural control. Therefore adults aged between 20 and 90 will perform reaching tasks while at the same time a fall is simulated in a controlled virtual environment (CAREN). The fall will be simulated by applying either mechanical, visual or cognitive perturbations. The findings will be used to develop a virtual environment (VE) to evaluate balance recovery reactions.

Study objective

Falls are one of the greatest concerns among the elderly, because the incidents are high and they lead to severe consequences. The extent of the problem will continue to expand as the number of older people is expected to increase dramatically over the next few decades. An important risk factor for falls in the elderly is an impaired postural control, which is defined as the act of maintaining, achieving or restoring a state of balance during any posture or activity. A growing number of studies show the potential of video games incorporating training (exergames) to improve postural control. However, scarce evidence is available that these interventions actually contribute to a decrease in fall risk. Finding indicators for improved postural control are needed in order to be able to validate fall risk interventions. By studying age related postural adaptations to perturbations that challenge balance in a controlled environment like CAREN (Computer Assisted Rehabilitation Environment) insight into these indicators can be gained. Eventually these findings can be used for validating an exergaming training intervention in terms of reducing fall risk by improving postural control. The main objective of the present study is to gain insight into factors that indicate an improved postural control by evaluating balance recovery (in terms of centre of mass (CoM) and centre of pressure (CoP)) of both young and older adults during a reaching task while

exposed to perturbations of physical, visual or cognitive factors, causing a near fall.

Study design

Data from VICON (Motion capture system) and force plates will be collected during the experimental trials. The NRBT and the IPEQ will be completed before the experimental trials start.

Intervention

Both young and older participants will perform multiple target-directed weight shifting movements, i.e. reaching tasks, in three simulated fall risk situations which are divided in three experiments. The experiments will be conducted in the CAREN (Computer Assisted Rehabilitation Environment) lab. In the first experiment mechanical perturbations will be created by sudden platform translations with different velocity profiles during the performance of multiple reaching tasks. In the second experiment visual surround manipulations will be applied by projecting optic flow patterns on a large screen in front of the subjects during the performance of multiple reaching tasks. In the third experiment participants will perform a continuous cognitive demanding dual task during the performance of multiple reaching tasks

Contacts

Public
VU University Medical Center
Department of General Practice
Van der Boechorststraat 7
Lianne Vries, de
Amsterdam 1081 BT
The Netherlands
+31 (0)20 4449811
Scientific
VU University Medical Center
Department of General Practice
Van der Boechorststraat 7
Lianne Vries, de
Amsterdam 1081 BT
The Netherlands
+31 (0)20 4449811

Eligibility criteria

Inclusion criteria

Adults aged between 20 and 90, who are able to walk 200 m without aids (to a nearby shop), understand verbal instructions and have the visual ability to perceive the information presented on a large screen.

Exclusion criteria

Young or elderly subjects who are not able to walk without aids, with orthopaedic or neurological disorders which prevent them for standing and reaching, have visual or hearing deficiencies that prevent them from perceiving or hearing presented information or/and have cognitive impairments that prevent them from understanding the instructions.

Study design

Design

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

Recruitment

NL

Recruitment status:	Recruiting
Start date (anticipated):	23-09-2013
Enrollment:	135
Type:	Anticipated

Ethics review

Not applicable

Application type:	Not applicable

Study registrations

Followed up by the following (possibly more current) registration

ID: 38827
Bron: ToetsingOnline
Titel:

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

No registrations found.

In other registers

Register	ID
NTR-new	NL3998
NTR-old	NTR4170
CCMO	NL43581.042.13
ISRCTN	ISRCTN wordt niet meer aangevraagd.
OMON	NL-OMON38827

Study results

Summary results
N/A