Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

Effects of Reactive Neuromuscular Training on Muscle Strength and Perceived Ankle Instability in Soccer Players with Chronic Ankle Instability

Protocol summary

Study aim

Finding out whether the designed exercise program protocol is effective in preventing ankle sprains?

Design

Randomized clinical trial with a control group on 20 people. Randomization was done by lottery.

Settings and conduct

This study focuses on sports injuries and aims to investigate the effects of reactive neuromuscular training on muscle strength, perceived ankle instability, pain intensity, fear of movement, and functional limitation in soccer players with chronic ankle instability. Participants are allocated to training and control groups. Assessments include measurement of peroneal muscle strength using a handheld dynamometer and evaluation of clinical and psychological outcomes using the relevant assessment instruments. Assessments are conducted at the Sport Sciences Research Institute, while the intervention group completes an eight-week training program, three sessions per week, at a sports club. The control group does not receive a specific training intervention during this period. Measurements are performed before the intervention and after completion of the eight-week program.

Participants/Inclusion and exclusion criteria

Footballers with more than three years of playing experience who have a history of ankle sprains and at least one year has passed since then.

Intervention groups

Participants in the intervention group completed an 8-week reactive neuromuscular training (RNT) program, consisting of three sessions per week. The program included resistance-based and functional exercises using resistance bands, balance exercises, and change-of-direction and deceleration tasks. The training program progressed gradually over the intervention period.

Main outcome variables

Peroneal muscle strength; perceived ankle instability; pain intensity; fear of movement; functional limitation

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20250409065266N1**
Registration date: **2026-10-26, 1405/08/04**
Registration timing: **retrospective**

Last update: **2026-10-26, 1405/08/04**
Update count: **0**

Registration date

2026-10-26, 1405/08/04

Registrant information

Name
Mojtaba Faraji
Name of organization / entity
Allameh tabatabae
Country
Iran (Islamic Republic of)
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+98 21 5576 5462
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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2025-02-19, 1403/12/01

Expected recruitment end date

2025-03-16, 1403/12/26

Actual recruitment start date

2025-02-19, 1403/12/01

Actual recruitment end date
2025-03-25, 1404/01/05
Trial completion date
2025-05-31, 1404/03/10

Scientific title
Effects of Reactive Neuromuscular Training on Muscle Strength and Perceived Ankle Instability in Soccer Players with Chronic Ankle Instability

Public title
Effects of Reactive Exercises on Muscle Strength and Perceived Ankle Instability in Soccer Players
Purpose
Prevention
Inclusion/Exclusion criteria
Inclusion criteria:
No history of knee or hip joint injuries in the past six months. At least one episode of recurrent ankle sprain that caused swelling, pain, and reduced ankle function. At least on year has passed since the first ankle sprain occurred. Age range between 16 and 20 years. At least 3 years of experience in playing football.
Exclusion criteria:
History of bilateral ankle sprains Failure to adhere to the training program (missing three non-consecutive sessions or two consecutive sessions) Sustaining an injury during the intervention period
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: **20**
Actual sample size reached: **20**
Randomization (investigator's opinion)
Randomized
Randomization description
We very simply wrote two words, interference and non-interference, on paper (the number of these sheets was equal to the number of subjects) and dropped them into a ball. We asked the subject to pick one of these papers. After reading the paper and registering the individual in the selected group, the paper was placed back into the ball.
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
Allameh Tabatabaei University Ethics Committee
Street address
No 2, Babae alley, Mollasalehi alley, Pahlavani Street, Shahid Arab street, Ghazvin street
City
Tehran
Province
Tehran
Postal code
1356746614
Approval date
2024-05-29, 1403/03/09
Ethics committee reference number
IR.ATU.REC.1403.078

Health conditions studied

1

Description of health condition studied
Chronic ankle instability in football players
ICD-10 code
M24.2
ICD-10 code description
Disorder of ligament

Primary outcomes

1

Description
Change in peroneal muscle strength from pre-intervention to post-intervention following 8 weeks of reactive neuromuscular training in soccer players with chronic ankle instability, measured using a hand-held dynamometer.
Timepoint
Peroneal muscle strength will be measured at baseline, before the intervention, and immediately after completion of the eight-week reactive neuromuscular training program.
Method of measurement
Hand-held dynamometer for measuring peroneal muscle strength.

