

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

11 Sep 2026

### The Effects of Comprehensive and Localized Corrective Exercises on Knee Valgus and Gluteal Muscle Strength and Endurance in Women with Gluteal Muscle Dysfunction

#### Protocol summary

##### Study aim

To determine the effects of comprehensive and local corrective exercises on knee valgus and gluteal muscle strength and endurance in women with gluteal muscle dysfunction

##### Design

A randomized controlled trial with three parallel groups (local corrective exercise, comprehensive corrective exercise, and control), double-blind in outcome assessment, simple randomization with 45 women; random sequence generated using the Random function in Excel and group allocation after screening for inclusion criteria.

##### Settings and conduct

The study will be conducted on women with gluteal muscle dysfunction at "Zarban" gym in Gorgan. Participants will be assigned to three parallel groups (local corrective exercise, comprehensive corrective exercise, and control). Exercises will be performed for 12 weeks under the researcher's supervision. Assessors and the data analyst will be blinded.

##### Participants/Inclusion and exclusion criteria

Inclusion criteria: gluteal muscle dysfunction; age 18-50; female; physically inactive and no regular exercise in the past 6 months; no medical contraindication for exercise  
Exclusion criteria: history of injury or surgery in the lumbopelvic or lower limb region; progressive neuromuscular disease; severe joint disorder; disc herniation or spondylolisthesis; use of assistive walking devices

##### Intervention groups

Local corrective exercise group: 12-week program focused on gluteal muscles; Comprehensive corrective exercise group: 12-week program targeting lower limbs and gluteal muscles; Control group: continue usual daily activities without specific exercise program.

##### Main outcome variables

Gluteal muscle strength (abduction, external rotation, hip extension); gluteal muscle endurance (single-leg bridge hold time); static and dynamic knee valgus (Q-angle and femur-tibia angle during standing and single-leg squat)

#### General information

##### Reason for update

##### Acronym

##### IRCT registration information

IRCT registration number: **IRCT20180521039762N5**

Registration date: **2026-02-05, 1404/11/16**

Registration timing: **prospective**

Last update: **2026-02-05, 1404/11/16**

Update count: **0**

##### Registration date

2026-02-05, 1404/11/16

##### Registrant information

##### Name

Afshin Moghadasi

##### Name of organization / entity

University of Isfahan

##### Country

Iran (Islamic Republic of)

##### Phone

+98 31 3793 4208

##### Email address

afshin.moghadasi@yahoo.com

##### Recruitment status

**Recruitment complete**

##### Funding source

##### Expected recruitment start date

2026-02-06, 1404/11/17

##### Expected recruitment end date

2026-02-18, 1404/11/29

**Actual recruitment start date**

empty

**Actual recruitment end date**

empty

**Trial completion date**

empty

**Scientific title**

The Effects of Comprehensive and Localized Corrective Exercises on Knee Valgus and Gluteal Muscle Strength and Endurance in Women with Gluteal Muscle Dysfunction

**Public title**

Effect of Corrective Exercises on Knee Valgus and Gluteal Muscle Function in Women

**Purpose**

Supportive

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

Presence of gluteal muscle dysfunction Age range between 18 and 50 years Female gender Physical inactivity and no regular exercise participation during the past 6 months No medical contraindication for participation in exercise programs

**Exclusion criteria:**

History of serious injury or surgery in the lumbopelvic region or lower limbs Presence of progressive neuromuscular diseases Presence of severe joint disorders such as hip or knee osteoarthritis Intervertebral disc herniation or spondylolisthesis Use of assistive walking devices such as a cane

**Age**

From **18 years** old to **50 years** old

**Gender**

Female

**Phase**

N/A

**Groups that have been masked**

- Outcome assessor
- Data analyser

**Sample size**

Target sample size: **45**

**Randomization (investigator's opinion)**

Randomized

**Randomization description**

After the initial assessment and screening for inclusion and exclusion criteria, eligible participants will enter the randomization phase. Randomization in this study will be performed as simple randomization with an individual randomization unit. The random sequence will be generated using the Random function in Microsoft Excel. Based on this sequence, participants will be randomly assigned to three equal groups: the local corrective exercise group, the comprehensive corrective exercise group, and the control group.

