Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

Comparison of the Effects of Neuromuscular, Traditional, and Combined Training Programs on the Incidence and Severity of Upper and Lower Limb Injuries, Pain, Functional Disability, and Health-Related Quality of Life in Male Professional Volleyball Players

Protocol summary

Study aim

Comparing the effects of eight weeks of neuromuscular, traditional, and combined training programs on the incidence and severity of upper and lower limb injuries, pain, functional disability, and health-related quality of life in professional male volleyball players aged 18-35 years.

Design

Randomized controlled trial, single-blind (outcome assessors), parallel three-intervention-group, pre-test/post-test, sample size 36, software randomization, phase not applicable.

Settings and conduct

Professional volleyball clubs. After screening and consent, 8-week intervention in standard hall under expert trainer supervision. Assessments by blinded assessors at pre-test and post-test.

Participants/Inclusion and exclusion criteria

Inclusion: male volleyball players 18-35 years; at least 3 years of professional league experience; no musculoskeletal injury in last 6 months; no performance-affecting medications; no chronic disease; consent. Exclusion: history of severe knee, ankle, shoulder, or back injury; history of upper/lower limb or spinal surgery; uncontrolled heart disease or diabetes; anti-inflammatory or steroidal medication use; inability to balance for 30s.

Intervention groups

Neuromuscular group: 8 weeks, 3×45min/week, progressive balance exercises, landing technique, and core stability. Traditional group: 8 weeks, 3×45min/week, strength, speed, and aerobic exercises. Combined group: 8 weeks, 3×45min/week, 50% neuromuscular and 50% traditional training.

Main outcome variables

Incidence and severity of upper and lower limb injuries using injury registration form; shoulder and arm pain and functional disability using SPADI questionnaire; foot and ankle pain and functional disability using FADI questionnaire; health-related quality of life using SF-36 questionnaire.

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20260624069940N6**
Registration date: **2026-08-20, 1405/05/29**
Registration timing: **prospective**

Last update: **2026-08-20, 1405/05/29**
Update count: **0**

Registration date

2026-08-20, 1405/05/29

Registrant information

Name

Atiye Gholizadeh

Name of organization / entity

Tarbiat modares university

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2026-09-01, 1405/06/10

Expected recruitment end date

2026-10-27, 1405/08/05

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Comparison of the Effects of Neuromuscular, Traditional, and Combined Training Programs on the Incidence and Severity of Upper and Lower Limb Injuries, Pain, Functional Disability, and Health-Related Quality of Life in Male Professional Volleyball Players

Public title

Comparison of Three Training Methods on Injury Prevention and Quality of Life in Professional Volleyball Players

Purpose

Prevention

Inclusion/Exclusion criteria

Inclusion criteria:

Male professional volleyball players aged 18 to 35 years At least 3 years of experience in professional league No musculoskeletal injuries in the past 6 months No use of performance-affecting medications No chronic diseases Ability to understand and cooperate in performing tests and exercises Signed written informed consent to participate in the study

Exclusion criteria:

History of severe knee, ankle, shoulder, or back injury in the past 6 months History of lower limb, upper limb, or spinal surgery in the past year Uncontrolled cardiovascular diseases Uncontrolled diabetes Regular use of anti-inflammatory or steroidal medications Inability to maintain standing balance for at least 30 seconds without assistance

Age

From **18 years** old to **35 years** old

Gender

Male

Phase

N/A

Groups that have been masked

- Outcome assessor

Sample size

Target sample size: **36**

Randomization (investigator's opinion)

Randomized

Randomization description

After initial screening and confirmation of eligibility, eligible participants will be randomly assigned to three intervention groups (Neuromuscular, Traditional, and Combined) using randomization software. The randomization method is simple randomization with individual as the unit of randomization. No stratification is used. The random sequence is generated by software. Allocation concealment is ensured using sealed envelopes

Blinding (investigator's opinion)

Single blinded

Blinding description

In this study, due to the nature of the exercise intervention, complete blinding is not possible. However, outcome assessors who are responsible for administering the questionnaires and assessments related to injury, pain, functional disability, and quality of life will be blinded to participants' group allocation. Participants, the principal investigator, and trainers are aware of the intervention type. Outcome assessors are blinded through participant coding and lack of access to group allocation information.

