

Clinical Trial Protocol

Iranian Registry of Clinical Trials

24 Jun 2026

Comparison of the effect of eight weeks of plyometric exercises with and without electrical muscle stimulation (EMS) on motor function, postural control and strength in athletes with ankle instability

Protocol summary

Study aim

Comparison of plyometric training with and without EMS on motor performance, postural control and strength of athletes with ankle instability

Design

36 female athletes with functional ankle instability divided into two experimental and one control groups. The simple randomization method was used to assign individuals to groups that in this method, random allocation software was used to create a random sequence.

Settings and conduct

The present study is a quasi-experimental research with a pre-test - post-test design. 36 Female Athletes with Ankle Instability randomly divided into two experimental and one control groups. Motor performance, postural control and strength are measured before and after exercises.

Participants/Inclusion and exclusion criteria

Athletes with ankle instability; age range 18 to 26 years old; at least once ankle sprain in the last 6 months; pain intensity calculated from the Pain Scale Test (VAS) at least 4.

Intervention groups

The first intervention group included female athletes with ankle instability who received a plyometric exercise intervention. The second intervention group included female athletes with ankle instability who received the intervention of plyometric exercises with electrical muscle stimulation (EMS). The control group included female athletes with ankle instability who did not receive any intervention.

Main outcome variables

Motor performance; Postural control; Strength

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20200107046035N7**

Registration date: **2022-01-05, 1400/10/15**

Registration timing: **prospective**

Last update: **2022-01-05, 1400/10/15**

Update count: **0**

Registration date

2022-01-05, 1400/10/15

Registrant information

Name

Hossein Shahrokhi

Name of organization / entity

Hakim Sabzevari University

Country

Iran (Islamic Republic of)

Phone

+98 51 4401 2756

Email address

h.shahrokhi@hsu.ac.ir

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2022-01-21, 1400/11/01

Expected recruitment end date

2022-03-20, 1400/12/29

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Comparison of the effect of eight weeks of plyometric exercises with and without electrical muscle stimulation (EMS) on motor function, postural control and strength in athletes with ankle instability

Public title

The effect of plyometric exercises with and without electrical muscle stimulation (EMS) on motor function, postural control and strength in athletes with ankle instability

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

Ankle Instability Age range 18 to 26 years Ankle sprains at least once in the last 6 months Pain intensity calculated from the Visual Analog Scale (VAS) at least 4 Athlete

Exclusion criteria:

Perform exercises outside the researcher's supervision
Absence of three general sessions and two consecutive sessions of exercises Referral pain to the lower limb during activity

Age

From **18 years** old to **26 years** old

Gender

Female

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **36**

Randomization (investigator's opinion)

Randomized

Randomization description

The simple Randomization Method was used to assign individuals to three groups that in this method, Random Allocation Software was used to create a random sequence. Then, in order not to determine which group the individuals will be assigned to before dividing them into two groups, or in other words, allocation concealment, the central randomization method was used.

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

Sport sciences research institute

Street address

No. 3, 5th Alley, Miremad Street, Motahhari Street, Tehran, Iran.

City

Tehran

Province

Tehran

Postal code

1587958711

Approval date

2021-07-20, 1400/04/29

Ethics committee reference number

IR.SSRC.REC.1400.072

Health conditions studied

1

Description of health condition studied

Ankle Instability

ICD-10 code

M25.3

ICD-10 code description

Other instability of joint

Primary outcomes

1

Description

Motor performance

Timepoint

At the beginning of the study (before the start of the intervention) and after 8 weeks of intervention

Method of measurement

Single leg jump test and side jump test

2

Description

Postural control

Timepoint

At the beginning of the study (before the start of the intervention) and after 8 weeks of intervention

Method of measurement

Y Balance test

3

Description

Strength

Timepoint

At the beginning of the study (before the start of the intervention) and after 8 weeks of intervention

Method of measurement

Dynamometer

Secondary outcomes

empty

Intervention groups

1

Description

Intervention group: Plyometric exercise, for 8 weeks, 3 sessions per week, 2 hour per session

Category

Treatment - Other

2

Description

Intervention group: Plyometric exercise with EMS, for 8 weeks, 3 sessions per week, 2 hour per session

Category

Treatment - Other

3

Description

Control group: Without any training and just doing normal daily activities

Category

N/A

Recruitment centers

1

Recruitment center

Name of recruitment center

Raja University

Full name of responsible person

Sahar Rezaei

Street address

Novrizian, Motahhari blvd.

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Qazvin

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95834-34148

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+98 28 3367 7101

Email

Rezaei.sah@gmail.com

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Raja university

Full name of responsible person

Hadi Miri

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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

Raja university

Proportion provided by this source

5

Public or private sector

Private

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

Hakim Sabzevari University

Full name of responsible person

Hossein Shahrokhi

Position

Assistant professor

Latest degree

Ph.D.

Other areas of specialty/work

Corrective Exercise

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Hakim Sabzevari University - Tohidshahr - Sabzevar

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Person responsible for scientific inquiries

Contact

Name of organization / entity

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Full name of responsible person

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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

All potential data can be shared after people have not been identified

When the data will become available and for how long

Start the access period one year after printing the results

To whom data/document is available

Data will be available to academic and scientific researchers

Under which criteria data/document could be used

Any kind of functional analysis on the submitted data is allowed

From where data/document is obtainable

Email: h.shahrokhi@hsu.ac.ir

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

by Email: h.shahrokhi@hsu.ac.ir and the reason for using the documents

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

Hakim Sabzevari University

Full name of responsible person

Hossein Shahrokhi

Position

Assistant professor

Latest degree

Ph.D.

Other areas of specialty/work

Corrective Exercise

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Province

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