Evaluation of boiled vs raw eggs for stimulating post-exercise muscle protein synthesis

Published: 25-09-2017
Last updated: 12-04-2024

Looking into the effects of raw vs boiled eggs vs isocaloric low-protein meal on muscle growth.

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

Summary

ID

NL-OMON44581

Source
ToetsingOnline

Brief title
Rocky study

Condition

- Muscle disorders

Synonym
digestion/absorption, muscle growth

Research involving
Human

Sponsors and support

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

Intervention

Keyword: eggs, muscle, Protein, strength

Outcome measures

Primary outcome

Primary study parameters include postprandial plasma amino acid availability

and myofibrillar muscle protein synthesis rates.

Secondary outcome

Secondary study parameters include whole-body protein synthesis, breakdown,

oxidation, and net balance.

Study description

Background summary

Muscle consists of proteins. These proteins are composed a several small building blocks: amino acids. By ingesting sufficient protein and/or amino acids in our nutrition, we make sure that sufficient amino acids are available to stimulate muscle growth.
For increasing muscle mass, it is advised to combine resistance type exercise with protein dense nutrition. A good source of protein are eggs. However, eggs can be ingested in several ways (ie. raw vs boiled). It has been shown previously that eating raw eggs will lead to less uptake from the small intestine when compared to eating boiled eggs. However, the effect on muscle protein synthesis remains unknown.
The goal of this study is to investigate the effects of boiled vs raw eggs after strength exercise on muscle growth.

Study objective

Looking into the effects of raw vs boiled eggs vs isocaloric low-protein meal on muscle growth.

Study design

Randomized parallel study design.

Intervention

5 raw or boiled eggs or an isocaloric low-protein meal will be consumed (15 per group) with 300 mL of water.

Study burden and risks

The burden and risks associated with participation are small. Insertion of the catheters is comparable to a blood draw and could result in a small hematoma. Muscle biopsies will be taken under local anesthesia by an experienced physician, but may cause some minor discomfort for maximally up to 24 h after completion. The discomfort is comparable to muscle soreness or the pain one has after bumping into a table. We will take 16 blood samples (10 mL) during the experimental trial. The total amount of blood we draw is less than half the amount of a blood donation and will be completely restored in approximately 1 month. Participants come to the university twice: 1 screening (2 hours) and 1 experimental trial (entire day). For both the screening and the experimental trial, participants have to be fasted, so they are not allowed to eat and drink (except for water) from 22h00 the evening before. Also, 3 days prior to the experimental trial participants should keep their diet as constant as possible, do not perform any type of intense physical exercise, and do not consume alcohol. During the screening we will perform a DEXA and a strength test. Furthermore, we will ask the participants to fill out a medical questionnaire and record their food intake and activity for 2 days prior to the experimental trial. During the experimental trial, we will collect muscle and blood samples, and participants have to perform resistance exercise and consume either 5 raw or boiled eggs. There is no direct benefit for the participants, only their contribution to scientific knowledge.

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

Healthy males
Age between 18 and 35 (inclusive) years old
BMI between 18.5 and 30 kg/m2

Exclusion criteria

* Allergies to egg proteins
* Smoking
* Phenylketonuria
* Diabetes
* Diagnosed GI tract disorders or diseases
* Arthritic conditions
* A history of neuromuscular problems
* Any medications known to affect protein metabolism (i.e. corticosteroids, non-steroidal anti-inflammatories, or prescription strength acne medications).
* Use of certain anticoagulants (use of thrombocyte *aggregation inhibitors such as acetylsalicylic acid and carbasalaatcalcium is permitted. Use of*other thrombocyte aggregation inhibitors will be discussed with the responsible physician)
* Blood donation within 2 months of study initiation
* Hypertension (according to WHO criteria)

Study design

Design

Study type:	Interventional
Intervention model:	Parallel
Allocation:	Randomized controlled trial
Masking:	Open (masking not used)
Control:	Active
Primary purpose:	Treatment

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	01-11-2017
Enrollment:	60
Type:	Actual

Ethics review

Approved WMO Date:	25-09-2017
Application type:	First submission
Review commission:	METC academisch ziekenhuis Maastricht/Universiteit Maastricht, METC azM/UM (Maastricht)
Approved WMO Date:	25-10-2017
Application type:	Amendment
Review commission:	METC academisch ziekenhuis Maastricht/Universiteit Maastricht, METC azM/UM (Maastricht)

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	NL62956.068.17