Clinical Trial Protocol
Iranian Registry of Clinical Trials

09 Nov 2026

Effect of different caffeine supplementation strategies on resistance training adaptations in low caffeine consumers

Protocol summary

Study aim
This study will compare the effects of different caffeine supplementation strategies on resistance training adaptations in low caffeine consumers.

Design
A randomized, double-blind, placebo-controlled, parallel-group, phase 3 study on 90 young men. The RAND function of Excel will be used for randomization.

Settings and conduct
Participants will be randomly assigned to CON, ESC, or PLA. Following a free-caffeine month, participants will complete 10 weeks of supervised resistance training (3 sessions/week; ~70–85% 1RM). The study will be conducted in Ankara, Turkey.

Participants/Inclusion and exclusion criteria
Inclusion criteria: recreationally resistance-trained men with 6 to 12 months of experience; aged between 18 and 25 years; low caffeine consumers. Exclusion criteria: suffering from pathology or injury, utilizing medications, supplements, or ergogenic aids, and missing > 5% of the training trials.

Intervention groups
Constant daily caffeine (CON) group: intake of 4 mg/kg/day caffeine; 2) gradually escalating dose caffeine (ESC) group: intake of 2 to 6 mg/kg/day caffeine across weeks; 3) Placebo (PLA) group: intake of 300 mg/day microcrystalline cellulose.

Main outcome variables
Maximal strength, muscular endurance, neuromuscular performance, muscle thickness, LBM, and FM will be assessed before and after the intervention.

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20231004059615N12**
Registration date: **2026-08-31, 1405/06/09**
Registration timing: **registered_while_recruiting**

Last update: **2026-08-31, 1405/06/09**
Update count: **0**

Registration date
2026-08-31, 1405/06/09

Registrant information
Name
Davar Khodadadi
Name of organization / entity
Country
Iran (Islamic Republic of)
Phone
+98 21 2263 3583
Email address
davar.khodadadi@yahoo.com

Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2026-08-27, 1405/06/05

Expected recruitment end date
2026-09-06, 1405/06/15

Actual recruitment start date
empty

Actual recruitment end date
empty

Trial completion date
empty

Scientific title
Effect of different caffeine supplementation strategies on resistance training adaptations in low caffeine consumers

Public title
Effect of caffeine supplementation strategies on resistance training adaptations

Purpose

Basic scienece

Inclusion/Exclusion criteria

Inclusion criteria:

Have complete physical and mental health. Do not smoke. Do not consume alcohol. Daily caffeine intake be less than 100 mg. Have 6 to 12 months of resistance training experience.

Exclusion criteria:

Suffering from pathology or injury Taking any medications or nutritional supplements within the past three months Missing > 5% of the training trials Having a history of caffeine intolerance

Age

From **18 years** old to **25 years** old

Gender

Male

Phase

3

Groups that have been masked

- Participant
- Investigator
- Outcome assessor
- Data analyser

Sample size

Target sample size: **90**

Randomization (investigator's opinion)

Randomized

Randomization description

To minimize potential differences between groups, participants will first be grouped based on their average one-repetition maximum strength in the squat, bench press, and lat pull-down exercises. The names of the subjects in each group will be entered into an Excel column; each subject will be randomly assigned a number using the RAND function (=RAND()); the numbers will then be sorted from smallest to largest. After that, subjects in each group will be randomly assigned to one of the three experimental groups: daily caffeine supplementation at a constant dose, daily caffeine supplementation at a gradually escalating dose, or placebo, using a 1:1:1 method.

Blinding (investigator's opinion)

Double blinded

Blinding description

Someone outside the study will prepare the supplement and placebo and will not be known to the participants or researchers until after the data analysis. Also, subjects will receive the supplement and placebo in an opaque capsule with a completely similar appearance and weight, and at the same time of day.

Placebo

Used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics Committee of the International Science and Technology University

Street address

Metromall Business F Blok Office, Dumlupınar 30 Ağustos Cad. No:2, Tanohan neighborhood

City

Ankara

Postal code

21,06824

Approval date

2026-08-21, 1405/05/30

Ethics committee reference number

202608-05

Health conditions studied

1

Description of health condition studied

Resistance training adaptations

ICD-10 code

ICD-10 code description

2

Description of health condition studied

Caffeine supplementation

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description

Skeletal muscle thickness

Timepoint

Pre-test and post-test

Method of measurement

By an ultrasound instrument

2

Description

Body composition

Timepoint

Pre-test and post-test

Method of measurement

By dual-energy X-ray absorptiometry

3

Description

Mascular strength

Timepoint

Pre-test and post-test

Method of measurement
By one repetition maximum (1RM) test

Secondary outcomes

1

Description
Muscular endurance
Timepoint
Pre-test and post-test
Method of measurement
By a repetitions-to-failure test on the back squat using a load corresponding to 60% of 1RM

2

Description
Jump height
Timepoint
Pre-test and post-test
Method of measurement
By the countermovement jump (CMJ) test on a force plat

3

Description
The flight-time-to-contraction-time (FT:CT) ratio
Timepoint
Pre-test and post-test
Method of measurement
By the countermovement jump (CMJ) test on a force plat

4

Description
Training session rating of perceived exertion (sRPE)
Timepoint
After each supervised training session during the study.
Method of measurement
By the Borg CR10 scale

5

Description
Cumulative training volume-load
Timepoint
During the intervention period (all training sessions)
Method of measurement
Calculated as the sum of lifted load using the formula (kilograms × repetitions × sets) accumulated during each training session.

