

Clinical Trial Protocol

Iranian Registry of Clinical Trials

28 Sep 2026

Comparison of the effects of inverted pendulum exercises, TRX and conventional stability on selected muscles activity, Centre of pressure deviation and functional movements in healthy non-athlete males

Protocol summary

Study aim

Comparison of the effects of inverted pendulum exercises, TRX and conventional stability on selected muscles activity, Centre of pressure deviation and functional movements in healthy non-athlete males

Design

The number of samples is 45 eligible subjects who are selected based on inclusion and exclusion criteria. The samples are divided into three training groups. Variables of selected muscles activity, Centre of pressure deviation and functional movements are measured before and after exercise.

Settings and conduct

The present study is a quasi-experimental research with a pre-test-post-test design with three experimental groups. The number of samples is 45 eligible subjects who are selected based on the inclusion and exclusion criteria of the study and will be randomly placed in one of the experimental groups. The study is one-sided blind, so that the subjects will not be aware of the intervention of other groups. Variables of selected muscle activity, center of pressure fluctuations, and functional movements are measured before and after exercise.

Participants/Inclusion and exclusion criteria

Healthy non-athlete males in the age group of 20 to 30 years

Intervention groups

inverted pendulum exercises, TRX exercises and conventional stability exercises

Main outcome variables

selected muscles activity; Centre of pressure deviation ; functional movements

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20211009052705N1**

Registration date: **2021-11-03, 1400/08/12**

Registration timing: **prospective**

Last update: **2021-11-03, 1400/08/12**

Update count: **0**

Registration date

2021-11-03, 1400/08/12

Registrant information

Name

Mehrdad Bastani

Name of organization / entity

The university of Esfahan

Country

Iran (Islamic Republic of)

Phone

+98 31 4263 7377

Email address

mehr.bastani@yahoo.com

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2021-11-05, 1400/08/14

Expected recruitment end date

2022-01-04, 1400/10/14

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Comparison of the effects of inverted pendulum

exercises, TRX and conventional stability on selected muscles activity, Centre of pressure deviation and functional movements in healthy non-athlete males

Public title
Comparison of the effect of three different exercises methods on the quality of neuromuscular adaptation, balance and motor function of healthy males

Purpose
Treatment

Inclusion/Exclusion criteria
Inclusion criteria:
Enjoy public health Fill in the consent form consciously
Men in the age range of 20 to 30 years Not participating in regular sports activities
Exclusion criteria:
History of severe musculoskeletal and neurological injuries
History of trunk or lower limb surgery over the past year

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

Gender
Male

Phase
N/A

Groups that have been masked

- Participant
- Outcome assessor
- Data analyser
- Data and Safety Monitoring Board

Sample size
Target sample size: **50**

Randomization (investigator's opinion)
Randomized

Randomization description
A simple randomization method will be used to assign participants to three groups. Random allocation software will be used to create random sequences. The central randomization method will also be used to hide the allocation concealment.

Blinding (investigator's opinion)
Single blinded

Blinding description
The subjects will be randomly assigned to one of the three intervention groups to improve their posture. The subjects will not be aware of the type of intervention of other groups.

Placebo
Not used

Assignment
Parallel

Other design features

Secondary Ids
empty

Ethics committees

1

Ethics committee
Name of ethics committee
Research Ethics committee of Esfahan University
Street address
Azadi Square, University of Isfahan, Faculty of Sports Sciences
City
Esfahan
Province
Isfahan
Postal code
8174673441
Approval date
2021-09-16, 1400/06/25
Ethics committee reference number
IR.UI.REC.1400.055

Health conditions studied

1

Description of health condition studied
fall
ICD-10 code
R29.6
ICD-10 code description
Repeated falls

Primary outcomes

1

Description
muscles activity
Timepoint
At the beginning of the study (before the start of the intervention) and after 8 weeks of intervention
Method of measurement
16-channel biomonitor MB 6000-T16

2

Description
Balance
Timepoint
At the beginning of the study (before the start of the intervention) and after 8 weeks of intervention
Method of measurement
Force plate machine

3

Description
functional movements
Timepoint
At the beginning of the study (before the start of the intervention) and after 8 weeks of intervention
Method of measurement
FMS

Secondary outcomes

empty

Intervention groups

1

Description

Intervention group: inverted pendulum exercises

Category

Prevention

2

Description

Intervention group: TRX exercises

Category

Prevention

3

Description

Intervention group: conventional stability exercises

Category

Prevention

Recruitment centers

1

Recruitment center

Name of recruitment center

آزمایشگاه دانشکده تربیت بدنی دانشگاه اصفهان

Full name of responsible person

مهرداد باستانی

Street address

No. 14, Bastani Alley., Emam Street

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85186-83911

Phone

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Email

mehr.bastani@yahoo.com

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

University of Esfahan

Full name of responsible person

Dr. Gholam Ali Ghasemi

Street address

Azadi Square, University of Isfahan, Faculty of Sports Sciences

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8174673441

Phone

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Email

Gh.ghasemi@yahoo.com

Grant name

Grant code / Reference number

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

Yes

Title of funding source

University of Esfahan

Proportion provided by this source

10

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

Other

Person responsible for general inquiries

Contact

Name of organization / entity

University of Isfahan

Full name of responsible person

Mehrdad Bastani

Position

Researcher

Latest degree

Master

Other areas of specialty/work

Sport Medicine

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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

Yes - There is a plan to make this available

Analytic Code

Yes - There is a plan to make this available

Data Dictionary

Yes - There is a plan to make this available

Title and more details about the data/document

All Potential Data Can be Shared After People have not been Identified

When the data will become available and for how long

Start the Access Period one Year After Printing the Results

To whom data/document is available

Data will be Available to Academic and Scientific Researchers

Under which criteria data/document could be used

Any Kind of Functional Analysis on the Submitted Data is Allowed

From where data/document is obtainable

By Email

What processes are involved for a request to access data/document

By Email

Comments**Person responsible for updating data****Contact****Name of organization / entity**

University of Isfahan

Full name of responsible person

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Latest degree

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