Clinical Trial Protocol
Iranian Registry of Clinical Trials

16 Sep 2026

Comparison of the effect of whole body vibration before and after eccentric exercise on functional markers of delayed onset muscle soreness

Protocol summary

Study aim

Investigating the effect of whole body vibration stimulation time on functional indicators of delayed muscle pain

Design

A controlled, parallel-group, single-blind, randomized, phase 2 clinical trial on 48 male and female seated volleyball athletes was used for randomization based on the coding method.

Settings and conduct

Subjects will be invited to the Neuromuscular Research Center of Semnan University of Medical Sciences through a researcher-made questionnaire and will be randomly assigned to one of the three intervention and control groups. It is placed on the vibration device and all measurements will be done before, immediately after, 24, 48 and 72 hours and one week and two weeks after the implementation of the protocol.

Participants/Inclusion and exclusion criteria

With 48 male and female sitting volleyball athletes, the entry and exit criteria include not consuming nutritional intervention substances (consuming high-fat food during the implementation of the protocol), drugs (not using painkillers and intramuscular injections) before the study.

Intervention groups

The first intervention group of 16 people (sitting volleyball athletes receiving whole body vibration before training), The second intervention group of 16 people (sitting volleyball athletes receiving whole body vibration after training), Control group of 16 people

Main outcome variables

Delayed contusion is measured through a visual perception chart that consists of 10 points, where 0 indicates no pain and 10 indicates pain that prevents movement. The isometric strength of the biceps muscle by the dynamometer by performing two maximum pressures on the dynamometer while the hand is hanging by the side of the thigh. Circumference of the non-superior arm by a tape measure at the midpoint of the acromion-radial line Elbow flexion range of motion by goniometer and elbow flexion angle measurement

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20220713055455N1**
Registration date: **2022-11-03, 1401/08/12**
Registration timing: **registered_while_recruiting**

Last update: **2022-11-03, 1401/08/12**
Update count: **0**

Registration date

2022-11-03, 1401/08/12

Registrant information

Name

Nasrin Irvani

Name of organization / entity

Country

Iran (Islamic Republic of)

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2022-10-02, 1401/07/10

Expected recruitment end date

2022-11-22, 1401/09/01

Actual recruitment start date
empty
Actual recruitment end date
empty
Trial completion date
empty

Scientific title
Comparison of the effect of whole body vibration before and after eccentric exercise on functional markers of delayed onset muscle soreness

Public title
Comparison of the effect of whole body vibration before and after eccentric exercise on functional markers of delayed onset muscle soreness
Purpose
Treatment
Inclusion/Exclusion criteria
Inclusion criteria:
Male and female seated volleyball athletes
Exclusion criteria:
Using nutritional interventions (consuming high-fat food during the implementation of the protocol) Use of interfering medicinal substances (use of painkillers and intramuscular injections) before the study
Age
From **20 years** old to **25 years** old
Gender
Both

Phase
N/A
Groups that have been masked

- Participant

Sample size
Target sample size: **48**
Randomization (investigator's opinion)
Randomized
Randomization description
In this research, available sampling method and random grouping based on coding method will be used. The samples are coded with two-digit numbers using a random number table and randomly selected from a point of the table until the number of samples is 48.
Blinding (investigator's opinion)
Single blinded
Blinding description
In this research, 48 male and female sitting volleyball athletes are studied. The initial sampling will be voluntary, but in the next stage, subjects will be randomly (systematically) selected from among those who are eligible and registered.
Placebo
Not used
Assignment
Parallel
Other design features
-

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Ethics Committee of Semnan University of Medical Sciences
Street address
KM 5 of Damghan road
City
Semnan
Province
Semnan
Postal code
35147-99442
Approval date
2022-07-06, 1401/04/15
Ethics committee reference number
IR.SEMUMS.REC.1401.086

Health conditions studied

1

Description of health condition studied
delayed onset muscle soreness
ICD-10 code
ICD-10 code description

Primary outcomes

1

Description
isometric strength
Timepoint
All measurements will be done before, immediately after, 24, 48 and 72 hours and one week and two weeks after the implementation of the protocol.
Method of measurement
To measure isometric (static) strength, the examinee holds the dynamometer in one hand so that the hand is in line with the arm and hangs next to the thigh. Without moving his hand, he displays his maximum power by pressing the dynamometer. This movement should be repeated 2 times.

