Clinical Trial Protocol
Iranian Registry of Clinical Trials

07 Nov 2026

Time-of-Day Modulates Caffeine Ergogenicity in Adolescent Futsal Players: Effects on Repeated-Sprint Performance, Readiness, and Mood

Protocol summary

Study aim

Determining the Effect of Time of Day on the Ergogenic Effects of Acute Caffeine Ingestion in Adolescent Futsal Players: Effects on Repeated-Sprint Performance, Readiness, and Mood

Design

This study is a randomized, double-blind, placebo-controlled, counterbalanced crossover trial conducted on 24 adolescent futsal players.

Settings and conduct

Testing sessions are conducted in an indoor futsal facility under standardized environmental conditions in Islamic Azad University Shahrekord branch. Morning trials are performed between 08:00 and 09:00 h and evening trials between 17:00 and 18:00 h. Playing surface, footwear, testing equipment, warm-up, recovery intervals, and verbal instructions are standardized across sessions.

Participants/Inclusion and exclusion criteria

Participants are male adolescent futsal players aged 14–18 years with at least 2 years of structured futsal training and at least 3 training sessions per week. Individuals with recent injury, sleep-related disorders, use of medications affecting performance or sleep, high habitual caffeine intake, caffeine hypersensitivity are excluded.

Intervention groups

Each participant completes four experimental conditions in a crossover design: caffeine in the morning, placebo in the morning, caffeine in the evening, and placebo in the evening. Anhydrous caffeine at a dose of 3 milligrams per kilogram of body mass or placebo in the form of microcrystalline cellulose is ingested 60 minutes before testing. A washout interval of at least 72 hours separates the experimental sessions.

Main outcome variables

Mean time of the Repeated Sprint Ability test, The best time and total time of the Repeated Sprint Ability test , Repeated Sprint Ability decrement, Countermovement Jump height , 10- and 20-m sprint times, Illinois agility test time, Rate of Perceived Exertion , alertness, fatigue, motivation, readiness to perform, Brunel Mood Scale indices.

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20241205063953N5**
Registration date: **2026-05-30, 1405/03/09**
Registration timing: **prospective**

Last update: **2026-05-30, 1405/03/09**
Update count: **0**

Registration date

2026-05-30, 1405/03/09

Registrant information

Name

akram jafari

Name of organization / entity

Country

Iran (Islamic Republic of)

Phone

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Email address

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2026-06-05, 1405/03/15

Expected recruitment end date

2026-06-20, 1405/03/30

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Time-of-Day Modulates Caffeine Ergogenicity in Adolescent Futsal Players: Effects on Repeated-Sprint Performance, Readiness, and Mood

Public title

Effect of Time of Day on the Ergogenic Responses to Caffeine in Adolescent Futsal Players

Purpose

Health service research

Inclusion/Exclusion criteria

Inclusion criteria:

Male adolescent futsal players aged 14–18 years At least 2 years of structured futsal training experience Participation in organized training at least 3 sessions per week Good general health and no musculoskeletal injury during the previous 3 months No diagnosed cardiovascular, metabolic, neurological, psychiatric, or sleep-related disorder

Exclusion criteria:

Habitual consumption of caffeine greater than 3 milligrams per kilogram of body mass per day Known caffeine hypersensitivity or intolerance

Age

From **14 years** old to **18 years** old

Gender

Male

Phase

N/A

Groups that have been masked

- Participant
- Care provider
- Investigator
- Outcome assessor
- Data analyser
- Data and Safety Monitoring Board

Sample size

Target sample size: **24**

Randomization (investigator's opinion)

N/A

Randomization description

Blinding (investigator's opinion)

Triple blinded

Blinding description

Caffeine and placebo capsules are identical in shape, color, size, appearance, and packaging. Caffeine is administered as anhydrous caffeine at 3 $mg \cdot kg^{-1}$ body mass, and placebo capsules contain microcrystalline cellulose. Supplement preparation, coding, and packaging are performed by an independent person. Participants, coaches, outcome assessors, researchers present during testing, and data analysts remain blinded to supplement allocation until completion of analyses. After each experimental trial, participants' guesses regarding supplement identity are recorded to evaluate blinding success.

Placebo

Used

Assignment

Crossover

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Institutional Research Ethics Committee of Islamic Azad University, Shahrekord Branch

Street address

Islamic Azad University Shahrekord Branch, Rahmatieh

City

Shahrekord

Province

Chahar-Mahal-va-Bakhtiari

Postal code

8818730003

Approval date

2023-11-11, 1402/08/20

Ethics committee reference number

IR.IAU.SHK.REC.1402.102

Health conditions studied

1

Description of health condition studied

The study was conducted in healthy adolescent athletes and aims to examine the acute effect of caffeine ingestion on sports performance, perceptual readiness, and mood during morning and evening testing. This is not a disease-focused trial.

