

# 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

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

|                              |                  |
|------------------------------|------------------|
| <b>Ethical review</b>        | Approved WMO     |
| <b>Status</b>                | Pending          |
| <b>Health condition type</b> | Muscle disorders |
| <b>Study type</b>            | 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**

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## **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 ( $\geq 18$  and  $\leq 35$  years)
- Male sex
- Non-obese ( $\geq 18.5$  and  $\leq 27.5$  kg/m<sup>2</sup>)
- 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

CCMO

### ID

NL88300.028.24