Clinical Trial Protocol
Iranian Registry of Clinical Trials

27 Jul 2026

Effect of 6 Week Plyometric Training with Feedback on Lower Extremity Kinematic and GRF Symmetry on Drop Landing Technique of Male Basketball Players with Chronic Ankle Instability

Protocol summary

Study aim
Effect of 6 week plyometric trainig with feedback on lower extremity kinematic and GRF symmetry on drop landing technique of male basketball players with chronic ankle instability

Design
Randomized control trial with control group, with parallel groups, single blinded

Settings and conduct
Twenty four basketball players suffering from chronic ankle instability qualified to participate in the study will be assigned in two groups (experimental and control). Plyometric exercises will be conducted in fifty-minute sessions for three sessions a week and for six weeks. Participants will do the warm-up for ten minutes followed by plyometric exercises along with feedback (external manual) for thirty minutes, and the last ten minutes for cooling down.

Participants/Inclusion and exclusion criteria
Inclusion conditions: 1- At least having one experience of acute ankle sprain resulted in pain, swelling, and temporary reduction in performance (not in the last three months) 2-Having score less than 27 in Cumberland Ankle Instability Tool 3- Experience of repetitive giving way during the last six months Exclusion conditions: 1- No consent to participation in the research 2- Absent more than three times during the exercises 3- Experience of any influential damage and malformation in researching lower limbs 4- Balance disorders (not resulting from chronic ankle instability) 5- Attending in rehabilitation programs during the last six months

Intervention groups
intervention: Plyometric training with feedback control: They continue their routine basketball exercises

Main outcome variables
Knee flexion angle, Knee valgus angle, GRF symmetry, drop time symmetry

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20191222045850N1**
Registration date: **2020-01-27, 1398/11/07**
Registration timing: **registered_while_recruiting**

Last update: **2020-01-27, 1398/11/07**
Update count: **0**

Registration date
2020-01-27, 1398/11/07

Registrant information

Name
Moein Saghari
Name of organization / entity
The university of Kharazmi
Country
Iran (Islamic Republic of)
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+98 23 3234 3194
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Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2019-12-31, 1398/10/10

Expected recruitment end date
2020-03-07, 1398/12/17

Actual recruitment start date
empty

Actual recruitment end date
empty

Trial completion date

empty

Scientific title
Effect of 6 Week Plyometric Training with Feedback on Lower Extremity Kinematic and GRF Symmetry on Drop Landing Technique of Male Basketball Players with Chronic Ankle Instability

Public title
Effect Plyometric Training with Feedback on Lower Extremity Kinematic and GRF Symmetry

Purpose
Treatment

Inclusion/Exclusion criteria

Inclusion criteria:
At least having one acute ankle sprain resulted in pain, swelling, and temporary reduction in performance (not in the last three months) Having score less than 27 in Cumberland Ankle Instability Tool Experience of repetitive giving way during the last six months

Exclusion criteria:
No consent for participation in the research Absent more than three times during the exercises Experience of any influential damage and malformation in researching lower limbs Balance disorders (not resulting from chronic ankle instability) Attending in rehabilitation programs during the last six months

Age
From **18 years** old to **28 years** old

Gender
Male

Phase
N/A

Groups that have been masked

- Outcome assessor
- Data analyser

Sample size
Target sample size: **24**

Randomization (investigator's opinion)
Randomized

Randomization description
The sample will be categorized into two groups including purposeful and simple random groups based on research participation scales. Randomization is based on four blocks. A series of consecutive numbers generated by the computer's table of numbers. They are randomly placed in opaque envelopes, one blind to patients and intervention groups, randomizing and assigning numbers to groups. Patients in each group were also blinded to randomization and intervention in the other group.

Blinding (investigator's opinion)
Single blinded

Blinding description
Evaluator and analyzer will be kept blind.

Placebo
Not used

Assignment
Parallel

Other design features
-

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee
Ethics committee of kharazmi University

Street address
Center of Human Movement Sciences Kharazmi University- Mirdamad, South Razan Street, Hesari Street, Keshvari Sport Complex, Tehran, Iran

City
Tehran

Province
Tehran

Postal code
-

Approval date
2019-12-22, 1398/10/01

Ethics committee reference number
IR.KHU.REC.1398.029

Health conditions studied

1

Description of health condition studied
chronic ankle instability

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description
knee flexion angle

Timepoint
Knee flexion angle measurements one week before the intervention and one week after the end of training

Method of measurement
3-dimensional Motion analysis systems

2

Description
Knee Valgus angle

Timepoint
Knee Valgus angle measurements one week before the intervention and one week after the end of training

Method of measurement
3-dimensional Motion analysis systems

3

Description
Vertical Ground reaction force

Timepoint

Vertical Ground reaction force measurements one week before the intervention and one week after the end of training

Method of measurement

Force plate

4

Description

Drop time symmetry

Timepoint

Drop time symmetry measurements one week before the intervention and one week after the end of training

Method of measurement

Force plate

5

Description

Maximum knee flexion

Timepoint

Maximum knee flexion measurements one week before the intervention and one week after the end of training

Method of measurement

3-dimensional Motion analysis systems

6

Description

Maximum knee valgus

Timepoint

Maximum knee valgus measurements one week before the intervention and one week after the end of training

Method of measurement

3-dimensional Motion analysis systems

7

Description

initial knee flexion

Timepoint

initial knee flexion measurements one week before the intervention and one week after the end of training

Method of measurement

3-dimensional Motion analysis systems

8

Description

initial knee valgus

Timepoint

initial knee valgus measurements one week before the intervention and one week after the end of training

Method of measurement

3-dimensional Motion analysis systems

Secondary outcomes

empty

Intervention groups

1

Description

Intervention group: The exercises lasted 6 weeks, three sessions per week, and each session lasted for 50 minutes. First 10 minutes for warm-up, then 35 minutes of plyometric exercises with external verbal feedback from the instructor, and then 5 minutes cold down.

Category

Rehabilitation

2

Description

Control group: They continue their routine basketball exercises

Category

Other

Recruitment centers

1

Recruitment center

Name of recruitment center

Kharazmi University Health and wellness Center

Full name of responsible person

Moein Saghari

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Kharazmi university

Full name of responsible person

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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
20
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
Center of Human movement Sciences Kharazmi University
Full name of responsible person
Moein Saghari
Position
Master student of Corrective exercise and sport injury prevention
Latest degree
Master
Other areas of specialty/work
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Person responsible for scientific inquiries

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Latest degree
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Other areas of specialty/work
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Person responsible for updating data

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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
Only part of the data, such as dependent variables, The average of all samples can be shared scientific article.
When the data will become available and for how

long

The data of access is April 2020

To whom data/document is available

personal information is confidential and general out comes in paper from available to everyone.

Under which criteria data/document could be used

information is not available to anyone. General outcomes in paper from available to everyone.

From where data/document is obtainable

Moein Saghari, Phone: 00989364441226, Email: std_moein.saghari@khu.ac.ir

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

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Comments