

Blood flow velocity changes in the brain due to the loss of water after exercising

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The main objective of this research is to find out if the blood flow velocity in the MCA changes after exercise for 1,5 hours and if this can be attributed to the loss of water.

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Other condition
Study type	Interventional

Summary

ID

NL-OMON43463

Source

ToetsingOnline

Brief title

Blood flow velocity changes in the brain after exercise

Condition

- Other condition

Synonym

blood flow velocity in the brain, Cerebral blood flow velocity

Health condition

geen aandoening

Research involving

Human

Sponsors and support

Primary sponsor: Martini Ziekenhuis

Source(s) of monetary or material Support: Ministerie van OC&W

Intervention

Keyword: Blood flow velocity, Cerebral blood flow, Exercise, Transcranial Doppler

Outcome measures

Primary outcome

The main study parameters are the change in blood flow velocity in the MCA measured by TCD and the change in weight after 1,5 hours of exercise. The study is finished when 20 participants, in whom written consent has been obtained, have successfully completed the entire study.

Secondary outcome

Not applicable

Study description

Background summary

During exercise temperature rises and the body has to cool itself. This is done by sweating. Continuous exercising causes a considerable loss of water. This will usually be compensated by drinking water. If water will not be drunk, then the vascular system has less volume. This can also affect the blood flow towards the brain.

Normally the cerebral autoregulation keeps the blood flow towards the brain constant, within certain ranges. We hypothesize that after endurance exercising the loss of water causes the MCA blood flow velocity to become more systolic dominant and that the mean MCA blood flow velocity decreases.

Study objective

The main objective of this research is to find out if the blood flow velocity in the MCA changes after exercise for 1,5 hours and if this can be attributed to the loss of water.

Study design

A prospective intervention study. Participants will visit three times. The VO₂max will be calculated during the first visit. During the second and third

visit the participant has to cycle for 1,5 hours without water and with water, respectively. Measurements will be done before and after the 1,5 hours of exercise. Measurements include TCD, CO₂, blood pressure and heart rate.

Intervention

Every participant has to cycle for 1,5 hours on 70% of their VO₂max twice. The first time they are not allowed to drink water and the second time they will be given water at 45 minutes from the start. The amount of water is 70% of the water lost during the first session.

Study burden and risks

The participant will be asked to visit three times. In total this will take around 5 hours. There will be incentives for those that participate. The risks associated with this study are negligible. 70% VO₂max is sub-maximal and is not considered to be discomforting to participants. All the measurements done are non-invasive and safe.

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

Exercises at least 2 times per week 1 hour endurance exercise

Exclusion criteria

Younger than 18 years old

Older than 35 years old

Answered yes 1 time or more on the PAR-Q form

Sweat disturbances

Insufficient temporal window for TCD investigation

Existing brain injury

Smoking

Diabetes

Study design

Design

Study type: Interventional

Masking: Open (masking not used)

Control: Uncontrolled

Primary purpose: Basic science

Recruitment

NL

Recruitment status: Recruitment stopped

Start date (anticipated): 16-03-2016

Enrollment: 20

Type: Actual

Ethics review

Approved WMO

Date: 09-02-2016

Application type: First submission

Review commission: RTPO, Regionale Toetsingscie Patientgebonden Onderzoek (Leeuwarden)

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	NL56381.099.16