

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

10 Jun 2026

### The effect of Hamstring eccentric training on knee strength and proprioception , as well as the hamstring flexibility and lower extremity performance in active females having hamstring tightness.

#### Protocol summary

##### Study aim

The effect of Hamstring eccentric training on knee strength and proprioception, as well as the hamstring flexibility and lower extremity performance in active females with hamstring tightness.

##### Design

A clinical trial of controlled and randomized double-blind, placebo type

##### Settings and conduct

The study was conducted at Kharazmi University. The subjects of this study included 24 active female athletes (12 from experimental group and 12 from control group) with hamstring tightness. For measurement of the strength (eccentric and concentric peak torque and time to reach the peak torque in speeds of 60 and 180 degree per second) and proprioception, hamstring flexibility and lower extremity performance, respectively the device of isokinetic dynamometer , passive knee extension test, hopping test and single leg bridge test were used. The Measurements were made before trainings and 6 weeks after resistance eccentric hamstring trainings .

##### Participants/Inclusion and exclusion criteria

Active female students within the age range of 18-25 having all the below conditions: Hamstring tightness, normal BMI range of 20-25 : a previous history of lower extremity injuries, a previous history of neurological disorders, Physiotherapy and movement therapy within the last six months, Joint problems, A previous history of lower extremity surgery or fracture and Pregnancy

##### Intervention groups

Control group and experimental group The experimental group completed eccentric hamstring trainings in six weeks and at the same time the control group performed their daily activities.

##### Main outcome variables

strength, proprioception, flexibility, lower extremity performance

#### General information

##### Reason for update

##### Acronym

##### IRCT registration information

IRCT registration number: **IRCT20190611043865N1**

Registration date: **2019-08-28, 1398/06/06**

Registration timing: **retrospective**

Last update: **2019-08-28, 1398/06/06**

Update count: **0**

##### Registration date

2019-08-28, 1398/06/06

##### Registrant information

##### Name

Aisan Fardmehregan

##### Name of organization / entity

Kharazmi University

##### Country

Iran (Islamic Republic of)

##### Phone

+98 21 2222 8001

##### Email address

std\_a.mehregan@khu.ac.ir

##### Recruitment status

**Recruitment complete**

##### Funding source

##### Expected recruitment start date

2018-07-31, 1397/05/09

##### Expected recruitment end date

2018-09-29, 1397/07/07

##### Actual recruitment start date

2018-08-05, 1397/05/14

##### Actual recruitment end date

2018-10-01, 1397/07/09

##### Trial completion date

2018-10-01, 1397/07/09

### Scientific title

The effect of Hamstring eccentric training on knee strength and proprioception, as well as the hamstring flexibility and lower extremity performance in active females having hamstring tightness.

### Public title

The effect of Hamstring eccentric training on knee strength and proprioception, as well as the hamstring flexibility and lower extremity performance in active females with hamstring tightness

### Purpose

Prevention

### Inclusion/Exclusion criteria

#### Inclusion criteria:

Active female students with the age range of 18-25 with hamstring tightness having the normal Body Mass Index range (BMI) of 20-25

#### Exclusion criteria:

A previous history of lower extremity injuries A previous history of neurological disorders Physiotherapy and movement therapy within previous six months Joint problems A previous history of lower extremity surgery or fracture Pregnancy

### Age

From **18 years** old to **25 years** old

### Gender

Female

### Phase

N/A

### Groups that have been masked

- Participant
- Outcome assessor

### Sample size

Target sample size: **28**

Actual sample size reached: **24**

### Randomization (investigator's opinion)

Randomized

### Randomization description

Randomly

### Blinding (investigator's opinion)

Double blinded

### Blinding description

The evaluators and the test subjects were not aware of the grouping

### Placebo

Not used

### Assignment

Parallel

### Other design features

## Secondary Ids

empty

## Ethics committees

### 1

#### Ethics committee

##### Name of ethics committee

Ethics Committee for Research at Tarbiat Modarres University

##### Street address

Tehran, Jalal Al Ahmad, Nasr Bridge

##### City

Tehran

##### Province

Tehran

##### Postal code

14115-111

#### Approval date

2018-07-20, 1397/04/29

#### Ethics committee reference number

IR.MODARES.REC.1397.042

## Health conditions studied

### 1

#### Description of health condition studied

Hamstring tightness

#### ICD-10 code

#### ICD-10 code description

## Primary outcomes

### 1

#### Description

Knee strength

#### Timepoint

Before and after intervention

#### Method of measurement

Isokinetic Dynamometer (Biodex-3) to measure knee flexion and extension

### 2

#### Description

Knee proprioception

#### Timepoint

Before and after intervention

#### Method of measurement

Assesment of proprioception by objective angle retrieval method using the dynamometer isokinetic device

