Clinical Trial Protocol
Iranian Registry of Clinical Trials

08 Nov 2026

Effects of Six Weeks of Beta-Alanine Supplementation on Exercise Performance and Fatigue-Related Outcomes in Competitive Adolescent Female Karate Athletes: A Randomized, Double-Blind, Placebo-Controlled Trial

Protocol summary

Study aim

This study examined whether six weeks of beta-alanine supplementation improves physical performance and fatigue-related outcomes in competitive adolescent female karate athletes.

Design

A randomized, double-blind, placebo-controlled clinical trial with parallel groups was conducted in 24 adolescent female karate athletes aged 15–18 years. Participants were allocated to two parallel groups of 12: (1) an intervention group receiving beta-alanine (3.2 g/day) for six weeks, and (2) a control group receiving a placebo for six weeks. Random allocation was performed using a computer-generated random-number sequence by an individual who was not involved in outcome assessment.

Settings and conduct

The study was conducted at karate clubs in Mahabad. The study was conducted using a double-blind design. The beta-alanine and placebo capsules were matched in size, color, weight, appearance, and packaging. An independent individual handled the distribution and coding of the supplements. Participants and outcome assessors remained unaware of group allocation until the final assessments.

Participants/Inclusion and exclusion criteria

Eligible participants were female karate athletes aged 15–18 years who had at least three years of continuous karate training, held a brown belt (Dan 1) or higher, and had participated in at least one provincial-level or higher competition during the previous year. Additional inclusion criteria were absence of acute or chronic cardiovascular, metabolic, renal, or hepatic disease;

Intervention groups

The beta-alanine supplementation group and the control group, which receives a placebo.

Main outcome variables

400-m running time; Standing broad-jump distance; Multidimensional fatigue (MFI); Rating of perceived exertion (RPE); Post-exercise muscle soreness; Simple visual reaction time

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20201223049811N2**
Registration date: **2026-10-19, 1405/07/27**
Registration timing: **retrospective**

Last update: **2026-10-19, 1405/07/27**
Update count: **0**

Registration date

2026-10-19, 1405/07/27

Registrant information

Name

Mohammad Azizi

Name of organization / entity

Razi university

Country

Iran (Islamic Republic of)

Phone

+98 83 3832 4201

Email address

mo.azizi@razi.ac.ir

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2026-04-14, 1405/01/25

Expected recruitment end date
2026-06-15, 1405/03/25
Actual recruitment start date
2026-04-18, 1405/01/29
Actual recruitment end date
2026-06-04, 1405/03/14
Trial completion date
2026-06-04, 1405/03/14

Scientific title
Effects of Six Weeks of Beta-Alanine Supplementation on Exercise Performance and Fatigue-Related Outcomes in Competitive Adolescent Female Karate Athletes: A Randomized, Double-Blind, Placebo-Controlled Trial

Public title
"The Effect of Beta-Alanine Supplementation on Athletic Performance in Adolescent Female Karate Athletes"
Purpose
Health service research
Inclusion/Exclusion criteria
Inclusion criteria:
Eligible participants were female karate athletes aged 15–18 years who had at least three years of continuous karate training, held a brown belt (Dan 1) or higher, and had participated in at least one provincial-level or higher competition during the previous year. n absence of acute or chronic cardiovascular, metabolic, renal, or hepatic disease; no known sensitivity to the supplement ingredients maintenance of a regular pattern of physical activity
Exclusion criteria:
voluntary withdrawal consumption of less than 90% of the assigned supplement, absence from more than two scheduled training sessions, development of a supplementation-related adverse event requiring medical attention illness or injury preventing completion of the performance assessments.
Age
From **15 years** old to **18 years** old
Gender
Female

