

Clinical Trial Protocol

Iranian Registry of Clinical Trials

26 May 2026

The effect of calisthenics exercises on fitness and skill measures and functional movements in students with flexible flatfeet

Protocol summary

2023-02-03, 1401/11/14

Study aim

The purpose of this study is to investigate the effect of calisthenics exercises on fitness and skill measures and functional movements in students with flexible flatfeet.

Design

Before and after clinical trial without control group with 25 participants.

Settings and conduct

This research will be conducted in the Faculty of Physical Education of Kharazmi University. For this purpose, 25 available students aged 18-24 years old will be placed in the intervention group (group with flexible flatfoot). The pre-test will be performed. Then, training will be performed for 16 weeks. Then the post-test will be done.

Participants/Inclusion and exclusion criteria

Inclusion criteria: Students with flexible flatfoot between 18 and 24 years of age will be included in intervention groups 1. Exclusion criteria: Students with regular sports activities will not participate in the study.

Intervention groups

Intervention group 1 (students with flexible flatfoot) will receive calisthenics exercises for 16 weeks.

Main outcome variables

static balance, dynamic balance, strength of abdominal and erector spinae muscles, agility, functional movement

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20130109012078N8**

Registration date: **2023-02-03, 1401/11/14**

Registration timing: **registered_while_recruiting**

Last update: **2023-02-03, 1401/11/14**

Update count: **0**

Registration date

Registrant information

Name

Maryam Ghorbani

Name of organization / entity

Azad

Country

Iran (Islamic Republic of)

Phone

+98 21 6656 2382

Email address

maryamm_ghorbani@yahoo.com

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2023-02-02, 1401/11/13

Expected recruitment end date

2023-06-03, 1402/03/13

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

The effect of calisthenics exercises on fitness and skill measures and functional movements in students with flexible flatfeet

Public title

Investigating the effect of calisthenics exercise on physical fitness factors

Purpose

Supportive

Inclusion/Exclusion criteria

Inclusion criteria:

Female students in the age range of 18-24 years The

health of the nervous, skeletal and muscular system (except for the deformity of flexible flatfoot) The health of the cardiovascular system, respiratory system, etc

Exclusion criteria:

Suffering from structural flatfoot Having regular sports activities People who have a history of neurological, rheumatism, metabolic diseases, mental disorders, disorders in the vestibular system, a history of balance disorders and frequent dizziness

Age

From **18 years** old to **24 years** old

Gender

Female

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **25**

Randomization (investigator's opinion)

N/A

Randomization description

Blinding (investigator's opinion)

Not blinded

Blinding description

Placebo

Not used

Assignment

Single

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics Committee in Research of Sports Science
Research Institute

Street address

No. Mir Emad St. 5th Alley . Ostad Motahhari St.
Tehran

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Postal code

1587958711

Approval date

2022-12-25, 1401/10/04

Ethics committee reference number

IR.SSRC.REC.1401.090

Health conditions studied

1

Description of health condition studied

flatfoot

ICD-10 code

M21.4

ICD-10 code description

Flat foot [pes planus] (acquired)

Primary outcomes

1

Description

Primary outcome: functional movement

Timepoint

Measurements will be performed before and after the training intervention.

Method of measurement

Functional movements will be evaluated using the Functional Movement Screening Test (FMS).

Secondary outcomes

1

Description

Secondary outcome: static balance

Timepoint

Measurements will be performed before and after the training intervention.

Method of measurement

Sharpened-Romberg test will be used to evaluate static balance.

2

Description

Secondary outcome: dynamic balance

Timepoint

Measurements will be performed before and after the training intervention.

Method of measurement

Y test will be used to measure dynamic balance.

3

Description

Secondary outcome: strength of abdominal and erector spinae muscles

Timepoint

Measurements will be performed before and after the training intervention.

Method of measurement

In order to measure the strength of the abdominal and the erector spine muscles, the test of curl-up and maintaining the plank position will be used.

4

Description

Secondary outcome: agility

Timepoint

Measurements will be performed before and after the training intervention.

Method of measurement

In order to measure agility, the 4x10m Shuttle Run test will be used.

Intervention groups

1

Description

Intervention group 1 (with flexible flatfoot): calisthenics exercises. In the exercise program based on calisthenics, each session of the exercises suitable for the prerequisites and basic levels of calisthenics, which is for beginners, will be performed for 80 minutes. -Training period: sixteen weeks. -Number of training sessions per week: one session per week. -The duration of each training session: 90 minutes (5 minutes of warm-up, 80 minutes of the main body of the class, 5 minutes of cool-down) in each session.

Category

Rehabilitation

Recruitment centers

1

Recruitment center

Name of recruitment center

Shahid Bahonar Higher Education Center of Tehran

Full name of responsible person

Maryam Ghorbani

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Shahid Bahonar Higher Education Center of Tehran.
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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

kharazmi University

Full name of responsible person

Dr. Hamid Rajabi

Street address

Faculty of Physical Education & Sports Sciences of
Kharazmi University, Mirdamad Ave, Tehran, Iran.

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Grant name

Grant code / Reference number

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

No

Title of funding source

kharazmi University

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

kharazmi University

Full name of responsible person

Maryam Ghorbani

Position

student

Latest degree

Master

Other areas of specialty/work

motor behavior

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Person responsible for scientific inquiries

Contact

Name of organization / entity

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Full name of responsible person

Rasoul Yaali

Position

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Person responsible for updating data

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Latest degree

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Other areas of specialty/work

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Email

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

This research work will be published in the form of an article; although the data will be stored in the library archive.

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

Not applicable

Data Dictionary

Not applicable

Title and more details about the data/document

Some preliminary outcome information (functional movement) will be shared.

When the data will become available and for how long

September 2023.

To whom data/document is available

Students and university professors

Under which criteria data/document could be used

If researchers need data for research studies, the data will be provided to them.

From where data/document is obtainable

One should contact the executive of project.

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

Individuals should email the executive of project to be sent the information to them. Information about the executive of project can be accessed through the following link:

https://cesaeh.khu.ac.ir/cv.php?cv=391&mod=bcv&slc_lang=fa&sid=1

Comments