2

Description
Change in perceived ankle instability score from pre-intervention to post-intervention following 8 weeks of reactive neuromuscular training in soccer players with chronic ankle instability, measured using a validated ankle instability questionnaire.
Timepoint
Perceived ankle instability will be assessed at baseline, before the intervention, and immediately after

completion of the eight-week reactive neuromuscular training program.

Method of measurement

The questionnaire used in the study to assess perceived ankle instability, with scores recorded at pre-intervention and post-intervention assessments.

Secondary outcomes

1

Description

Change in ankle pain intensity during daily activities from baseline to immediately after completion of the eight-week intervention.

Timepoint

Ankle pain intensity during daily activities will be assessed at baseline, before the intervention, and immediately after completion of the eight-week intervention.

Method of measurement

A 100-mm Visual Analogue Scale, scored from 0 to 100, with 0 indicating no pain and 100 indicating the worst imaginable pain.

2

Description

Change in foot and ankle function during activities of daily living and sports activities from baseline to immediately after completion of the eight-week intervention.

Timepoint

Foot and ankle function during activities of daily living and sports activities will be assessed at baseline, before the intervention, and immediately after completion of the eight-week intervention.

Method of measurement

The Foot and Ankle Ability Measure, a 29-item questionnaire comprising the Activities of Daily Living subscale (21 items) and the Sports subscale (8 items). Scores are expressed as percentages, with higher scores indicating better function.

Intervention groups

1

Description

Intervention group: Participants performed an 8-week reactive neuromuscular training (RNT) program, consisting of three sessions per week, each lasting 30–60 minutes. The program included eight exercises targeting lower-limb neuromuscular control, balance, strength, and dynamic stability. Training volume was progressively increased throughout the intervention period, with prescribed sets and repetitions adjusted weekly. Rest intervals were 2 minutes during weeks 1–4, 1.5 minutes during weeks 5–7, and 1 minute during week 8.

Category

Prevention

2

Description

Control group: Participants did not receive any specific intervention during the 8-week study period.

Category

N/A

Recruitment centers

1

Recruitment center

Name of recruitment center

Physical Education and Sports Sciences Research Institute

Full name of responsible person

DR Samira Gholamian

Street address

Unit 3, No 2, Babaei Alley, Molla Salehi Alley, Shahid Pahlavani Street, Shahid Arab Street, Qazvin Street

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Allameh Tabatabae University of Tehran

Full name of responsible person

Seyed Ahmad Yahyazadeh

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No 2, Babae Alley, Molla salehi Alley, Shahid Pahlavani Street, Shahid Arab Street, Ghazvin Street

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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

Mojtaba Faraji

Proportion provided by this source

100

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
Persons

Person responsible for general inquiries

Contact

Name of organization / entity
Allameh Tabatabae University

Full name of responsible person
Mojtaba Faraji

Position
Student

Latest degree
Bachelor

Other areas of specialty/work
Sport Injuries

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Allameh Tabatabaei University, Faculty of Physical Education and Sport Sciences, opposite Olympic Hotel, West Boulevard of Azadi Stadium, Chogan Boulevard, Hakim West Highway

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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
No - There is not a plan to make this available

Data Dictionary
Not applicable

Title and more details about the data/document
The data of the participants can be shared without mentioning their name. These data are related to the main and secondary consequence during the research.

When the data will become available and for how long
Starting the course of 6 months after printing the results of the article

To whom data/document is available
All people in universities and industry can do this for a specified period of time.

Under which criteria data/document could be used

Applicants can evaluate and analyze the analysis data from the two devices used in this study with permission from the researcher.

From where data/document is obtainable

Directly with the researcher herself by electronic address: mojtaba.faraji90@gmail.com or Mobile Number 00989194102304

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

The applicant receives the information for up to one month after submitting the application.

Comments