The role of a nutritional formulation containing caprylic acid and omega 3 fatty acids in promoting skeletal muscle function recovery to damaging exercise in healthy, young volunteers

Published: 20-01-2025
Last updated: 31-01-2025

To assess the impact of a nutritional formulation containing caprylic acid and omega 3 fatty acids on skeletal muscle function recovery from damaging exercise.

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

Summary

ID

NL-OMON57242

Source
ToetsingOnline

Brief title
RECOVER

Condition

- Muscle disorders

Synonym
Muscle function recovery, Muscle soreness

Research involving
Human

Sponsors and support

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

Intervention

Keyword: caprylic acid, damaging exercise, emulsion, omega 3 fatty acids

Outcome measures

Primary outcome

Recovery of muscle function following a single bout of damaging exercise,

expressed as maximal voluntary muscle contractile function (MVC) before and

after exercise.

Secondary outcome

Secondary endpoints: recovery of muscle fatigue, soreness and plasma markers of

damage and inflammation following a single bout of damaging exercise.

Study description

Background summary

Maintaining muscle health is crucial for mobility and independence, particularly in aging populations where inflammation, oxidative stress, and muscle damage can exacerbate functional declines. Caprylic acid, metabolized into ketones, provides an efficient energy source that supports muscle repair and growth by modulating anabolic pathways, while omega-3 fatty acids offer anti-inflammatory benefits that may reduce muscle soreness and fatigue post-exercise. The combined effects of these nutrients on muscle recovery have yet to be systematically examined.

This research explores whether a vegan, plant-based emulsion containing these nutrients could offer a sustainable, accessible solution for muscle health maintenance, addressing a gap in dietary supplements tailored to a growing vegan demographic and supporting ethical and environmental goals.

Study objective

To assess the impact of a nutritional formulation containing caprylic acid and omega 3 fatty acids on skeletal muscle function recovery from damaging exercise.

Study design

randomized, parallel (two groups) study design

Intervention

During this 7-day study, two 100 ml emulsions will be compared for their effect on muscle function recovery following a single bout of damaging exercise. The emulsions differ in the type of fatty acids (test versus control formulation), which will be ingested in standardized state (day -3 - 0: once daily, in the evening at 10 PM; testday 1-4: once daily, in the morning after an overnight fast). One group will receive a *test emulsion* which contains the medium-chain fatty acid caprylic acid and the long-chain omega-3 fatty acid DHA, which are known to influence metabolic and inflammatory pathways that affect muscle health. The other group will receive the 'control emulsion' which contains fatty acids that do not exert these effects, while the other ingredients will remain similar to create an isocaloric alternative.

Study burden and risks

The test drinks contain commercially available, and food grade ingredients which are safe for human consideration. The drinks will be prepared according to GMP standards. Participants could experience some gastric or intestinal discomfort after intake of the drinks. Insertion of a catheter in a vein is comparable to a normal blood draw and the only risk is a small local hematoma. Eccentric exercise is known to induce muscle damage and soreness which is resolved by around 4 days after the exercise bout. When making the DXA scan, a very low amount of X-ray radiation is used. The total exposure to radiation as a result of the DXA scan is so low that it poses no health risks.

Contacts

Public
Wageningen Universiteit

De Elst 1
Wageningen 6708WD
NL
Scientific
Wageningen Universiteit

De Elst 1
Wageningen 6708WD
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)

Inclusion criteria

In order to be eligible to participate in this study, a subject must meet all of the following criteria:
- Young (>=18 and <=35 years)
- Male sex
- Non-obese (>=18.5 and <=27.5 kg/m2)
- Recreationally active (performing non-competitive exercise at least one time a week for minimally 30 minutes)

Exclusion criteria

A potential subject who meets any of the following criteria will be excluded from participation in this study:
- Smoking
- Participation in structural exercise with a major eccentric component (e.g. soccer, basketball, trail running, etc*)
- Chronic use of any prescribed over the counter pharmaceuticals
- Any history of medical or surgical events that may effect the study outcomes
- Following a specific diet (e.g. weight loss, ketogenic, vegan)
- Taking protein supplements

Study design

Design

Study type:	Interventional
Intervention model:	Parallel
Allocation:	Randomized controlled trial
Masking:	Single blinded (masking used)
Control:	Placebo
Primary purpose:	Treatment

Recruitment

NL

Recruitment status:	Pending
Start date (anticipated):	01-02-2025
Enrollment:	28
Type:	Anticipated

Ethics review

Approved WMO

Date:	20-01-2025
Application type:	First submission
Review commission:	METC Brabant (Tilburg)

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	NL88300.028.24