2

Description
Range of motion of the non-dominant elbow
Timepoint
All measurements will be done before, immediately after, 24, 48 and 72 hours and one week and two weeks after the implementation of the protocol.
Method of measurement
The goniometer will be used to measure the range of

motion. To measure the range of motion, the fixed arm of the goniometer will be placed parallel to the acromion-radial line and the movable arm of the goniometer will be placed on the radial-ulnar line in anatomical position.

3

Description
circumference of the non-dominant arm
Timepoint
All measurements will be done before, immediately after, 24, 48 and 72 hours and one week and two weeks after the implementation of the protocol.
Method of measurement
A tape measure is used to measure the circumference of the arm. To measure the circumference of the arm, first, the middle point of the acromion-radial line is determined, then the person places his hand in a hanging position next to the body, and the circumference of the arm is at the mentioned point. It will be measured perpendicular to the length of the arm

4

Description
muscle contusion(visual analogue scale)
Timepoint
All measurements will be done before, immediately after, 24, 48 and 72 hours and one week and two weeks after the implementation of the protocol.
Method of measurement
In order to measure muscle contusion, a visual perception chart will be used. This chart contains 10 grades, zero indicates the absence of pain, and grade 5 indicates pain that is caused by movement and causes little restriction. Grade 10 also indicates pain that may prevent any movement.

Secondary outcomes

empty

Intervention groups

1

Description
Intervention group 1: Seated volleyball athletes (16 people) after warming up and stretching for 5 minutes will perform 50 outward contractions with an intensity of 85% of 1RM and then undergo vibration therapy for one minute with a frequency of 40 Hz - with peak amplitude. They will be placed up to the top of 2 mm.
Category
Prevention

2

Description
Intervention group 2: Seated volleyball athletes (16 people) before warming up and stretching for 5 minutes will perform 50 outward contractions with an intensity of 85% of 1RM and then undergo vibration therapy for one minute with a frequency of 40 Hz - with peak amplitude. They will be placed up to the top of 2 mm.
Category
Prevention

3

Description
Control group: The control group (16 people) - sitting volleyball athletes (16 people) will perform warm-up and stretching exercises for 5 minutes, 50 outward contractions with an intensity of 85% of 1RM, and undergo vibration therapy before and after training. are not placed
Category
Prevention

Recruitment centers

1

Recruitment center
Name of recruitment center
Neuromuscular Research Center, Faculty of Rehabilitation, Semnan University of Medical Sciences
Full name of responsible person
Fatemeh Ehsani
Street address
Tabatabai Rehabilitation Clinic, Quds Street, Mashahir Square, Semnan
City
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Province
Razavi Khorasan
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35147-99442
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+98 23 3332 2328
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n.irvani737@gmail.com

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Semnan University of Medical Sciences
Full name of responsible person
Dr. Mir Mohammad Khani
Street address
Faculty of Rehabilitation, Semnan University of Medical Sciences, 5 km Damghan Road, Semnan
City
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Email

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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

Semnan University of Medical Sciences

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

Semnan University of Medical Sciences

Full name of responsible person

Nasrin Irvani

Position

Senior student of sports physiotherapy

Latest degree

Bachelor

Other areas of specialty/work

Physiotherapy

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Position

Senior student of sports physiotherapy

Latest degree

Bachelor

Other areas of specialty/work

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Person responsible for updating data

Contact

Name of organization / entity

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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