Ionized magnesium in athletes

Published: 22-09-2015
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The main objective is to investigate whether ionized magnesium concentration varies during one day, and whether it is changed after one bout of exercise.

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

Summary

ID

NL-OMON42609

Source
ToetsingOnline

Brief title
Mg status in athletes

Condition

- Other condition

Synonym
magnesium deficiency

Health condition

micronutrienten

Research involving
Human

Sponsors and support

Primary sponsor: Wageningen Universiteit
Source(s) of monetary or material Support: Ministerie van OC&W

Intervention

Keyword: changes, day variation, exercise, Ionized magnesium

Outcome measures

Primary outcome

The main study parameter is ionized magnesium concentration in serum.

Secondary outcome

Total magnesium concentration in serum

The machine also analysis the next parameters in the same sample:

Ca2+, pH, pO2, pCO2, hematocrit, Na, K, glucose and lactate.

These parameters are also measured and used as outcome measures.

There is no extra blood needed and also no extra analysis.

Study description

Background summary

Magnesium is an essential micronutrient for health and exercise performance. Deficiencies are common, especially in case of insufficient diets. Athletes are a population at risk of magnesium deficiency, as they can have strong nutritional (dis)believes and increased losses through sweat. That is why monitoring magnesium status in athletes is very important. Ionized magnesium is the active form of total magnesium, this value might be even more important than total magnesium. However, whether ionized magnesium is influenced by day variation is not clear yet. In addition: one bout of exercise can change magnesium status and probably ionized magnesium status. For people active in sports it is important to be aware of this variation in magnesium status, to prevent the diagnosis of false inadequate magnesium status. Therefor it is the aim of this proposal to determine whether ionized magnesium varies within one day and whether it changes after an acute bout of exercise.

Study objective

The main objective is to investigate whether ionized magnesium concentration varies during one day, and whether it is changed after one bout of exercise.

Study design

This will be a cross-over design. With screening and preliminary tests before the exercise test day and the non-exercise test day. The order in which exercise day and non-exercise day will be done, will be randomly divided between the participants.

Intervention

A rest day and an exercise day
At exercise day: an exercise test of 90 min at 70% of VO2max.

Bloedsamples are taken at set time points during rest day and exercise day

Study burden and risks

Exercise tests may cause muscle pain. This is innocent and will only be for a couple of days.
Blood samples can be uncomfortable. Bruises may appear, but will be gone in a few days.

Contacts

Public
Wageningen Universiteit

Bomenweg 2 building 307
Wageningen 6307 HD
NL
Scientific
Wageningen Universiteit

Bomenweg 2 building 307
Wageningen 6307 HD
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

Age: 18 - 45 y
BMI: 18.5 - 25
Minimal of 5 hours of training per week, for at least 2 years
Used to bike, at least 5 hours per week in high season
No Mg and / or Ca supplementation during study
No blood donation, during or in the 6 weeks preliminary the study
Suitable veins
No chronic medication, with the exception of paracetamol and or birth control
No antibiotics in the month preliminary the study
Good health
Mg intake >420 mg for men and >320 mg for women (estimated with FFQ)
Serum Mg > 0.7 mmol/L
Willing to give blood
Able to be present and participate at all test days

Exclusion criteria

Chronical illness
Use of medication with the exception of paracetamol and or birth control
Mg and or Ca supplementation use
Inadequate Mg intake (according to FFQ)
Working at Human Nutrition - Wageningen University
Msc thesis or internship at Human Nutrition - Wageningen University
Participating in other scientific research (with the exception of EetMeetWeet)

Study design

Design

Study type:	Interventional
Intervention model:	Crossover
Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Diagnostic

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	23-11-2015
Enrollment:	18
Type:	Actual

Ethics review

Approved WMO

Date:	22-09-2015
Application type:	First submission
Review commission:	METC Wageningen Universiteit (Wageningen)

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	NL54333.081.15