### 3

#### Description

Hamstring flexibility

#### Timepoint

Before and after intervention

#### Method of measurement

Passive knee extension test

### 4

#### Description

Lower extremity performance

**Timepoint**

Before and after intervention

**Method of measurement**

Hopping and single leg bridge tests

**Secondary outcomes**

empty

**Intervention groups****1****Description**

Intervention group: hamstring Eccentric training for six weeks, three 30 minutes sessions per week

**Category**

Prevention

**2****Description**

Control group: Without any intervention

**Category**

Prevention

**Recruitment centers****1****Recruitment center****Name of recruitment center**

kharazmi university

**Full name of responsible person**

Aisan Fardmehregan

**Street address**

Department of Biomechanics and Sports Injury,  
Faculty of Physical Education and Sport Sciences,  
Kharazmi University, Mirdamad, Shahid Keshvari, Iran

**City**

Tehran

**Province**

Tehran

**Postal code**

33111-15477

**Phone**

+98 21 2222 8001

**Fax**

+98 21 2226 9547

**Email**

std\_a.mehregan@khu.ac.ir

**Sponsors / Funding sources****1****Sponsor****Name of organization / entity**

Kharazmi university

**Full name of responsible person**

Amir letafatkar

**Street address**

Department of Biomechanics and Sports Injury,  
Faculty of Physical Education and Sport Sciences,  
Kharazmi University, Mirdamad, Shahid Keshvari, Iran

**City**

Tehran

**Province**

Tehran

**Postal code**

33111-15447

**Phone**

+98 21 2222 8001

**Email**

std\_a.mehregan@khu.ac.ir

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

Yes

**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**

Amir letafatkar

**Position**

Associate professor

**Latest degree**

Ph.D.

**Other areas of specialty/work**

Sport Injuries and Corrective Exercises

**Street address**

Department of Biomechanics and Sports Injury,  
Faculty of Physical Education and Sport Sciences,  
Kharazmi University, Mirdamad, Shahid Keshvari

**City**

Tehran

**Province**

Tehran

**Postal code**

15447-33111

**Phone**

+98 21 2222 8001

**Email**

Amir.letafatkar@khu.ac.ir

## Person responsible for scientific inquiries

### Contact

**Name of organization / entity**

Kharazmi University

**Full name of responsible person**

Malihe Hadadnezhad

**Position**

Associate professor

**Latest degree**

Ph.D.

**Other areas of specialty/work**

Sport Injuries and Corrective Exercises

**Street address**

Department of Biomechanics and Sports Injury,  
Faculty of Physical Education and Sport Sciences,  
Kharazmi University, Mirdamad, Shahid Keshvari, Iran

**City**

Tehran

**Province**

Tehran

**Postal code**

15447-33111

**Phone**

021 0098 22228001

**Email**

Malihehadadnezhad@khu.ac.ir

## Person responsible for updating data

### Contact

**Name of organization / entity**

Kharazmi University

**Full name of responsible person**

Aisan Fardmehregan

**Position**

Ms.Sport injuries and Corrective Exercises

**Latest degree**

Master

**Other areas of specialty/work**

Sport injuries and Corrective Exercises

**Street address**

Department of Biomechanics and Sports Injury,  
Faculty of Physical Education and Sport Sciences,  
Kharazmi University, Mirdamad, Shahid Keshvari, Iran

**City**

Tehran

**Province**

Tehran

**Postal code**

15447-33111

**Phone**

21 0098 22486439

**Email**

std\_a.mehregan@khu.ac.ir

## 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**

The university has not allowed the researcher to do so.

**Study Protocol**

Yes - There is a plan to make this available

**Statistical Analysis Plan**

No - There is not 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**

Not applicable

**Title and more details about the data/document**

Only part of the data, such as information about the original outcome or alike, can be shared.

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

Access to data, starts 6 months after results are printed

**To whom data/document is available**

Researchers working in academic and scientific institutions

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

For scientific and research purposes with mentioning the research title and researcher name

**From where data/document is obtainable**

Request by Email from the Researcher:

std\_a.mehregan@khu.ac.ir

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

Request by Email Researcher, std\_a.mehregan@khu.ac.ir

**Comments**