

# 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 flatfoot

#### 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 flatfoot.

##### 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 flatfoot

##### 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

**City**

Tehran

**Province**

Tehran

**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

##### Street address

Shahid Bahonar Higher Education Center of Tehran.  
Hafez Street. Tehran. Iran

##### City

Tehran

##### Province

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##### Postal code

۱۱۳۳۹۱۴۹۶۱

##### Phone

+98 912 809 2567

##### Email

maryamm\_ghorbani@yahoo.com

## 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.

##### City

Tehran

#### Province

Tehran

#### Postal code

1571914911

#### Phone

+98 21 8832 9220

#### Email

hrajabi@khu.ac.ir

#### 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

##### Street address

No. 27., Deilman St, Nofalah St, Azadi St, Tehran.

##### City

Tehran

##### Province

Tehran

##### Postal code

1313886873

##### Phone

+98 21 6656 2382

##### Email

maryamm\_ghorbani@yahoo.com

## Person responsible for scientific inquiries

#### Contact

##### Name of organization / entity

kharazmi University

##### Full name of responsible person

Rasoul Yaali

##### Position

University Assistant Professor

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**Latest degree**

Ph.D.

**Other areas of specialty/work**

motor behavior

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**Person responsible for updating data**

**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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No. 27, Azadi St., Nofalah St., Deilman St., Tehran.

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tehran

**Province**

Tehran

**Postal code**

1313886873

**Phone**

+98 21 6656 2382

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

**Comments**