Placebo

Not used

Assignment

Parallel

Other design features

Randomized controlled trial, single-blind (outcome assessors), with three parallel groups and pre-test/post-test design

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Research Ethics Committee of Tarbiat Modares University

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Tarbiat Modares University, Shahid Chamran Blvd., Tehran, Iran

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Approval date

2026-07-18, 1405/04/27

Ethics committee reference number

IR.MODARES.REC.1405.120

Health conditions studied

1

Description of health condition studied

Sports injuries

ICD-10 code

Y93.6

ICD-10 code description

Primary outcomes

1

Description
Incidence of Upper and Lower Limb Injuries
Timepoint
Before the intervention and after 8 weeks of intervention
Method of measurement
Volleyball Injury Registration Form (including injury type, anatomical site, mechanism, and date of occurrence)

2

Description
Severity of Upper and Lower Limb Injuries
Timepoint
Before the intervention and after 8 weeks of intervention
Method of measurement
Volleyball Injury Registration Form (including time loss from training and competition, need for medical intervention, and pain severity using Numerical Pain Rating Scale)

3

Description
Shoulder and Arm Pain and Functional Disability
Timepoint
Before the intervention and after 8 weeks of intervention
Method of measurement
Shoulder Pain and Disability Index (13 items in two sections: pain and disability; scored 0-100, higher score indicates more severe pain and disability)

4

Description
Foot and Ankle Pain and Functional Disability
Timepoint
Before the intervention and after 8 weeks of intervention
Method of measurement
Foot and Ankle Disability Index (26 items regarding performance of various activities; scored 0-100, lower score indicates greater disability)

5

Description
Health-Related Quality of Life
Timepoint
Before the intervention and after 8 weeks of intervention
Method of measurement
36-Item Short Form Health Survey (36 items in eight domains: physical functioning, role limitations due to physical health, bodily pain, general health, vitality, social functioning, role limitations due to emotional health, and mental health; scored 0-100, higher score indicates better health status)

Secondary outcomes

empty

Intervention groups

1

Description
Intervention group 1 (Neuromuscular): Neuromuscular training for 8 weeks, three sessions per week, each session lasting 45 to 60 minutes. Each session includes 10 minutes of warm-up with light running and dynamic stretching, 30 to 40 minutes of specialized exercises including progressive balance exercises using balance boards and balance balls, landing technique exercises with emphasis on soft and controlled landing, core stability exercises for strengthening deep abdominal, back, and pelvic muscles, and 5 to 10 minutes of cool-down with static stretching. Exercise intensity and difficulty will gradually increase over the 8 weeks.
Category
Behavior

2

Description
Intervention group 2 (Traditional): Traditional strength and power training for 8 weeks, three sessions per week, each session lasting 45 to 60 minutes. Each session includes 10 minutes of warm-up with light running and dynamic stretching, 30 to 40 minutes of resistance exercises using weights and weight machines for strengthening major muscles of the lower and upper limbs, speed and explosive exercises for improving muscular power and enhancing jump and hit performance, and moderate to high-intensity aerobic exercises for maintaining general endurance, and 5 to 10 minutes of cool-down with static stretching. Exercise intensity will gradually increase over the 8 weeks.
Category
Behavior

3

Description
Intervention group 3 (Combined): Combined training (50% neuromuscular and 50% traditional) for 8 weeks, three sessions per week, each session lasting 45 to 60 minutes. Each session includes 10 minutes of warm-up with light running and dynamic stretching, 30 to 40 minutes of combined training including 20 to 30 minutes of neuromuscular exercises (balance, landing technique, and core stability) and 20 to 30 minutes of traditional exercises (strength, speed, and aerobic) with gradual progressive overload, and 5 to 10 minutes of cool-down with static stretching. Special emphasis is placed on applying correct technique in jumping and landing movements.
Category
Behavior

Recruitment centers

1

Recruitment center

Name of recruitment center
Tarbiat Modares University

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Sponsors / Funding sources

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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
Tarbiat Modares University

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
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Position
PhD Candidate in Exercise Physiology

Latest degree
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Other areas of specialty/work
Exercise Physiology

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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
Yes - There is a plan to make this available
Title and more details about the data/document
De-identified individual participant data, study protocol, statistical analysis plan, informed consent form, clinical study report, and data dictionary: All collected data related to outcome variables (incidence and severity of upper and lower limb injuries, pain and functional disability, and health-related quality of life) will be shared completely without identifying information. Documentation regarding methodology, forms used, and analysis plan will also be provided.
When the data will become available and for how long
Six months after publication of study results
To whom data/document is available
Researchers affiliated with reputable academic and scientific institutions who have an approved research proposal by their institutional ethics committee.
Under which criteria data/document could be used
Data may be used solely for research purposes and secondary analyses related to injury prevention and exercise physiology. Commercial use of the data is not permitted. All users must adhere to ethical requirements and maintain data confidentiality, and must report any findings from their analyses to the primary authors. Requests must include a detailed description of the project and its objectives.
From where data/document is obtainable
To request data, please contact the corresponding author, Mr.Kheirollah Abdulrazaq Naji, via email at k.abdulrazaq@modares.ac.ir. Requests may also be submitted through the Department of Exercise Sciences at Tarbiat Modares University.
What processes are involved for a request to access data/document
Upon submission of a request via email, the corresponding author will review the application. After approval by the university ethics committee, the request will be forwarded to the research team. If finally approved, de-identified data will be provided within two to four weeks via email or a secure data-sharing platform.
Comments
Data will be provided solely for non-commercial purposes, with full adherence to ethical principles and confidentiality of participant information.