Intervention groups

1

Description
First intervention group: Constant daily caffeine (CON) group, intake of 4 mg/kg/day caffeine;
Category
Lifestyle

2

Description
Second intervention group: gradually escalating dose caffeine (ESC) group, intake of 2 to 6 mg/kg/day caffeine across weeks;
Category
Lifestyle

3

Description
Control group: Placebo (PLA) group, intake of 300 mg/day microcrystalline cellulose.
Category
Placebo

Recruitment centers

1

Recruitment center
Name of recruitment center
INTERNATIONAL SCIENCE AND TECHNOLOGY UNIVERSITY
Full name of responsible person
Heidar Sajedi
Street address
Metromall Business F Blok Office, Dumlupınar 30 Ağustos Cad. No:2, Tanohan neighborhood
City
Ankara
Postal code
21,06824
Phone
+90 312 475 76 15
Email
heidar.sajedi@istu.edu.pl

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
INTERNATIONAL SCIENCE AND TECHNOLOGY UNIVERSITY
Full name of responsible person
Erdal Dursun
Street address
Metromall Business F Blok Office, Dumlupınar 30 Ağustos Cad. No:2, Tanohan neighborhood
City
Ankara
Postal code
21,06824
Phone
+90 312 475 76 15
Email
heidar.sajedi@istu.edu.pl
Grant name
Grant code / Reference number

Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
INTERNATIONAL SCIENCE AND TECHNOLOGY UNIVERSITY
Proportion provided by this source
100
Public or private sector
Private
Domestic or foreign origin
Foreign
Category of foreign source of funding
Sponsor: country of origin
Country of origin
IR
Type of organization providing the funding
Academic

Person responsible for general inquiries

Contact
Name of organization / entity
Islamic Azad University
Full name of responsible person
Davar Khodadadi
Position
Assistant professor
Latest degree
Ph.D.
Other areas of specialty/work
Physiology
Street address
Faculty of Physical Education and Sports Sciences, Velayat University Complex, Shahid Sohani St., Sohank
City
Tehran
Province
Tehran
Postal code
1955847781
Phone
+98 21 2263 3583
Fax
Email
davar.khodadadi@yahoo.com

Person responsible for scientific inquiries

Contact
Name of organization / entity
Islamic Azad University
Full name of responsible person
Davar Khodadadi
Position
Assistant professor
Latest degree
Ph.D.
Other areas of specialty/work
Physiology
Street address
Faculty of Physical Education and Sports Sciences, Velayat University Complex, Shahid Sohani St., Sohank
City
Tehran
Province
Tehran
Postal code
1955847781
Phone
+98 21 2263 3583
Fax
Email
davar.khodadadi@yahoo.com

Person responsible for updating data

Contact
Name of organization / entity
Islamic Azad University
Full name of responsible person
Davar Khodadadi
Position
Assistant professor
Latest degree
Ph.D.
Other areas of specialty/work
Physiology
Street address
Faculty of Physical Education and Sports Sciences, Velayat University Complex, Shahid Sohani St., Sohank
City
Tehran
Province
Tehran
Postal code
1955847781
Phone
+98 21 2263 3583
Fax
Email
davar.khodadadi@yahoo.com

Sharing plan

Deidentified Individual Participant Data Set (IPD)
Yes - There is a plan to make this available
Study Protocol
Yes - There is a plan to make this available
Statistical Analysis Plan
Not applicable
Informed Consent Form
No - There is not a plan to make this available
Clinical Study Report
Not applicable
Analytic Code
Not applicable
Data Dictionary
Not applicable
Title and more details about the data/document
All data collected during the study will be shareable after

de-identifying the subjects.

When the data will become available and for how long

The data will be published after the extracted articles are accepted.

To whom data/document is available

All people

Under which criteria data/document could be used

All data collected during the study will be shareable after de-identifying the subjects. The requester will only be permitted to use the data for meta-analysis reviews.

From where data/document is obtainable

Corresponding author: Davar Khodadadi, Faculty of Physical Education and Sports Sciences, Islamic Azad University Central Tehran Branch, Tehran, Iran. Email: davar.khodadadi@yahoo.com

What processes are involved for a request to access data/document

Sending an email request to the corresponding author: Davar Khodadadi, Email: davar.khodadadi@yahoo.com

Comments