

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

Gepubliceerd: 10-09-2013 Laatste bijgewerkt: 15-05-2024

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...

Ethische beoordeling	Niet van toepassing
Status	Werving gestart
Type aandoening	-
Onderzoekstype	Observationeel onderzoek, zonder invasieve metingen

Samenvatting

ID

NL-OMON23172

Bron

NTR

Aandoening

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

Ondersteuning

Primaire sponsor: University Medical Centre Groningen (UMCG)
University of Groningen (RUG)

Overige ondersteuning: SPRINT SNN tender

Onderzoeksproduct en/of interventie

Uitkomstmaten

Primaire uitkomstmaten

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

Toelichting onderzoek

Achtergrond van het onderzoek

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.

Doel van het onderzoek

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.

Onderzoeksopzet

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.

Onderzoeksproduct en/of interventie

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

Contactpersonen

Publiek

VU University Medical Center

Department of General Practice

Van der Boechorststraat 7
Lianne Vries, de
Amsterdam 1081 BT
The Netherlands
+31 (0)20 4449811

Wetenschappelijk

VU University Medical Center

Department of General Practice

Van der Boechorststraat 7
Lianne Vries, de
Amsterdam 1081 BT
The Netherlands
+31 (0)20 4449811

Deelname eisen

Belangrijkste voorwaarden om deel te mogen nemen (Inclusiecriteria)

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.

Belangrijkste redenen om niet deel te kunnen nemen (Exclusiecriteria)

Young or elderly subjects who are not able to walk without aids, with orthopaedic or neurological disorders which prevent them from 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.

Onderzoeksopzet

Opzet

Type:	Observationeel onderzoek, zonder invasieve metingen
Onderzoeksmodel:	Anders
Toewijzing:	N.v.t. / één studie arm
Blinding:	Open / niet geblindeerd
Controle:	N.v.t. / onbekend

Deelname

Nederland	
Status:	Werving gestart
(Verwachte) startdatum:	23-09-2013
Aantal proefpersonen:	135
Type:	Verwachte startdatum

Ethische beoordeling

Niet van toepassing	
Soort:	Niet van toepassing

Registraties

Opgevolgd door onderstaande (mogelijk meer actuele) registratie

ID: 38827

Bron: ToetsingOnline

Titel:

Andere (mogelijk minder actuele) registraties in dit register

Geen registraties gevonden.

In overige registers

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

Resultaten

Samenvatting resultaten

N/A