Phase
N/A
Groups that have been masked

- Participant
- Investigator

Sample size
Target sample size: **30**
Actual sample size reached: **24**
Randomization (investigator's opinion)
Randomized
Randomization description
After eligibility screening and baseline assessment, participants were randomly allocated to the beta-alanine or placebo group using a computer-generated random-number sequence. Allocation was performed by an independent individual who was not involved in subsequent outcome assessments.
Blinding (investigator's opinion)
Double blinded
Blinding description
To ensure a double-blind design and minimize bias, the beta-alanine supplement and placebo (maltodextrin) were prepared in capsules identical in appearance, size, color, texture, weight, and smell. Both supplements were packaged in identical, opaque containers. Coding and labeling of the containers (e.g., as 'Code A' and 'Code B') were conducted by an independent researcher who was not involved in participant recruitment, training supervision, or outcome assessments. Consequently, both the participants and the evaluators conducting the physical performance tests remained blind to group allocations throughout the intervention and data collection. The allocation code was concealed in a sealed envelope and remained undisclosed until all statistical analyses were completed
Placebo
Used
Assignment
Other
Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Ethics committee of Razi University
Street address
Baghe abrisham
City
Kermanshah
Province
Kermanshah
Postal code
6714414971
Approval date
2025-07-02, 1404/04/11
Ethics committee reference number
IR.RAZI.REC.1404.018

Health conditions studied

1

Description of health condition studied
athletes
ICD-10 code
ICD-10 code description

Primary outcomes

1

Description
400-m running time
Timepoint

Before and 6 weeks after supplementation

Method of measurement

The 400-meter running time was measured and recorded in seconds using a stopwatch

Secondary outcomes

1

Description

Reaction time

Timepoint

before and after 6-week supplementation

Method of measurement

Reaction Time Apparatus

Intervention groups

1

Description

Intervention group: 6 weeks of exercise training and beta-alanine supplementation (3.2 g/day)

Category

Treatment - Other

2

Description

Control group: 6 weeks of exercise training and placebo (starch) supplementation.

Category

Treatment - Other

Recruitment centers

1

Recruitment center

Name of recruitment center

Mahabad Club

Full name of responsible person

Aahra Aliyari

Street address

Shahid Rezaee

City

Mahabad

Province

West Azarbaijan

Postal code

767676543

Phone

+98 918 374 6103

Email

azizimihammad@gmail.com

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Razi University

Full name of responsible person

Worya tahmasebi

Street address

Daneshgah

City

Kermanshah

Province

Kermanshah

Postal code

6714414971

Phone

+98 918 873 7001

Email

worya2626@gmail.com

Grant name

Grant code / Reference number

Is the source of funding the same sponsor organization/entity?

Yes

Title of funding source

Razi 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

Razi university

Full name of responsible person

Mohammad Azizi

Position

Associate Professor

Latest degree

Ph.D.

Other areas of specialty/work

Physiology

Street address

Baghe abrisham

City

Kermanshah

Province

Kermanshah

Postal code

6714414971

Phone

+98 918 374 6103

Email

azizimihammad@gmail.com

Person responsible for scientific inquiries

Contact

Name of organization / entity
Razi university

Full name of responsible person
Mohammad Azizi

Position
Associate professor

Latest degree
Ph.D.

Other areas of specialty/work
Physiology

Street address
Baghe abrisham

City
Kermanshah

Province
Kermanshah

Postal code
6714414971

Phone
+98 918 374 6103

Email
azizimihammad@gmail.com

Person responsible for updating data

Contact

Name of organization / entity
Razi university

Full name of responsible person
Mohammad Azizi

Position
Associate professor

Latest degree
Ph.D.

Other areas of specialty/work
Physiology

Street address
Baghe abrisham

City
Kermanshah

Province
Kermanshah

Postal code
6714414971

Phone
+98 918 374 6103

Email
azizimihammad@gmail.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
Yes - There is a plan to make this available

Informed Consent Form
Yes - There is a plan to make this available

Clinical Study Report
Not applicable

Analytic Code
Undecided - It is not yet known if there will be a plan to make this available

Data Dictionary
Undecided - It is not yet known if there will be a plan to make this available

Title and more details about the data/document
The data have been coded, and the participants cannot be identified. The information will be reported anonymously in the thesis and in any article published later.

When the data will become available and for how long
from 2027

To whom data/document is available
researcher

Under which criteria data/document could be used
Only the researchers and the editor of the journal in which we intend to publish the article in the future will have access to the data.

From where data/document is obtainable
Supervisor: Mohammad Azizi, faculty member at Razi University. azizimihammad@gmail.com

What processes are involved for a request to access data/document
The request and the reason for requesting the data will be reviewed, and the data will then be emailed as soon as possible (within 48 hours).

Comments