Clinical Trial Protocol
Iranian Registry of Clinical Trials

08 Nov 2026

The effect of partial sleep deprivation and caffeine supplementation on anaerobic performance in active women

Protocol summary

Study aim
The effect of late-night sleep deprivation and caffeine supplementation on anaerobic performance in active women.

Design
A quasi-experimental, single-blind, crossover, 14 participants per group, applied trial study

Settings and conduct
Fourteen subjects will consume caffeine supplements and a placebo in a single-blind crossover design. This study will be conducted in the physiology laboratory of Alzahra University, Tehran. Subjects will attend the laboratory in four separate sessions to perform the Wingate test to evaluate anaerobic power. The test sessions are as follows: In the first session, the subjects will appear in the laboratory at 4 PM after a full night's sleep from 11 PM to 8 AM and will perform the Wingate test. In the second session, the subjects will perform the Wingate test after a night of partial sleep deprivation (going to bed at 11 PM and waking up at 4 AM, then not sleeping until the test). In the third and fourth sessions, the subjects will perform the Wingate anaerobic test after a night of partial sleep deprivation and attending the laboratory one hour after consuming a caffeine supplement (6 mg of caffeine per kilogram of body weight) or a placebo (wheat flour).

Participants/Inclusion and exclusion criteria
1- Active women aged 18-28 2- Have a normal body mass index (19-24) 3- Regular menstrual cycle 4- Consume a maximum of 70 mg of caffeine in the daily diet 5- Enjoy a normal night's sleep (sleeping hours range from 11-12 pm to 7-8 am)

Intervention groups
Subjects will be in a group for 4 sessions in a crossover manner, taking caffeine supplements and placebo, in the laboratory to perform the Wingate test to assess lower body anaerobic power.

Main outcome variables
Late-night sleep deprivation, caffeine supplementation, anaerobic performance

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20241115063714N1**
Registration date: **2025-02-06, 1403/11/18**
Registration timing: **registered_while_recruiting**

Last update: **2025-02-06, 1403/11/18**
Update count: **0**

Registration date
2025-02-06, 1403/11/18

Registrant information

Name
Zahra Vahidipour

Name of organization / entity
Al-Zahra University, Tehran

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Iran (Islamic Republic of)

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Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2024-11-10, 1403/08/20

Expected recruitment end date
2025-03-10, 1403/12/20

Actual recruitment start date
empty

Actual recruitment end date
empty

Trial completion date
empty

Scientific title
The effect of partial sleep deprivation and caffeine supplementation on anaerobic performance in active women

Public title
The effect of sleep deprivation and caffeine supplementation on anaerobic performance in active women.

Purpose
Basic scienece

Inclusion/Exclusion criteria
Inclusion criteria:
Young women aged 18 to 28 years old from Tehran with a two-month history of physical activity, not consuming more than 70 milligrams of caffeine in their daily diet, and having a natural 8-hour night sleep.
Exclusion criteria:
Excessive caffeine consumption in the daily diet and irregular sleep.

Age
From **18 years** old to **28 years** old

Gender
Female

Phase
N/A

Groups that have been masked

- Participant
- Outcome assessor

Sample size
Target sample size: **14**

Randomization (investigator's opinion)
N/A

Randomization description

Blinding (investigator's opinion)
Double blinded

Blinding description
In this study, the participant is blinded; subjects do not know which intervention they receive in each test session. This is to prevent it from affecting their performance during the Wingate test. and the outcome evaluator in the laboratory who collects the data

Placebo
Used

Assignment
Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Al-Zahra University Ethics Committee
Street address
Alzahra University, Deh Vanak, Tehran
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Terhran
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Tehran
Postal code
1993891176

Approval date
2024-06-01, 1403/03/12

Ethics committee reference number
IR.ALZAHRA.REC.1403.015

Health conditions studied

1

Description of health condition studied
Sleep deprivation at the end of the night

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description
Anaerobic Performance

Timepoint
In four sessions following three nights of partial sleep deprivation and one night of full sleep

Method of measurement
Wingate Anaerobic Test

Secondary outcomes

empty

Intervention groups

1

Description
Intervention group: After one night of partial sleep deprivation, one hour before performing the Wingate test, the subjects will consume a caffeine supplement at a dose of 6 mg per kg of body weight. The duration of the present protocol is two months, and all tests will be conducted during the second week of the follicular phase of the menstrual cycle.

Category
N/A

Recruitment centers

1

Recruitment center
Name of recruitment center
Al-Zahra University

Full name of responsible person
Leila Ghazaleh
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Sponsors / Funding sources

1

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Grant name
-
Grant code / Reference number
-
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Al-Zahra University
Proportion provided by this source
1
Public or private sector
Public
Domestic or foreign origin
Domestic
Category of foreign source of funding
empty
Country of origin
Type of organization providing the funding
Academic

Person responsible for general inquiries

Contact
Name of organization / entity
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Sharing plan

Deidentified Individual Participant Data Set (IPD)

No - There is not a plan to make this available

Justification/reason for indecision/not sharing IPD

No more information available.

Study Protocol

No - There is not a plan to make this available

Statistical Analysis Plan

No - There is not a plan to make this available

Informed Consent Form

No - There is not a plan to make this available

Clinical Study Report

No - There is not a plan to make this available

Analytic Code

No - There is not a plan to make this available

Data Dictionary

No - There is not a plan to make this available