

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

27 Jul 2026

### The effect of Combine of Short Foot Training with Hip External Rotator Muscles Strengthening on Navicular Drop, Ankle Range of Motion, and Foot Arch Index in Girl Students from 15 to 18 years old with Flexible Flat Foot

#### Protocol summary

##### Study aim

The effect of Combine of Short Foot Training with Hip External Rotator Muscles Strengthening on Navicular Drop, Ankle Range of Motion, and Foot Arch Index in Girl Students from 15 to 18 years old with Flexible Flat Foot Posture of Bukan City

##### Design

The clinical trial has an experimental group and a control group with parallel and randomized groups, which are random allocation software used for randomization.

##### Settings and conduct

The present study is a quasi-experimental research with a pre-test-post-test design with an experimental group and a control group. 30 female students with flexible flat feet will be randomly divided into two experimental and control groups. The navicular prolapse indices, dorsiflexion and plantarflexion range of motion, and the Stahely index will be measured before and after the exercises.

##### Participants/Inclusion and exclusion criteria

Entry requirements: Female gender, age range 15 to 18, navicular prolapse greater than 9 mm. Entry requirements: Unwillingness to continue cooperation, absence of more than 2 sessions in the entire training period, creating a specific problem that prevents training.

##### Intervention groups

The intervention group receives short-leg exercises and strengthening of the external rotator muscles of the thigh, but the control group receives no intervention.

##### Main outcome variables

Navicular Drop, Ankle Range of Motion, and Foot Arch Index

#### General information

##### Reason for update

##### Acronym

##### IRCT registration information

IRCT registration number: **IRCT20240221061073N2**

Registration date: **2025-06-30, 1404/04/09**

Registration timing: **prospective**

Last update: **2025-06-30, 1404/04/09**

Update count: **0**

##### Registration date

2025-06-30, 1404/04/09

##### Registrant information

##### Name

somayeh momeni

##### Name of organization / entity

Payame Noor University

##### Country

Iran (Islamic Republic of)

##### Phone

+98 21 4492 7037

##### Email address

dr.momeni@pnu.ac.ir

##### Recruitment status

##### Recruitment complete

##### Funding source

##### Expected recruitment start date

2025-08-01, 1404/05/10

##### Expected recruitment end date

2025-09-01, 1404/06/10

##### Actual recruitment start date

empty

##### Actual recruitment end date

empty

**Trial completion date**

empty

**Scientific title**

The effect of Combine of Short Foot Training with Hip External Rotator Muscles Strengthening on Navicular Drop, Ankle Range of Motion, and Foot Arch Index in Girl Students from 15 to 18 years old with Flexible Flat Foot

**Public title**

The effect of Combine of Short Foot Training with Hip External Rotator Muscles Strengthening on girls with Flexible Flat Foot

**Purpose**

Treatment

**Inclusion/Exclusion criteria****Inclusion criteria:**

Having Flexible Flat Foot Navicular Drop greater than 9 mm

**Exclusion criteria:**

Unwillingness to continue cooperation Creating a specific problem that prevents you from continuing to practice

**Age**

From **15 years** old to **18 years** old

**Gender**

Female

**Phase**

N/A

**Groups that have been masked**

*No information*

**Sample size**

Target sample size: **30**

More than 1 sample in each individual

Number of samples in each individual: **2**

Navicular Drop in Right foot and Left foot

**Randomization (investigator's opinion)**

Randomized

**Randomization description**

The simple Randomization Method was used to Assign Individuals to two Groups that in this Method It was done by Flip the coin method. This method is usually used to create a random sequence in two-group experiments in such a way that one of the study groups considers the A and the other group the B and based on the sample size, coins were tossed and Individuals are assigned to two random groups. Then, in Order not to Determine Which Group the Individuals will be Assigned to before Dividing them into two Groups, or in other words, Allocation Concealment, the Sequentially numbered, sealed opaque envelopes was used. This method is one of the common methods in concealing random allocation, which is abbreviated to SNOSE method. In this method, after a random sequence, a number of envelopes are prepared and each of the random sequences created is recorded on a card and the cards are placed in the envelopes respectively. In order to maintain a random sequence, the envelopes are numbered in the same way on the outer surface. Finally, the lids of the letter envelopes are glued and placed inside a box, respectively. At the beginning of the registration of participants, according to the order of entry of eligible participants into the study, one of the envelopes of the letter is opened and the

assigned group of the participant is revealed.

