Brain mechanisms of balance learning in aging

No registrations found.

Ethical review	Not applicable
Status	Pending
Health condition type	-
Study type	Interventional

Summary

ID

NL-OMON27346

Source
Nationaal Trial Register

Health condition

Aging

Sponsors and support

Primary sponsor: University Medical Center Groningen
Source(s) of monetary or material Support: Univeristy Medical Center Groningen

Intervention

Outcome measures

Primary outcome

Behavioral outcome during balance learning is the error produced by balancing on an unstable balance board (Sensamove, Groessen, NL). The error, in degrees, is computed as the cumulative deviation between the position of the board relative to the horizontal. In addition to the performance on the balance board, the laboratory behavioral outcome is the magnitude of sway on the force platform measured in standing with a narrow stance during TMS and EEG testing. Magnitude of sway is expressed in cm as path length over unit time and the velocity of sway in the anterior-posterior and in the medio- lateral directions.

Secondary outcome

TMS outcomes include the size of the short-interval intracortical inhibition (SICI), long-interval intracortical inhibition (LICI), and corticospinal excitability measured as the amplitude of the motor evoked potential (MEP). EEG outcomes include the phase slope index, a measure of connectivity in the frequency domain between specific brain areas.

Study description

Study objective

The overall hypothesis is that balance-specific exercise training only improves postural control of sway measured in standing and causes retention of the improved sway behavior and that such behavioral improvements correlate with changes in measures of neuronal excitability in the brain.

Study design

acute study: week 1

Chronic study: week 1, week 4 and week 6

Intervention

Balance training on an unstable surface, cycling on an a stationary bicycle ergometer and no-intervention control

Contacts

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Eligibility criteria

Inclusion criteria

Young adults: Age between 18 and 40, female or male, healthy.
Old adults: Age between 65 and 85, female or male, healthy.

Exclusion criteria

A score lower than 24 on the Mini Mental State Examination

A score higher than 70 on the falls self-efficacy scale

More than 1 fall over the past year (‘Coming unintentionally to rest on the ground, floor, or lower level’)

Do not meet TMS guidelines

Unable to stand independently for 10 minutes without rest

Epilepsy

Any metal in the brain/skull

Electrical, magnetic, or mechanical implantation: cardiac pacemakers or intracerebral vascular clip

Pregnancy or suspicion of pregnancy

History of seizures or unexplained loss of consciousness

Immediate family member with epilepsy

Use of seizure threshold lowering medicine

History of Schizophrenia

History of Hallucinations

History of other neurological disorders

A prior stroke, heart attack, heart failure, bypass, cardiac arhythmia Acute flu or cold

Spinal, joint, and head pain

Diabetes mellitus

Hypertension (systolic/diastolic > 160/ > 100 mmHg)

Acute and chronic inflammatory condition

Severe arthrosis

Vertigo

Knee or hip endoprosthesis

Trauma within the last 6 months

Active cancer, cancer therapy

Study design

Design

Study type:	Interventional
Intervention model:	Parallel
Allocation:	Randomized controlled trial
Masking:	Open (masking not used)
Control:	Placebo

Recruitment

NL

Recruitment status:	Pending
Start date (anticipated):	01-02-2018
Enrollment:	288
Type:	Anticipated

Ethics review

Not applicable

Application type: Not applicable

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
NTR-new	NL6691
NTR-old	NTR6861
Other	NL64147.041.17 : 201700861

Study results