

Clinical Trial Protocol

Iranian Registry of Clinical Trials

05 Jul 2026

Effects of Acute β -Alanine supplementation on anaerobic performance and muscle fatigue in athletic female

Protocol summary

Study aim

Since fatigue factors in female athletes increase rapidly, it is necessary to reduce these factors with appropriate methods. Due to the fact that the production of beta-alanine (BA) in the human body is limited and less in women than men, and the response to it is higher in trained people than in untrained people. Beta-alanine (BA) supplement, an ergogenic supplement and carnosine precursor, has been suggested to reduce or delay muscle fatigue and improve function. Beta-alanine (BA) can increase the level of muscle carnosine concentration and increases the buffering role in intense and short-term anaerobic exercise.

Design

The statistical population of this study consisted of 20-30-year-old girls who had done regular exercise at least 3 times a week for the past year. Then, 10 qualified people who meet the inclusion criteria will be selected as a sample. Subjects will be coded and divided into two groups of supplement and placebo based on random sampling by Excel software. One week after the implementation of the research protocol, the groups will change in terms of supplements and placebo and will implement the test protocol again.

Settings and conduct

The subjects will refer to the Faculty of Physical Education laboratory of Guilan University in 3 sessions. In the first session, tests related to physical fitness will be measured. In the second session, which will be held 5 days after the first session, they will be present in the laboratory at 8 in the morning and perform the protocol after warming up. Subjects will perform MVC tests for 3 seconds.

Participants/Inclusion and exclusion criteria

No musculoskeletal damage and physical problems affecting the research results

Intervention groups

Beta-alanine supplementation group; without supplement or placebo group

Main outcome variables

Maximum voluntary contraction muscle power rate of perceived exertion rate of pain

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20190720044283N2**

Registration date: **2021-09-01, 1400/06/10**

Registration timing: **retrospective**

Last update: **2021-09-01, 1400/06/10**

Update count: **0**

Registration date

2021-09-01, 1400/06/10

Registrant information

Name

Siamand Abdollahpour

Name of organization / entity

Guilan university of medical sciences

Country

Iran (Islamic Republic of)

Phone

+98 13 3369 0274

Email address

siamand.abp1@gmail.com

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2021-08-23, 1400/06/01

Expected recruitment end date

2021-08-27, 1400/06/05

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Effects of Acute β -Alanine supplementation on anaerobic performance and muscle fatigue in athletic female

Public title

Acute effect of beta-alanine supplementation on anaerobic function and muscle fatigue in female athletes

Purpose

Other

Inclusion/Exclusion criteria**Inclusion criteria:**

Trained girls have had at least 3 regular workout sessions a week in the past year No musculoskeletal injuries and physical problems

Exclusion criteria:

Existence of musculoskeletal injury and taking medication or supplements Physician not confirming physical health Alcohol or tobacco consumption

Age

From **20 years** old to **30 years** old

Gender

Female

Phase

1-2

Groups that have been masked

- Participant
- Care provider
- Investigator
- Outcome assessor
- Data analyser

Sample size

Target sample size: **10**

Randomization (investigator's opinion)

Randomized

Randomization description

Using the random selection method by Excel software by writing the names of the subjects in cells and then in the other part, we specify the position of the desired groups in two separate sections of 5 subjects. Then in these two sections, we will execute the following code so that they are randomly placed in groups of 5 subjects.

```
=INDEX($A$3:$A$12,RANDBETWEEN(1,ROWS($A$3:$A$12)),1)
```

Blinding (investigator's opinion)

Double blinded

Blinding description

In this study, one group will take 6 grams of beta-alanine supplement in capsules and the other group will take a placebo containing sucrose. It should be noted that capsules containing supplements or placebos will be coded by a third party who has no conflict of interest in the present study and is present merely as an observer and will distribute it with the knowledge of each individual supplement.

Placebo

Used

Assignment

Crossover

Other design features**Secondary Ids**

empty

Ethics committees**1****Ethics committee****Name of ethics committee**

Research Ethics Committee of Sports Science Institute (SSRI)

Street address

Fifth Alley, Mir Emad St., Ostad Motahhari St.

