Clinical Trial Protocol
Iranian Registry of Clinical Trials

09 Jun 2026

The effect of an eight-week ACL injury prevention training protocol on performance indicators of professional male volleyball players.

Protocol summary

Study aim
The objective of this study will be to examine the effects of an eight-week anterior cruciate ligament (ACL) injury prevention program (PEP) on improving dynamic balance, explosive power, and functional performance in professional male volleyball players, as well as reducing the risk of non-contact knee injuries.

Design
This quasi-experimental study will be conducted with a parallel-group design (intervention and control) using simple random allocation. The intervention will last for eight weeks with three sessions per week, and assessments will be carried out at pre-test and post-test stages.

Settings and conduct
This study will be conducted in the sports hall of the Shahr Aftab Volleyball Club in Meybod, where all tests and interventions will take place.

Participants/Inclusion and exclusion criteria
In this study, 30 professional male volleyball players (aged 16–20 years) will be selected. Inclusion criteria will include no history of ACL injury or surgery, no participation in similar prevention programs during the past year, and 3 to 6 years of training experience. Eligible participants will be randomly assigned to intervention and control groups (15 players each).

Intervention groups
It is expected that the intervention group (15 players) will perform the PEP program three times per week over an eight-week period. The program, lasting approximately 15–20 minutes and consisting of warm-up, strength, plyometric, agility, and stretching exercises, is anticipated to improve neuromuscular control, increase explosive power, enhance dynamic balance, and reduce the risk of non-contact knee injuries, particularly ACL injuries.

Main outcome variables
The primary outcome variables of this study will be dynamic balance, explosive muscular power, agility, and functional movement screening (FMS) scores.

General information

Reason for update

Acronym
PEP

IRCT registration information
IRCT registration number: **IRCT20250823066957N1**
Registration date: **2025-09-04, 1404/06/13**
Registration timing: **prospective**

Last update: **2025-09-04, 1404/06/13**
Update count: **0**

Registration date
2025-09-04, 1404/06/13

Registrant information

Name
Morteza Barzegar Bafrouei

Name of organization / entity
The University of Shahid Beheshti

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Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2025-09-16, 1404/06/25

Expected recruitment end date
2025-10-02, 1404/07/10

Actual recruitment start date
empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

The effect of an eight-week ACL injury prevention training protocol on performance indicators of professional male volleyball players.

Public title

Investigating the effect of ACL injury prevention exercises on functional indices

Purpose

Prevention

Inclusion/Exclusion criteria

Inclusion criteria:

No history of ACL injury or surgery in the past No participation in any ACL injury prevention program during the past year Having 3 to 6 years of training experience

Exclusion criteria:

Participation in any ACL injury prevention training program or similar program within the past year (such as PEP, FIFA 11+, or Sportsmetrics). The occurrence of any musculoskeletal injury or condition in the lower extremity during the execution of the protocol that prevents proper implementation of the training protocol. Inability to consistently adhere to the training protocol or failure to attend post-assessments. Lack of cooperation in implementing the protocol and discontinuation of participation for any reason.

Age

From **16 years** old to **20 years** old

Gender

Male

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **30**

Randomization (investigator's opinion)

Randomized

Randomization description

The allocation of participants to the intervention and control groups will be carried out randomly. After selecting eligible players based on the inclusion and exclusion criteria, a list of names will be prepared and each participant will be assigned a number. Using a simple randomization method (lottery drawing), the numbers will then be distributed into two groups of 15 players each. No non-random or subjective criteria will be applied in this process in order to minimize the risk of selection bias.

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

Ethics in Biological Research Working Group, Shahid Beheshti University, Tehran

Street address

Evin, Shahid Shahriari Square, Shahid Beheshti University, Presidency Building, Research Affairs, Office of the Biomedical Research Ethics Committee

City

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Province

Tehran

Postal code

1983969411

Approval date

2025-07-26, 1404/05/04

Ethics committee reference number

IR.SBU.REC.1404.130

Health conditions studied

1

Description of health condition studied

The study subjects will include professional male volleyball players (aged 16–20 years) who meet the eligibility criteria and will participate in the injury prevention training program (PEP) during the study.