**Blinding (investigator's opinion)**

Double blinded

**Blinding description**

Participants will be aware of their group assignment because the study objectives and interventions are

explained to them, and blinding participants is not ethically possible. However, individuals involved in data collection and outcome assessment, including measurement assessors and the data analyst, will be blinded to group assignments. The principal investigator and healthcare personnel (physicians, physiotherapists, or trainers) who interact directly with participants will be aware of the group allocation. The Data Safety and Monitoring Committee and personnel preparing the manuscript will also remain blinded to group assignments. This design minimizes potential bias during data collection and analysis.

**Placebo**

Not used

**Assignment**

Parallel

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

empty

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

Research Ethics Committees of Payame Noor University

**Street address**

Payame Noor University, Nakhli St., Artesh Blvd., Tehran, Iran

**City**

Tehran

**Province**

Tehran

**Postal code**

193954697

**Approval date**

2024-12-20, 1403/09/30

**Ethics committee reference number**

IR.PNU.REC.1403.539

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

Gluteal muscle dysfunction

**ICD-10 code****ICD-10 code description****Primary outcomes****1****Description**

- Gluteal muscle strength (abduction, external rotation, hip extension) will be measured using a dynamometer.

**Timepoint**

Before the intervention and after the 12-week exercise

program  
**Method of measurement**  
Dynamometer

## 2

### **Description**

Gluteal muscle endurance will be measured as the single-leg bridge hold time.

### **Timepoint**

Before the intervention and after the 12-week exercise program

### **Method of measurement**

Timer to measure the duration of the single-leg bridge hold

## 3

### **Description**

Static and dynamic knee valgus will be assessed by measuring Q-angle and femur-tibia angle during standing and single-leg squat

### **Timepoint**

Before the intervention and after the 12-week exercise program

### **Method of measurement**

Goniometer or video analysis software to measure angles

## **Secondary outcomes**

## 1

### **Description**

Hip joint flexibility will be assessed by measuring range of motion in abduction and external rotation

### **Timepoint**

Before the exercise program and after the 12-week intervention

### **Method of measurement**

Goniometer to measure joint angles

## 2

### **Description**

Static balance will be assessed using the single-leg stance test measuring the duration of balance

### **Timepoint**

Before the exercise program and after the 12-week intervention

### **Method of measurement**

Timer to record single-leg stance duration

## **Intervention groups**

## 1

### **Description**

Intervention group 1 – Local corrective exercise: Participants will follow a 12-week program of exercises focused on gluteal muscles. Sessions will be conducted three times per week under researcher supervision.

### **Category**

Rehabilitation

## 2

### **Description**

Intervention group 2 – Comprehensive corrective exercise: Participants will follow a 12-week program of exercises targeting the lower limbs and gluteal muscles. Sessions will be conducted three times per week under researcher supervision.

### **Category**

Rehabilitation

## 3

### **Description**

Control group: Participants will continue their usual daily activities without receiving any specific exercise program.

### **Category**

N/A

## **Recruitment centers**

## 1

### **Recruitment center**

#### **Name of recruitment center**

Zarban Fitness Club

#### **Full name of responsible person**

Fatemeh Eskandarian

#### **Street address**

No. 40, Sayad Street, Manzarieh Square

#### **City**

Gorgan

#### **Province**

Golestan

#### **Postal code**

۴۱۴۷۶۵۴۹۱۹

#### **Phone**

+98 911 644 5549

#### **Email**

zarabaan\_gym@gmail.com

## **Sponsors / Funding sources**

## 1

### **Sponsor**

#### **Name of organization / entity**

Payame Noor University

#### **Full name of responsible person**

Dr. Majid Zamahni

#### **Street address**

Payame Noor University, Nakhli St, Artesh Blvd, Tehran

#### **City**

Tehran

#### **Province**

Tehran

#### **Postal code**

193954697

**Phone**

+98 21 2332 0000

**Email**

zamahani@pnu.ac.ir

**Grant name****Grant code / Reference number****Is the source of funding the same sponsor organization/entity?**

Yes

**Title of funding source**

Payame Noor 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**

Payame Noor University

**Full name of responsible person**

Afshin Moghadasi

**Position**

Assistant professor

**Latest degree**

Ph.D.

