Ingestion of different protein sources before sleep to promote muscle protein synthesis after endurance exercise in young men

No registrations found.

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

Summary

ID

NL-OMON27053

Source
Nationaal Trial Register

Brief title
PROsleepMITO

Health condition

- Milk protein

- Protein digestion

- Protein synthesis

Sponsors and support

Primary sponsor: Maastricht University
Source(s) of monetary or material Support: Campina

Intervention

Outcome measures

Primary outcome

Overnight muscle protein synthesis rates

Secondary outcome

- Plasma amino acid concentrations

Study description

Background summary

A single session of exercise stimulates muscle protein synthesis rates, and to a lesser extent, muscle protein breakdown rates. However, the muscle protein net balance will remain negative
in the absence of food intake. Protein ingestion stimulates muscle protein synthesis and inhibits
muscle protein breakdown rates, resulting in net muscle protein accretion during the acute stages of post-exercise recovery. Therefore, post-exercise protein ingestion is widely applied as a strategy to augment post-exercise muscle protein synthesis rates and, as such, to facilitate the skeletal muscle adaptive response to exercise training. As overnight sleep is typically the longest post-absorptive period during the day, we have recently introduced the concept of protein ingestion prior to sleep as a means to augment muscle protein synthesis during overnight recovery following resistance-type exercise. However, it is currently unknown whether pre-sleep protein also promotes overnight recovery following other exercise modalities and whether the type of ingested protein modulates the response. Therefore, the current study investigates the impact of the ingestion of different protein source before sleep to promote muscle protein synthesis after endurance exercise.

Study objective

1) Pre-sleep whey protein ingestion stimulates overnight muscle protein synthesis rates

2) Pre-sleep casein protein ingestion stimulates overnight muscle protein synthesis rates

3) Pre-sleep whey and casein protein do not differ in their impact on overnight muscle protein synthesis rates.

Study design

- Overnight MPS (computed from biopsy at t=0 and t=450 min)

- Plasma amino acid concentrations: t0, t30, t60, t90, t150, t210, t330 and t450 min)

Intervention

1) pre-sleep whey protein ingestion

2) pre-sleep casein protein ingestion

3) water placebo ingestion

Contacts

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Eligibility criteria

Inclusion criteria

- Males

- Aged between 18-35 years

- Healthy

- 18.5 ≤ BMI ≤ 30 kg/m2

Exclusion criteria

- Smoking

- Sports/exercise > 4 sessions/week

- Lactose intolerant

- A history of neuromuscular problems

- Use of anticoagulation medication

- Recent (<1 y) participation in amino acid tracer [13C6 or 3,5-D2-tyrosine] studies

- Individuals on any medications known to affect protein metabolism (i.e. corticosteroids, non-steroidal anti-inflammatories, or prescription acne medications)

Study design

Design

Study type:	Interventional
Intervention model:	Parallel
Allocation:	Randomized controlled trial
Masking:	Double blinded (masking used)
Control:	Placebo

Recruitment

NL

Recruitment status:	Other
Start date (anticipated):	01-08-2018
Enrollment:	36
Type:	Unknown

Ethics review

Not applicable

Application type:	Not applicable

Study registrations

Followed up by the following (possibly more current) registration

ID: 50719
Bron: ToetsingOnline
Titel:

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

No registrations found.

In other registers

Register	ID
NTR-new	NL7046
NTR-old	NTR7251
CCMO	NL64719.068.18
OMON	NL-OMON50719

Study results