# Clinical Trial Protocol
# Iranian Registry of Clinical Trials

07 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

**Country**

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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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**Full name of responsible person**
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**Latest degree**
Master

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## Person responsible for scientific inquiries

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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**
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.