Clinical Trial Protocol
Iranian Registry of Clinical Trials

08 Nov 2026

Comparison of the effect of hip- and ankle- focused training programs on biomechanical risk factors of anterior cruciate ligament injury in female basketball players

Protocol summary

Study aim
The general purpose of this research is to compare the effect of a training program with an emphasis on hip and ankle on biomechanical risk factors of anterior cruciate ligament injury in female basketball players based on the regional dependence model.

Design
The clinical trial has two experimental groups and one control group, with parallel, double-blind, randomized groups, and the sample size of the target population is estimated to be 15 people for each group using Gpower software.

Settings and conduct
Research Institute of Physical Education and Sports Sciences, jumping and landing test on force plate and motion analysis by motion device.

Participants/Inclusion and exclusion criteria
The entry conditions for the participants are female basketball players between the ages of 14 and 18 who do not have any injuries or deformities of the lower limbs.

Intervention groups
Hip- and Ankle-focused training program , 8 weeks and three session in a week, two experimental group and one control group

Main outcome variables
knee, ankle and hip angles

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20221002056077N1**
Registration date: **2022-11-12, 1401/08/21**
Registration timing: **retrospective**
Last update: **2022-11-12, 1401/08/21**
Update count: **0**

Registration date
2022-11-12, 1401/08/21

Registrant information

Name
Noushafarin Azad

Name of organization / entity

Country
Iran (Islamic Republic of)

Phone
+98 11 4308 2994

Email address
nushin.azad@gmail.com

Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2022-06-29, 1401/04/08

Expected recruitment end date
2022-07-11, 1401/04/20

Actual recruitment start date
empty

Actual recruitment end date
empty

Trial completion date
empty

Scientific title
Comparison of the effect of hip- and ankle- focused training programs on biomechanical risk factors of anterior cruciate ligament injury in female basketball players

Public title
Comparison of the effect of hip- and ankle- focused training programs on biomechanical risk factors of

anterior cruciate ligament injury in female basketball players: Based on the Regional Interdependence Model

Purpose

Prevention

Inclusion/Exclusion criteria

Inclusion criteria:

A member of one of youth basketball league teams of Tehran province The age range of the players should be between 14 and 18 years Have an average of 3 training sessions per week Players must be matured No history of knee ligament tears No significant abnormalities in lower limbs

Exclusion criteria:

Not to exercise 3 sessions a week regularly Not to follow training protocols regularly Not to participate in the post-test Using any other systematic injury prevention exercise program

Age

From **14 years** old to **18 years** old

Gender

Female

Phase

N/A

Groups that have been masked

- Participant
- Data analyser

Sample size

Target sample size: **36**

Randomization (investigator's opinion)

Randomized

Randomization description

Simple randomization instrument: Packet In this method, the researcher gives a special number to each teams. And there are those numbers in the selected envelopes. Therefore, she will have numbered envelopes as many as the number of teams. Then he pours them into a bag or container and stirs them. Then she takes out them one by one and writes down their numbers. And the first to third teams are randomly assigned to the control and intervention groups

Blinding (investigator's opinion)

Single blinded

Blinding description

The participants, including two experimental groups and a control group, as well as the data analyst, have been blinded. The groups and the data analyst are blinded in a way that they do not know which group they belong to.

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethical Committee of Research Institute of Physical Education and Sports Sciences

Street address

No.3, Fifth Ave, Miremad St, Ostad Motahati St, Tehran

City

Tehran

Province

Tehran

Postal code

1587958711

Approval date

2022-05-21, 1401/02/31

Ethics committee reference number

IR.SSRC.REC.1401.036

Health conditions studied

1

Description of health condition studied

Cruciate knee ligament injury

ICD-10 code

M36

ICD-10 code description

Systemic disorders of connective tissue in diseases classified elsewhere

Primary outcomes

1

Description

The angle of the ankle

Timepoint

In pre- and post-test

Method of measurement

Motion analysis device and force plate

2

Description

The angle of knee

Timepoint

In pre- and post-test

Method of measurement

Motion analysis device and force plate

3

Description

The angle of hip

Timepoint

In pre- and post-test

Method of measurement

Motion analysis device and force plate

Secondary outcomes

empty

Intervention groups

1

Description
First intervention group: The first intervention group will be given eight weeks of hip strengthening exercises along with PEP exercise program for three sessions a week for eight weeks. These exercises are performed in the warm-up section of the players' daily exercises and last for twenty minutes. In the exercises, the mini-loop band of Traband brand with medium resistance is used.
Category
Prevention

2

Description
Second intervention group: The second intervention group will be given eight weeks of ankle strengthening exercises along with PEP exercise program for three sessions a week for eight weeks. These exercises are performed in the warm-up section of the players' daily exercises and last for twenty minutes. In the exercises, the mini-loop band of Traband brand with medium resistance is used.
Category
Prevention

3

Description
Control group: The control group will be given eight weeks of PEP exercise program for three sessions a week for eight weeks. These exercises are performed in the warm-up section of the players' daily exercises and last for twenty minutes. In the exercises, the mini-loop band of Traband brand with medium resistance is used.
Category
Prevention

Recruitment centers

1

Recruitment center
Name of recruitment center
Research Institute of Physical Education and Sports Sciences
Full name of responsible person
Mostafa Zarei
Street address
5th Dead End, District 7, Miremad St, Ostad Motahari St ,Tehran, Tehran Province
City
Tehran
Province
Tehran
Postal code
1587958711
Phone
+98 21 8874 7836
Email
info@ssrc.ac.ir
Web page address
https://ssrc.ac.ir/fa

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Shahid Beheshti University of Medical Sciences
Full name of responsible person
Afshin Zarqi
Street address
Daneshjou Blvd, District 1, Tehran, Tehran Province
City
Tehran
Province
Tehran
Postal code
1983969411
Phone
+98 21 29901
Email
pr-office@sbu.ac.ir
Web page address
https://www.sbu.ac.ir/
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Shahid Beheshti University of Medical Sciences
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
Shahid Beheshti University of Medical Sciences
Full name of responsible person
Mostafa Zareii
Position
Professor
Latest degree
Ph.D.
Other areas of specialty/work

Teaching

Street address
Daneshjou Blvd, District 1, Tehran, Tehran Province

City
Tehran

Province
Tehran

Postal code
1983969411

Phone
+98 21 29901

Email
M_zareei@sbu.ac.ir

Person responsible for scientific inquiries

Contact

Name of organization / entity
Shahid Beheshti University of Medical Sciences

Full name of responsible person
Mostafa Zarei

Position
Professor

Latest degree
Ph.D.

Other areas of specialty/work
Teaching

Street address
Daneshjou Blvd, District 1, Tehran, Tehran Province

City
Tehran

Province
Tehran

Postal code
1983969411

Phone
+98 21 29910

Email
M_zareei@sbu.ac.ir

Person responsible for updating data

Contact

Name of organization / entity
Shahid Beheshti University of Medical Sciences

Full name of responsible person
Noushafarin Azad

Position
Student

Latest degree
Bachelor

Other areas of specialty/work
Sports pathology and corrective exercise

Street address
No 24, Darya 58/2 Ave, Taleb Amoli Blvd , Amol

City
Amol

Province
Mazandaran

Postal code
4615983339

Phone
+98 11 4308 2994

Email
Nushin.azad@gmail.com

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
Movement analysis

When the data will become available and for how long
After result edition

To whom data/document is available
Acadamics

Under which criteria data/document could be used
Studious

From where data/document is obtainable
nushin.azad@gmail.com

What processes are involved for a request to access data/document
Send request with an email and we check and send it in 15 days

Comments