City

Tehran

Province

Tehran

Postal code

1587958711

Approval date

2021-07-20, 1400/04/29

Ethics committee reference number

IR.SSRC.REC.1400.079

Health conditions studied**1****Description of health condition studied**

Prevent depletion of energy resources during physical activity, Reduce or delay muscle fatigue and improve performance, Increase anaerobic power

ICD-10 code**ICD-10 code description****Primary outcomes****1****Description**

Electromyographic (EMG) indices of the quadriceps muscle

Timepoint

Implement the protocol in two steps with a one week wash-out interval and before and after supplementation

Method of measurement

Electromyography device (Muscle Tester ME 3000P8 Mega Electronic Ltd, Finland) with sampling frequency HZ 2000 and bandwidth Hz / 3 Db 450-30

2**Description**

Maximal Voluntary Contraction (MVC)

Timepoint

Before and after supplementation

Method of measurement

Manual Muscle Testing Device (MMT, North coast, USA)

3

Description

Rate of Perceived Exertion (RPE)

Timepoint

Immediately after the fatigue protocol (consecutive side jump)

Method of measurement

Borg scale (6-20)

4

Description

Muscle Pain

Timepoint

Immediately, 24 and 48 hours after the fatigue protocol

Method of measurement

Visual Analogue Scale (VAS)

5

Description

Muscle Power

Timepoint

Before and after supplementation and Immediately after the fatigue protocol

Method of measurement

Johnson's and Bahamonde Method

6

Description

Sense of Fatigue

Timepoint

Immediately, 24 and 48 hours after the fatigue protocol

Method of measurement

Sense of Fatigue Questionnaire

Secondary outcomes

empty

Intervention groups

1

Description

Intervention group: Beta-alanine supplementation; The intervention group took 4.5 g of beta-alanine in capsules and the other group took a placebo containing the same amount of sucrose as beta-alanine. One week after the effects of the supplement disappear, in the third session, the two groups of subjects will change in terms of supplementation, and the group that uses the beta-alanine will use a placebo.

Category

Other

2

Description

Control group: The placebo group consumes 4.5 grams of sucrose in capsules. After one week, in the third session, the two groups of subjects will change in terms of supplementation, and the group that uses the placebo will use beta-alanine.

Category

Placebo

Recruitment centers

1

Recruitment center

Name of recruitment center

Faculty of Physical Education and Sports Sciences

Full name of responsible person

Dr. Javad Mehrabani

Street address

5th Kilometer of Persian Gulf Highway, Rasht, Guilan Province, Iran

City

Rasht

Province

Guilan

Postal code

4199613776

Phone

+98 13 3366 9027

Email

int@guilan.ac.ir

Web page address

<https://fe.guilan.ac.ir/>

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

University of Guilan

Full name of responsible person

Seyed Ziaaldein MirHossini

Street address

Rasht, km 6, Rasht-Qazvin road, Guilan University complex, in front of the central university organization, Vice Chancellor for Research and Technology

City

Rasht

Province

Guilan

Postal code

4199613776

Phone

+98 13 3369 0348

Fax

+98 13 3369 0447

Email

mehrabanij@guilan.ac.ir

Web page address

<https://resvp.guilan.ac.ir/%D8%B5%D9%81%D8%AD%D9%87-%D9%86%D8%AE%D8%B3%D8%AA>

Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
University of Guilan
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

Faculty of Physical Education and Sports Sciences,
University of Guilan

Full name of responsible person

Dr. Javad Mehrabani

Position

Assistant Professor

Latest degree

Ph.D.

Other areas of specialty/work

Exercise physiology

Street address

8 km of Tehran road, Faculty of Physical Education
and Sports Sciences, University of Guilan

City

Rasht

Province

Guilan

Postal code

4199843653

Phone

+98 911 230 9074

Email

mehrabanij@guilan.ac.ir

Person responsible for scientific inquiries

Contact

Name of organization / entity

Faculty of Physical Education and Sports Sciences,
University of Guilan

Full name of responsible person

Dr. Javad Mehrabani

Position

Assistant Professor

Latest degree

Ph.D.

Other areas of specialty/work

Exercise physiology

Street address

8 km of Tehran road, Faculty of Physical Education
and Sports Sciences, University of Guilan

City

Rasht

Province

Guilan

Postal code

4199843653

Phone

+98 911 230 9074

Email

mehrabanij@guilan.ac.ir

Person responsible for updating data

Contact

Name of organization / entity

Guilan university of medical sciences

Full name of responsible person

Siamand Abdolapour

Position

Student

Latest degree

Bachelor

Other areas of specialty/work

Sport sciences - Applied physiology

Street address

Rasht, Khaliye fars Highway, 5th km of Qazvin Road,
Faculty of sport Science

City

Rasht

Province

Guilan

Postal code

4199843653

Phone

+98 13 3369 0274

Fax

Email

Siamand.abp1@gmail.com

Sharing plan

Deidentified Individual Participant Data Set (IPD)

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

Study Protocol

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

Statistical Analysis Plan

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

Informed Consent Form

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

Clinical Study Report

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

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