**Other areas of specialty/work**

Sports Injury and Corrective Exercises

**Street address**

Payame Noor University, Nakhli St, Artesh Blvd,  
Tehran, Tehran Province, Iran

**City**

Tehran

**Province**

Tehran

**Postal code**

193954697

**Phone**

+98 21 2332 0000

**Email**

moghadasi@pnu.ac.ir

**Person responsible for scientific inquiries****Contact****Name of organization / entity**

Payame Noor University

**Full name of responsible person**

Afshin Moghadasi

**Position**

Assistant professor

**Latest degree**

Ph.D.

**Other areas of specialty/work**

Sports Injury and Corrective Exercises

**Street address**

Payame Noor University, Nakhli St, Artesh Blvd,  
Tehran, Tehran Province, Iran

**City**

Tehran

**Province**

Tehran

**Postal code**

193954697

**Phone**

+98 21 2332 0000

**Email**

moghadasi@pnu.ac.ir

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

Payame Noor University

**Full name of responsible person**

Afshin Moghadasi

**Position**

Assistant professor

**Latest degree**

Ph.D.

**Other areas of specialty/work**

Sports Injury and Corrective Exercises

**Street address**

Payame Noor University, Nakhli St, Artesh Blvd,  
Tehran, Tehran Province, Iran

**City**

Tehran

**Province**

Tehran

**Postal code**

193954697

**Phone**

+98 21 2332 0000

**Email**

moghadasi@pnu.ac.ir

**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**

No - There is not 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**

Individual participant data (IPD) from the study, after de-identification to ensure participant privacy, will be shared

upon reasonable request with researchers for secondary analyses related to gluteal muscle function and knee valgus. The data will include primary and secondary outcomes, demographic information, and relevant clinical measures.

**When the data will become available and for how long**

Access to the data and documents will begin after the completion of the study and the publication of the main results. Data preparation will include de-identification of participants' information. Access is expected to be available to interested researchers six months after publication of the results and will continue indefinitely.

**To whom data/document is available**

Access to the data and documents will be granted to researchers interested in scientific and secondary analyses. Requests for access should include a description of the intended research purpose and type of analysis. The data will not be available for direct commercial use and will be shared only for legitimate scientific research purposes.

**Under which criteria data/document could be used**

The study data and documents may be used solely for scientific research and secondary analyses related to gluteal muscle function and knee valgus. Applicants must provide a written description of the research purpose and proposed analyses. Direct commercial use of the data is not permitted. Individual participant data

will be de-identified to protect privacy. Applicants are required to use the data only for the approved purposes and must not publish results without permission.

**From where data/document is obtainable**

Applicants requesting access to study data and documents should contact the Principal Investigator: Name: Dr. Afshin Moghadasi Department: Department of Sports Injury and Corrective Exercises Institution: Payame Noor University (PNU) P.O. Box: 19395-4697, Tehran, Iran Email: moghadasi@pnu.ac.ir Phone: +98 918 943 2264 Please include in your email or correspondence a description of the research purpose and proposed analyses so that your request can be evaluated.

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

1. The applicant should submit a written request via email to the Principal Investigator. 2. The request must clearly describe the research purpose, proposed analyses, and the specific data or documents needed. 3. The Principal Investigator will review the request and, if approved, a Data Use Agreement outlining the terms of use will be sent to the applicant. 4. After signing and returning the agreement, the de-identified data and documents will be prepared and provided to the applicant. 5. The entire process typically takes 2 to 4 weeks after a complete and valid request, depending on the volume of data and complexity of the request.

**Comments**