Clinical Trial Protocol
Iranian Registry of Clinical Trials

04 Nov 2026

Acute effect of Citrulline malate oral Supplementation on upper-body resistance performance, blood pressure and post exercise hypotension in resistance trained men

Protocol summary

Study aim
Comparison of acute effects of two doses (8 and 12 grams) of citrulline malate oral supplement on upper body resistance performance, blood pressure and post-exercise hypotension in resistance trained men.

Design
Acutely, in the form of a double-blind cross-over and balanced design with placebo, 12 male volunteers did resistance training randomly in three groups of 4 (group 1: citrulline malate dose 8, group 2: citrulline malate dose 12 and group 3: placebo) in each session, each subject randomly receives one of the three complementary interventions. Blood pressure and heart rate were taken before and after each session, and factors related to resistance training performance were also recorded in each session.

Settings and conduct
Venue of research meetings: World of Power Club (Ravansar Iran)

Participants/Inclusion and exclusion criteria
Entry criteria: history of resistance training at least 3 sessions per week in the last 6 months, body mass index from 18.5 to 29.99 (kg/m2) exclusion criteria: smoking. Taking any sports supplement in the two months before the start of the research

Intervention groups
1. citrulline malate (8 grams) 2. citrulline malate 12 grams) 3. placebo (dextrose 10 grams)

Main outcome variables
Maximum power; blood pressure; heart beat ; Post-exercise blood pressure drop

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20221122056581N1**
Registration date: **2022-12-05, 1401/09/14**
Registration timing: **prospective**

Last update: **2022-12-05, 1401/09/14**
Update count: **0**

Registration date
2022-12-05, 1401/09/14

Registrant information

Name
Mohammad amin Nori
Name of organization / entity
The University of Razi
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Iran (Islamic Republic of)
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Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2022-12-27, 1401/10/06

Expected recruitment end date
2023-01-26, 1401/11/06

Actual recruitment start date
empty

Actual recruitment end date
empty

Trial completion date
empty

Scientific title
Acute effect of Citrulline malate oral Supplementation on upper-body resistance performance, blood pressure and

post exercise hypotension in resistance trained men

Public title
The effect of supplementation with citrulline malate on resistance training performance
Purpose
Basic scienece
Inclusion/Exclusion criteria
Inclusion criteria:
1. Athletes should be boys from the gym 2. The place of residence in the city of Ravansar 3. Age range from 21 to 39 years 4. Body mass index between 18.5 and 29.99 5. Having general health to participate in sports activities with the doctor's approval 6. Regular resistance sports activity program in 6 months before the beginning of the research
Exclusion criteria:
1.Having any chronic disease 2. History of allergy and sensitivity 3. Taking any sports supplement in two months before the start of the research 4. Smoking and alcohol consumption 5. No history of high blood pressure and neurological diseases 6. History of participation in any research related to supplement consumption and resistance exercises before starting the research
Age
From **21 years** old to **39 years** old
Gender
Male

Phase
3
Groups that have been masked

- Participant
- Investigator

Sample size
Target sample size: **12**
Randomization (investigator's opinion)
Randomized
Randomization description
Due to the existence of three groups (citrulline malate dose 8, citrulline malate dose 12, and placebo), all the subjects (n=12) were divided into three equal groups (4 people in each group) using a random number table and randomly Simple will be placed in one of the groups. There are 3 possible sequences in which the participants can complete the study. That is (ABC, BCA, CAB) and based on the sample size (n=12), each sequence will be used exactly twice. The order of assigning the sequences to Participants will be determined using the Random Sequence Generator at WWW.RANDOM.ORG.
Blinding (investigator's opinion)
Double blinded
Blinding description
Because the study was double-blind, the study subjects and the researchers did not know who would take citrulline malate or a placebo, and someone else would check the results. Also, in order not to distinguish the drug and the placebo, they will be prepared in the same glasses and the placebo group will use dextrose.
Placebo
Used
Assignment
Other
Other design features
Since this research project aims to evaluate and compare the acute effect of supplementing two different doses of citrulline malate, considering the existence of three groups (citrulline malate dose 8, citrulline malate dose 12, and placebo), all subjects (n=12) using a table of random numbers, they will be divided into three equal groups (4 people in each group) and they will be placed in one of the groups in a simple random manner, and for three weeks, three acute research sessions with an interval of one week from each other, along with Receiving the relevant supplement will implement a resistance training protocol.

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Ethics Committee of Razi University of Kermanshah
Street address
Razi University, University Street,Taq Bostan
City
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Province
Kermanshah
Postal code
6714414971
Approval date
2022-10-04, 1401/07/12
Ethics committee reference number
IR.RAZI.REC.1401.050

Health conditions studied

1

Description of health condition studied
Resistance exercise performance
ICD-10 code
ICD-10 code description

Primary outcomes

1

Description
Resistance sports performance
Timepoint
Three acute research sessions, one week apart
Method of measurement
Record the number of repetitions performed in each set of resistance exercise

Secondary outcomes

1

Description
Blood pressure and heart rate
Timepoint
Three acute research sessions, one week apart.
Method of measurement
Taking blood pressure and heart rate from each subject before and after each main research session

Intervention groups

1

Description
The first intervention group: supplementation with citrulline malate (8 grams) 60 minutes before the start of each main research session (resistance exercise) - in the acute phase of a single dose session
Category
Other

2

Description
The second intervention group: supplementation with citrulline malate (12 grams of citrulline malate) 60 minutes before the start of each main research session (resistance exercise) in the acute phase of one session and single dose
Category
Other

3

Description
Control group: third group: supplementation with placebo (10 grams of dextrose) 60 minutes before the start of each main research session (resistance exercise) - in the acute phase of a single dose session
Category
Other

Recruitment centers

1

Recruitment center
Name of recruitment center
World Power Gym
Full name of responsible person
Mohammad Amin Noori
Street address
No. 1259, Shahid Hasan Rezaei Alley, Molvi 3, Moalem Blvd.
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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
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Web page address
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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
Razi University of Kermanshah
Proportion provided by this source
100
Public or private sector
Private
Domestic or foreign origin
Domestic
Category of foreign source of funding
empty
Country of origin
Type of organization providing the funding
Other

Person responsible for general inquiries

Contact
Name of organization / entity
Razi University of Kermanshah
Full name of responsible person
Nasser Behpour
Position
Associate professor
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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
There is no further information.

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
Not applicable

Analytic Code
Not applicable

Data Dictionary
Not applicable