ICD-10 code

Z00.0

ICD-10 code description

Encounter for general adult medical examination

Primary outcomes

1

Description

Repeated-sprint ability mean time

Timepoint

During each of the four experimental sessions, after caffeine or placebo ingestion and standardized warm-up.

Method of measurement

Six maximal 20-m sprints interspersed with 20 s passive recovery; mean time across six sprints measured using electronic timing gates.

2

Description
Repeated-sprint ability total time
Timepoint
During each of the four experimental sessions, after caffeine or placebo ingestion and standardized warm-up.
Method of measurement
Sum of times from six 20-m sprints in the RSA protocol.

3

Description
Best sprint time during the repeated-sprint
Timepoint
During each of the four experimental sessions, after caffeine or placebo ingestion and standardized warm-up.
Method of measurement
Fastest time among six 20-m sprints measured using electronic timing gates.

4

Description
Percentage sprint decrement
Timepoint
During each of the four experimental sessions, after caffeine or placebo ingestion and standardized warm-up.
Method of measurement
Calculated from sprint times obtained during the RSA protocol.

5

Description
Countermovement jump height
Timepoint
During each of the four experimental sessions, after caffeine or placebo ingestion and standardized warm-up.
Method of measurement
Three maximal trials with hands on hips; the best jump height retained for analysis.

6

Description
10-m and 20-m sprint times
Timepoint
During each of the four experimental sessions, after caffeine or placebo ingestion and standardized warm-up.
Method of measurement
Two maximal trials from a standing start 0.5 m behind the first timing gate; fastest time measured using electronic timing gates.

7

Description
Illinois agility test
Timepoint
During each of the four experimental sessions, after caffeine or placebo ingestion and standardized warm-up.
Method of measurement
Two maximal trials separated by 4 min passive recovery; best time retained for analysis.

8

Description
Rating of perceived exertion
Timepoint
During each of the four experimental sessions, after caffeine or placebo ingestion and standardized warm-up.
Method of measurement
Borg scale

9

Description
Mood indices
Timepoint
During each of the four experimental sessions, after caffeine or placebo ingestion and standardized warm-up.
Method of measurement
Brunel Mood Scale scored according to published procedures.

Secondary outcomes

empty

Intervention groups

1

Description
First intervention group: Morning caffeine. The participant receives anhydrous caffeine capsules at 3 $mg \cdot kg^{-1}$ body mass with 250 mL water, 60 min before the morning testing session. Morning testing is performed between 08:00 and 09:00 h.
Category
N/A

2

Description
Second intervention group: : Morning placebo. The participant receives placebo capsules containing microcrystalline cellulose, visually identical to caffeine capsules, with 250 mL water, 60 min before the morning testing session. Morning testing is performed between 08:00 and 09:00 h.
Category
N/A

3

Description
Third intervention group: Evening caffeine. The participant receives anhydrous caffeine capsules at 3 $mg \cdot kg^{-1}$ body mass with 250 mL water, 60 min before the evening testing session. Evening testing is performed between 17:00 and 18:00 h.
Category
N/A

4

Description
Fourth intervention group: Evening placebo. The participant receives placebo capsules containing microcrystalline cellulose, visually identical to caffeine capsules, with 250 mL water, 60 min before the evening testing session. Evening testing is performed between 17:00 and 18:00 h.
Category
N/A

Recruitment centers

1

Recruitment center
Name of recruitment center
Islamic Azad University Shahrekord Branch
Full name of responsible person
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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
Islamic Azad University
Proportion provided by this source
100
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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Akram Jafari
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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
Yes - There is a plan to make this available
Informed Consent Form
Yes - There is a plan to make this available
Clinical Study Report
Yes - There is a plan to make this available
Analytic Code
Yes - There is a plan to make this available
Data Dictionary
Yes - There is a plan to make this available
Title and more details about the data/document
Performance, perceptual, mood, and safety data across morning caffeine, morning placebo, evening caffeine, and evening placebo conditions. after deidentification, data will include RSA indices, CMJ, sprint, agility, RPE, VAS, BRUMS, and adverse-symptom variables.
When the data will become available and for how long
From publication of the article for 6 months
To whom data/document is available
Academic and scientific researchers with a reasonable request and a clearly specified research purpose.
Under which criteria data/document could be used
Data may be used only for scientific purposes, reanalysis, meta-analysis, or methodological review; commercial use or attempts to identify participants are not permitted.
From where data/document is obtainable
From the corresponding author manager
What processes are involved for a request to access data/document
Requests should be submitted by email and include the research purpose, requested data, and planned analyses. After review and approval, data will be shared as a secure digital file. Estimated review time: 2–4 weeks.
Comments