Clinical Trial Protocol
Iranian Registry of Clinical Trials

16 Sep 2026

The study of concentrated nitrate-rich beetroot juice on some of lower extremity isokinetic parameters and balance in taekwondo athletes

Protocol summary

Summary

18 taekwondo athletes will participate in this double-blind randomized clinical trial with crossover design. Before intervention every person's background information will be recorded, including age, height, weight, BMI and dominant leg. The information related to the intended exercise tests (isokinetic and balance tests), blood pressure and heart rate will be also collected before and after intervention. Subjects will be randomly allocated into two groups of nine supplement and placebo. In phase I of the study, intervention group will receive concentrated nitrate-rich beetroot juice (2x 70 ml/day of concentrated beetroot juice with 8 mmol nitrate content) and placebo group will receive black currant juice (2x 70 ml/day of black currant juice with negligible nitrate content) for six days. After a 10-day washout period, phase II of the study will be initiated and then intervention and placebo groups will be interchanged. The measurement of isokinetic parameters and balance test will be conducted on day 6 of the study. isokinetic parameters such as peak torque, peak power and total work during knee extension for both legs will be measured using the Biodex isokinetic dynamometer system at angular velocities of 60, 90, 180, 270 and 360 °/s. subsequently, the subjects performed a 50 contraction fatigue test at angular velocity of 180°/s. The balance will be assessed using athlete single leg protocol on the the Biodex balance system. Then the effect of concentrated nitrate-rich beetroot juice on the isokinetic parameters and balance will be determined.

General information

Acronym

IRCT registration information

IRCT registration number: **IRCT2017072735331N1**
Registration date: **2017-11-18, 1396/08/27**
Registration timing: **registered_while_recruiting**
Last update:
Update count: **0**

Registration date

2017-11-18, 1396/08/27

Registrant information

Name

samaneh khosravi

Name of organization / entity

Tehran University of Medical Sciences(School of Nutritional Sciences and Dietetics)

Country

Iran (Islamic Republic of)

Phone

+98 21 8895 5975

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Recruitment status

Recruitment complete

Funding source

Vice Chancellor for research of Tehran University of Medical Sciences

Expected recruitment start date

2017-11-10, 1396/08/19

Expected recruitment end date

2017-12-14, 1396/09/23

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

The study of concentrated nitrate-rich beetroot juice on some of lower extremity isokinetic parameters and balance in taekwondo athletes

Public title

The effect of concentrated beetroot juice on muscle

strength and balance in taekwondo athletes

Purpose

Other

Inclusion/Exclusion criteria

Inclusion criteria: -the tendency to cooperation -18 to 32 years old taekwondo athletes - having necessary readiness for performing exercise tests using the Physical Activity Readiness Questionnaire Exclusion criteria: -will be unable to continue cooperation -the emergence of lower extremity injuries -making a change in the diet (or consumption of nitrate- rich foods) using the 24-hour Dietary Recall method -the consumption of any kind of supplements during the study -not consuming of concentrated nitrate-rich beetroot juice (in the two cases: 1-more than once during the study 2- on day 6 of the study) -will be unable to execute the knee extensor test using proper form

Age

From **18 years** old to **32 years** old

Gender

Male

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **18**

Randomization (investigator's opinion)

Randomized

Randomization description

Blinding (investigator's opinion)

Double blinded

Blinding description

Placebo

Used

Assignment

Crossover

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Tehran University of Medical Sciences

Street address

Central Building of Tehran University of Medical Sciences, on the corner of Qods street, Keshavarz Boulevard

City

Tehran

Postal code

1417653761

Approval date

2016-06-26, 1395/04/06

Ethics committee reference number

IR.TUMS.VCR.REC.1395.186

Health conditions studied

1

Description of health condition studied

healthy athletes

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description

peak torque

Timepoint

before and after intervention

Method of measurement

Biodex isokinetic dynamometer system

2

Description

peak power

Timepoint

before and after intervention

Method of measurement

Biodex isokinetic dynamometer system

3

Description

Total work

Timepoint

before and after intervention

Method of measurement

Biodex isokinetic dynamometer system

4

Description

stability index

Timepoint

before and after intervention

Method of measurement

Biodex balance system

Secondary outcomes

1

Description

Heart rate

Timepoint

before and after intervention

Method of measurement

Heart rate monitor

2

Description

Systolic and Diastolic blood pressure

Timepoint
before and after intervention
Method of measurement
Blood pressure device

3

Description
MAP
Timepoint
before and after intervention
Method of measurement
calculating

Intervention groups

1

Description
Intervention group: concentrated nitrate-rich beetroot juice, 2 x 70 ml (140 ml) , twice a day(one in the morning, one in the evening) for 6 days
Category
Placebo

2

Description
Placebo group: black currant juice, 2 x 70 ml (140 ml), twice a day (one in the morning, one in the evening) for 6 days
Category
Placebo

Recruitment centers

1

Recruitment center
Name of recruitment center
Shahid Beheshti University
Full name of responsible person
Sajjad Ahmadizad
Street address
School of Physical Education and Sport Sciences, Shahid Beheshti University, Daneshjou Boulevard, Evin, Tehran
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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
International Campus, Tehran University of Medical Sciences
Full name of responsible person
Vice Chancellor for Research of International Campus
Street address
#124, Baradaran Mozaffar street, Dameshq street, south Felestin street, Keshavarz Boulevard, Tehran
City
Tehran
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
International Campus, Tehran University of Medical Sciences
Proportion provided by this source
100
Public or private sector
empty
Domestic or foreign origin
empty
Category of foreign source of funding
empty
Country of origin
Type of organization providing the funding
empty

Person responsible for general inquiries

Contact
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Sharing plan

Deidentified Individual Participant Data Set (IPD)
empty
Study Protocol
empty
Statistical Analysis Plan
empty
Informed Consent Form
empty
Clinical Study Report
empty
Analytic Code
empty
Data Dictionary
empty