

# Exploring the effects of L-carnitine supplementation on CrossFit® performance

<b>Submission date</b> 07/10/2024	<b>Recruitment status</b> No longer recruiting	<input type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol
<b>Registration date</b> 29/01/2025	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
<b>Last Edited</b> 28/02/2025	<b>Condition category</b> Other	<input type="checkbox"/> Individual participant data <input type="checkbox"/> Record updated in last year

## Plain English summary of protocol

### Background and study aims

This study aims to investigate whether L-carnitine supplementation can improve performance in recreational CrossFit® athletes during a high-intensity workout called "Cindy." Specifically, whether taking L-carnitine will increase the number of repetitions completed during the workout and its effects on perceived exertion, blood pressure, and any potential side effects like gastrointestinal discomfort.

### Who can participate?

The study includes adult male volunteers between the ages of 18 and 35 years old who had at least six months of CrossFit® experience and had previously completed the "Cindy" workout

### What did the study involve?

Participants will be randomly assigned to take either a 3 g dose of L-carnitine or a placebo 90 minutes before performing the "Cindy" workout. Each participant takes part in two separate sessions: one with L-carnitine and one with a placebo. During the workout, the total number of repetitions, ratings of perceived exertion (RPE), blood pressure and any side effects, such as gastrointestinal issues, are recorded.

### What were the possible benefits and risks of participating?

While participants will not experience direct benefits from the study, the findings provide valuable information about the effects of L-carnitine on high-intensity exercise performance. There are minimal risks involved, such as reporting minor gastrointestinal discomfort and difficulty sleeping after taking L-carnitine, but no serious adverse effects are expected to be observed.

### Where was the study run from?

The study was conducted at a CrossFit® club within the Faculty of Higher Studies of Zaragoza.

### When did the study start and how long did it run for?

January 2023 to December 2023

Who funded the study?  
Universidad Nacional Autónoma de México

Who was the main contact?  
Dr Azucena Ojeda Sanchez, a.ojeda@zaragoza.unam.mx, azucenaojedasan@yahoo.com.mx

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## Additional identifiers

### Clinical Trials Information System (CTIS)

Nil known

### Protocol serial number

CARCT1

## Study information

### Scientific Title

The effects of acute L-carnitine supplementation on CrossFit® performance: a randomized, double-blind, placebo-controlled crossover study

### Study objectives

Primary Hypothesis: Acute L-carnitine supplementation will enhance exercise performance, as measured by the total number of repetitions completed by recreational CrossFit® athletes, compared to a placebo.

Secondary Hypothesis: L-carnitine supplementation will result in lower ratings of perceived exertion (RPE) and more favorable blood pressure (BP) measurements during exercise compared to a placebo.

### Ethics approval required

Ethics approval required

### Ethics approval(s)

approved 27/11/2023, The Research Ethics Committee of National Autonomous University of Mexico (Av. Universidad 3004, Copilco Universidad, Coyoacán, Mexico City, 04510, Mexico; +52 55 5622 0000; etica.enlace@zaragoza.unam.mx), ref: FESZ/CEI/31/23

### Study design

Randomized double-blind placebo-controlled crossover study

### Primary study design

Interventional

### Study type(s)

Efficacy

### Health condition(s) or problem(s) studied

The acute effects of L-carnitine supplementation on exercise performance in recreational CrossFit® practitioners

## **Interventions**

In this randomized, double-blind, placebo-controlled crossover study, a free online randomisation tool (randomiser.org) was used to assign CrossFit practitioners to groups. They participated in two workout sessions in a crossover design, with no additional follow-up activities afterwards. Participants were assigned to receive either a 3 mg dose of L-carnitine tartrate or a placebo. The L-carnitine tartrate dose was administered 90 minutes before the "Cindy" workout, a CrossFit® exercise regimen. Participants completed both the L-carnitine and placebo conditions in separate sessions, with the order of administration randomized to minimize bias. The total number of repetitions completed during the workout was recorded to assess exercise performance. In addition, ratings of perceived exertion (RPE) and blood pressure (BP) measurements were collected during each session. The percent change in performance between sessions was calculated to evaluate any potential learning effect on the ergogenic benefits of L-carnitine supplementation.

## **Intervention Type**

Supplement

## **Primary outcome(s)**

Exercise performance was measured using the total number of repetitions completed during the "Cindy" workout, a high-intensity CrossFit® protocol immediately after the workout in each session

## **Key secondary outcome(s)**

1. Ratings of Perceived Exertion (RPE) were measured using a standard Borg scale at the end of the workout
2. Blood Pressure (BP) was measured using a standard sphygmomanometer before and after the workout session
3. Gastrointestinal issues were measured using participant self-reporting at the end of the workout

## **Completion date**

31/12/2023

## **Eligibility**

### **Key inclusion criteria**

1. Trained adult males aged 18-35 years old
2. A minimum of six months of CrossFit® experience
3. Required to have previously completed the "Cindy" workout routine

### **Participant type(s)**

Healthy volunteer

### **Healthy volunteers allowed**

No

### **Age group**

Adult

**Lower age limit**

18 years

**Upper age limit**

35 years

**Sex**

Male

**Total final enrolment**

20

**Key exclusion criteria**

1. Diagnosed illnesses
2. Smoking
3. Recent use of medications or supplements (within the last three months)
4. Family history of seizures
5. Musculoskeletal injuries

**Date of first enrolment**

27/11/2023

**Date of final enrolment**

27/12/2023

## **Locations**

**Countries of recruitment**

Mexico

**Study participating centre**

**Faculty of Higher Studies of Zaragoza**

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Col. Ejército de Oriente

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## **Sponsor information**

**Organisation**

Universidad Nacional Autónoma de México

ROR

<https://ror.org/01tmp8f25>

## Funder(s)

### Funder type

University/education

### Funder Name

Universidad Nacional Autónoma de México

### Alternative Name(s)

National Autonomous University of Mexico, UNAM

### Funding Body Type

Government organisation

### Funding Body Subtype

Local government

### Location

Mexico

## Results and Publications

### Individual participant data (IPD) sharing plan

The datasets generated during and/or analyzed during the current study will be available upon request from Beat Knechtle, [beat.knechtle@hispeed.ch](mailto:beat.knechtle@hispeed.ch). The data includes individual participant data (IPD) related to performance outcomes, ratings of perceived exertion (RPE), blood pressure measurements, and any reported side effects. The data will be anonymized to protect participant confidentiality and will be shared with researchers upon request for the purpose of replicating or extending the findings of the study. Access will be granted to individuals or institutions involved in academic or scientific research, subject to approval by the study's ethics committee. Consent for data sharing was obtained from participants as part of the informed consent process.

### IPD sharing plan summary

Available on request

### Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
<a href="#">Participant information sheet</a>			21/10/2024	No	Yes