**Blinding (investigator's opinion)**

Not blinded

**Blinding description****Placebo**

Not used

**Assignment**

Parallel

**Other design features****Secondary Ids**

empty

**Ethics committees****1****Ethics committee****Name of ethics committee**

Payam Noor University

**Street address**

Payam Noor University, Nakhli Ave, Artesh Blvd, Mini City.

**City**

Tehran

**Province**

Tehran

**Postal code**

193954697

**Approval date**

2025-04-21, 1404/02/01

**Ethics committee reference number**

IR.PNU.REC.1404.063

**Health conditions studied****1****Description of health condition studied**

Flat foot

**ICD-10 code**

M21.4

**ICD-10 code description**

Flat foot [pes planus] (acquired)

**Primary outcomes****1****Description**

Navicular Drop

**Timepoint**

At the beginning of the study (before the start of the intervention) and after 6 weeks of intervention

**Method of measurement**

Measurement of the reservoir name to the ground surface

**2****Description**

Dorsi flexion range of motion  
**Timepoint**  
At the beginning of the study (before the start of the intervention) and after 6 weeks of intervention  
**Method of measurement**  
With goniometer

### 3

**Description**  
Plantar flexion range of motion  
**Timepoint**  
At the beginning of the study (before the start of the intervention) and after 6 weeks of intervention  
**Method of measurement**  
With goniometer

### 4

**Description**  
Foot arch index  
**Timepoint**  
At the beginning of the study (before the start of the intervention) and after 6 weeks of intervention  
**Method of measurement**  
Using the Stahali test

## Secondary outcomes

empty

## Intervention groups

### 1

**Description**  
Intervention group: The intervention group will perform short foot exercises with strengthening exercise for the external rotator muscles. This exercise will be performed for 6 weeks, 3 sessions of 2 hours each week.  
**Category**  
Rehabilitation

### 2

**Description**  
Control group: Without any training and just doing normal daily activities.  
**Category**  
N/A

## Recruitment centers

### 1

**Recruitment center**  
**Name of recruitment center**  
Girls upper secondary schools in Bukan Sity  
**Full name of responsible person**  
Zhaleh Rabani  
**Street address**  
Dental Prosthesis Laboratorry, Bustan Alley 5, Saman Region.

**City**  
Bukan  
**Province**  
West Azarbaijan  
**Postal code**  
5951756191  
**Phone**  
+98 44 4625 2546  
**Email**  
zhalerabani1288@gmail.com

## Sponsors / Funding sources

### 1

**Sponsor**  
**Name of organization / entity**  
Payam noor University  
**Full name of responsible person**  
Alireza Mohadesi  
**Street address**  
Payam Noor University, Nakhli Ave, Artesh Blvd, Mini City.  
**City**  
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**Province**  
Tehran  
**Postal code**  
193954697  
**Phone**  
+98 21 2248 7456  
**Email**  
dr.mohadesi@pnu.ac.ir  
**Grant name**  
**Grant code / Reference number**  
**Is the source of funding the same sponsor organization/entity?**  
Yes  
**Title of funding source**  
Payam noor University  
**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**  
Academic

## Person responsible for general inquiries

**Contact**  
**Name of organization / entity**  
Payame Noor University  
**Full name of responsible person**  
Somayeh Momeni  
**Position**  
Associate professor  
**Latest degree**

Ph.D.

**Other areas of specialty/work**

Sport injury and corrective exercise

**Street address**

No 587, Payam Noor University, Ostad Nejatolahi Street.

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**Person responsible for scientific inquiries**

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**Person responsible for updating data**

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**Name of organization / entity**

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**Email**

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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 result

**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: dr.momeni@pnu.ac.ir

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

by Email: dr.momeni@pnu.ac.ir and the reason for using the documents

**Comments**