

Effects of caffeine and music on anaerobic exercise performance

Submission date 14/03/2024	Recruitment status No longer recruiting	☐ Prospectively registered ☐ Protocol
Registration date 18/03/2024	Overall study status Completed	☐ Statistical analysis plan ☒ Results
Last Edited 01/04/2026	Condition category Other	☐ Individual participant data

Plain English summary of protocol

Background and study aims.

Listening to music and consuming caffeine are two widely used ways to enhance athletic performance, but the effects of combining a music intervention with caffeine in healthy active volunteers are currently unclear. The aim of this study is to investigate the effects of acute caffeine intake combined with a music intervention on anaerobic capacity in physically active volunteers.

Who can participate?

Healthy men aged over 18 years

What does the study involve?

All participants will be subjected to three conditions in a random order:

1. Caffeine + Music : Caffeine intake of 3 mg/kg and listening to self-selected music during warm-up.
2. Music: Placebo intake of 200 mg and listening to self-selected music during warm-up.
3. Control: no caffeine and no music.

Anaerobic performance is measured during each experiment.

What are the possible benefits and risks of participating?

Participants will be exposed to a variety of pre-competition warm-up protocols and nutritional supplementation strategies, and only a short intervention will be needed to improve their anaerobic exercise performance to a certain extent.

Strenuous exercise may be physically uncomfortable for subjects, and in addition, caffeine intake may cause adverse effects such as headaches, palpitations, insomnia, anxiety, irritability, and stomach upset. However, for most people, ingestion at appropriate doses usually does not cause serious physical harm.

Where is the study run from?

Beijing Sport University (China)

When is the study starting and how long is it expected to run for?

August 2023 to April 2024

Who is funding the study?
Investigator initiated and funded

Who is the main contact?
Bopeng Qiu, qiubopeng@bsu.edu.cn

Contact information

Type(s)

Public, Scientific, Principal investigator

Contact name

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Additional identifiers

Study information

Scientific Title

Effects of caffeine intake combined with listening to self-selected music during warm-up on Wingate performance: a double-blind, randomized crossover study

Study objectives

It is hypothesised that caffeine combined with music will have a synergistic effect on Wingate performance

Ethics approval required

Ethics approval required

Ethics approval(s)

Approved 28/09/2023, Sports Science Experiment Ethics Committee of Beijing Sport University (Beijing Sports University, No. 48 Xinxu Road, Haidian District, Beijing, 100084, China; +86 (0)10 62989306; mt5345916@163.com), ref: 2023225H

Primary study design

Interventional

Study design

Single-center interventional double-blind randomized controlled trial

Study type(s)

Efficacy, Other

Health condition(s) or problem(s) studied

Performance improvement

Interventions

All participants will be subjected to three conditions in a randomized crossover design. A computer randomization method will be used (random.org).

Caffeine + Music intervention group: Caffeine intake of 3 mg/kg and listening to self-selected music during warm-up.

Music intervention group: Placebo intake of 200 mg and listening to self-selected music during warm-up.

Control group: no caffeine and no music.

Participants participated in the intervention trial every other week over a period of approximately 3 weeks.

Intervention Type

Supplement

Primary outcome(s)

Anaerobic exercise performance will be measured during each experiment using the 30s-Wingate (WAnT) test

Key secondary outcome(s)

1. Heart rate measured using Polar H9 monitor

2. Rate of perceived exertion (RPE) measured using the Borg scale, 6 to 20

3. Feelings measured using a questionnaire on an 11-point scale, -5 to +5

4. Motivation measured using a questionnaire on a 10-point Likert scale, 0 to +10

The results of these four indicators will be recorded by two specialized researchers at the end of each WAnT test

5. Adverse reactions to supplement intake will be collected by a dedicated researcher who will guide the subjects through a questionnaire at a fixed time in the morning of the day after the experiment

Completion date

10/04/2024

Eligibility

Key inclusion criteria

1. No neuromusculoskeletal disorders

2. Age >18 years

3. Possessing a health condition that would allow them to complete the experimental tests

4. Daily caffeine intake less than 50 mg/day

Participant type(s)

Learner/student

Healthy volunteers allowed

No

Age group

Mixed

Lower age limit

18 Years

Upper age limit

100 Years

Sex

Male

Total final enrolment

24

Key exclusion criteria

1. Smoking
2. Alcohol consumption
3. Caffeine allergy
4. The presence of diseases and abnormalities of the ear or hearing

Date of first enrolment

01/12/2023

Date of final enrolment

01/03/2024

Locations**Countries of recruitment**

China

Study participating centre

Beijing Sport University

No. 48 Information Road

Haidian District

Beijing

China

100084

Sponsor information

Organisation

Beijing Sport University

ROR

<https://ror.org/03w0k0x36>

Funder(s)

Funder type

Other

Funder Name

Investigator initiated and funded

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary

Not expected to be made available

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		18/01/2025	01/04/2026	Yes	No