ICD-10 code

S83.512A

ICD-10 code description

Sprain of anterior cruciate ligament of left knee, initial encounter

Primary outcomes

1

Description

The primary outcome variable in this study is agility (9 x 4 meters). It is expected that implementing the PEP training program will produce significant improvements in this variable.

Timepoint

The study variables will be measured at two time points: pre-test (before the start of the intervention) and post-test (after the completion of the eight-week training program).

Method of measurement

This outcome assesses the agility of athletes through a 9-meter run test in four directions (9 x 4 meters). The aim of this test is to measure reaction speed, rapid change of direction, and muscle coordination. Specifically, the time recorded for running forward and

changing direction on this track will be a measure of the athletes' agility.

2

Description

The primary outcome variable in this study includes muscle power (Sargent jump). It is expected that implementing the PEP training program will produce a significant improvement in this variable.

Timepoint

The study variables will be measured at two time points: pre-test (before the start of the intervention) and post-test (after the completion of the eight-week training program).

Method of measurement

This outcome measures the explosive power of the athlete's lower body muscles through the Sargent Jump Test. In this test, the athlete must jump from a standing position to the highest possible height and record the distance of their jump. The purpose of this test is to measure muscular power and explosive power, which play an important role in sports performance, especially in disciplines such as volleyball.

3

Description

The primary outcome variable in this study is dynamic balance (Y-Balance). It is expected that implementing the PEP exercise program will produce significant improvements in this variable.

Timepoint

The study variables will be measured at two time points: pre-test (before the start of the intervention) and post-test (after the completion of the eight-week training program).

Method of measurement

This outcome assesses an individual's ability to maintain balance while moving in different directions. In this test, the athlete must maintain balance in three different directions (anterior, posterolateral, and posteromedial) and record their best performance. This test is useful for assessing neuromuscular function and dynamic balance.

4

Description

The primary outcome variable in this study is the Functional Movement Screening (FMS) score. It is expected that implementing the PEP exercise program will produce a significant improvement in this variable.

Timepoint

The study variables will be measured at two time points: pre-test (before the start of the intervention) and post-test (after the completion of the eight-week training program).

Method of measurement

This outcome is related to the assessment of the quality of functional movements performed using the FMS test. This test consists of seven different movements designed to assess basic movements and the degree of flexibility, strength, and stability of the body. The score of this test indicates the ability of the individual to perform complex movements and correct body function in different sports situations.

Secondary outcomes

empty

Intervention groups

1

Description

Intervention group: The intervention group will perform the anterior cruciate ligament (ACL) injury prevention program (PEP) three times per week for eight weeks. The program will last approximately 15–20 minutes and will include five components: warm-up, strength, plyometric, agility, and stretching exercises, implemented at the beginning of the main training session as a substitute for the regular warm-up. The aim of this intervention will be to improve neuromuscular control, increase explosive power, enhance dynamic balance, and ultimately reduce the risk of non-contact knee injuries, particularly ACL injuries.

Category

Prevention

2

Description

Control group: In the control group, volleyball players continued with their regular team training. This group did not undergo any specific intervention related to ACL injury prevention. The control group followed the standard training program as part of their regular daily or weekly schedule without being assigned any specific protocol such as PEP. The control group continued their regular training regimen and participated only in pre-test and post-test assessments for comparison with the intervention group. The main difference between the control group and the intervention group was that the control group did not perform any ACL injury prevention protocol and continued with their usual training routine.

Category

Prevention

Recruitment centers

1

Recruitment center

Name of recruitment center

Meybod County Volleyball Committee

Full name of responsible person

Morteza Barzegar Bafrouei

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Sponsors / Funding sources

1

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Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
No
Title of funding source
Necessary background for conducting the study and field facilities
Proportion provided by this source
1
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
Other

Person responsible for general inquiries

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Sharing plan

Deidentified Individual Participant Data Set (IPD)
Undecided - It is not yet known if there will be a plan to make this available

Study Protocol
Undecided - It is not yet known if there will be a plan to make this available

Statistical Analysis Plan
Undecided - It is not yet known if there will be a plan to make this available

Informed Consent Form
Undecided - It is not yet known if there will be a plan to make this available

Clinical Study Report
Undecided - It is not yet known if there will be a plan to make this available

Analytic Code
Undecided - It is not yet known if there will be a plan to make this available

Data Dictionary
Undecided - It is not yet known if there will be a plan to make this available