

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

09 Jun 2026

### Comparing the effect of kinetic chain and scapular proprioceptive neuromuscular facilitation exercise on pain, disability and shoulder performance of overhead athletes with scapular dyskinesia

#### Protocol summary

##### Study aim

Comparing the effect of kinetic chain and scapular proprioceptive neuromuscular facilitation exercise on pain, disability and shoulder performance of overhead athletes with scapular dyskinesia

##### Design

Double blind clinical trial with parallel groups with simple randomized method on 22 patients

##### Settings and conduct

Exercises are performed under the supervision of a researcher in a private clinic. The cases are randomly divided into two groups, both groups receive common exercises. In addition to common exercises, the first group received kinetic chain exercises and the second group received scapular PNF exercises in addition to common exercises.

##### Participants/Inclusion and exclusion criteria

inclusion criteria: 1) Overhead amateur male athlete 3) 18 to 30 years of age 4) Positive Lateral Scapular Slide Test 5) Shoulder pain during active Flex. & Abd. For at least 3 months with a score of at least 3 and at most 7 on the VAS 6) Absence of major cognitive disorders 7) Health of the lower limbs and no surgery in the trunk and lower limbs during the past year exclusion criteria: 1) Other conditions that cause upper extremity pain 2) History of surgery, fracture and dislocation in the shoulder 3) Having a neck injury 4) BMI above 30 5) Has received physiotherapy in the last 6 months 6) Non-cooperation in carrying out treatment protocols 7) Absence of the person in two consecutive treatment sessions 8) Inability to complete the assessment steps before and after treatment

##### Intervention groups

Male amateur overhead athletes with scapular dyskinesia

##### Main outcome variables

Pain intensity Flex/Abd Active ROM Upper limb disability (DASH) Distance of the best 2 throws out of 5 throws

Ratio of successful throws to overall throws Scapular dyskinesia (LSST) Reach distance in Upper quarter Y balance test Reach distance in lower quarter Y balance test

#### General information

##### Reason for update

##### Acronym

##### IRCT registration information

IRCT registration number: **IRCT20230125057229N1**

Registration date: **2023-02-17, 1401/11/28**

Registration timing: **registered\_while\_recruiting**

Last update: **2023-02-17, 1401/11/28**

Update count: **0**

##### Registration date

2023-02-17, 1401/11/28

##### Registrant information

##### Name

mehrnoosh vaezi

##### Name of organization / entity

##### Country

Iran (Islamic Republic of)

##### Phone

+98 21 2237 3653

##### Email address

vi.mehrnoosh@gmail.com

##### Recruitment status

**Recruitment complete**

##### Funding source

##### Expected recruitment start date

2023-02-05, 1401/11/16

##### Expected recruitment end date

2023-06-06, 1402/03/16

##### Actual recruitment start date

empty

**Actual recruitment end date**  
empty

**Trial completion date**  
empty

**Scientific title**  
Comparing the effect of kinetic chain and scapular proprioceptive neuromuscular facilitation exercise on pain, disability and shoulder performance of overhead athletes with scapular dyskinesia

**Public title**  
comparing the effect of therapeutic exercise in treatment of scapular dyskinesia

**Purpose**  
Treatment

**Inclusion/Exclusion criteria**  
**Inclusion criteria:**  
Overhead amateur athletes Males gender 18 to 30 years of age Positive lateral scapular slide test Shoulder pain during active Flexion & Abduction For at least 3 months with a score of at least 3 and at most 7 on the VAS. Absence of major cognitive disorders (ability to answer basic quesqion) Health of the lower limbs and no surgery in the trunk and lower limbs during the past year  
**Exclusion criteria:**  
Other conditions that cause upper extremity pain (eg, massive rotator cuff tears and long head of the biceps brachii, frozen shoulder, fibromyalgia, degenerative shoulder joint disorders and arthritis, disorders secondary to nerve damage) History of surgery, fracture and dislocation in the shoulder Having a neck and upper limb injury BMI above 30 (due to high fat or muscle tissue and difficulty in detecting shoulder movements) Has received physiotherapy in the last 6 months Non-cooperation in carrying out treatment protocols Absence of the person in two consecutive treatment sessions Inability to complete the assessment steps before and after treatment Taking sedatives, alcohol, drugs, etc. during the evaluation or treatment period

**Age**  
From **18 years** old to **30 years** old

**Gender**  
Male

**Phase**  
N/A

**Groups that have been masked**

- Participant
- Outcome assessor

**Sample size**  
Target sample size: **22**

**Randomization (investigator's opinion)**  
Randomized

**Randomization description**  
Sampling method: Convenience non-probability sampling  
Randomization: Sealed Envelope

**Blinding (investigator's opinion)**  
Double blinded

**Blinding description**  
In this double-blind study, both the participants and the

outcome assessors (responsible for data collection) are unaware of the study group allocation.

**Placebo**  
Not used

**Assignment**  
Parallel

**Other design features**

## Secondary Ids

empty

## Ethics committees

### 1

#### Ethics committee

##### Name of ethics committee

Ethics committee of Tehran University of Medical Sciences

##### Street address

No. 9 , East Morvarid Ave. , kaj square , saadat abad

##### City

Tehran

##### Province

Tehran

##### Postal code

1998715954

#### Approval date

2023-01-23, 1401/11/03

#### Ethics committee reference number

IR.TUMS.FNM.REC.1401.151

## Health conditions studied

### 1

#### Description of health condition studied

scapular dyskinesia

#### ICD-10 code

#### ICD-10 code description

## Primary outcomes

### 1

#### Description

Upper quarter Y balance test

#### Timepoint

the begining and end of the tratment period

#### Method of measurement

The reach is measured using a tape measure and presented as a percentage based on the length of the body.

## Secondary outcomes

### 1

#### Description

Pain intensity, Flex/Abd Active ROM, Upper limb

disability, Distance of the best 2 throws out of 5 throws, Ratio of successful throws to overall throws, Scapular dyskinesia, Reach distance in lower quarter Y balance test in Ant, PL, and PM directions

#### **Timepoint**

the beginning and end of the treatment period

#### **Method of measurement**

VAS, Goniometer, DASH questionnaire, Single arm shot put test, Functional throwing performance index, Lateral Scapular Slide Test, Tape Measure

## **Intervention groups**

### 1

#### **Description**

Intervention group: The first intervention group: they receive shoulder stabilization exercises with a flexibility and strengthening approach under the title of conventional shoulder dyskinesia treatment exercises along with kinetic chain exercises for 4 weeks 3 times a week (12 sessions). The second intervention group: they receive scapular stabilization exercises with a flexibility and strengthening approach under the title of common scapular dyskinesia therapeutic exercises along with scapular proprioceptive neuromuscular facilitation (PNF) exercises for 4 weeks 3 times a week (12 sessions). Shoulder stabilization exercises in both groups (common exercises): shoulder stabilization exercises with a flexibility approach including stretching the muscles of the pectoralis minor, levator scapula, latissimus dorsi and posterior capsule 3 sets each with 5 repetitions and shoulder stabilization exercises with a strengthening approach. It includes strengthening exercises for the rotator cuff, trapezius and anterior serratus muscles, including Resisted shoulder internal/external rotation, Resisted full can and Serratus punch, 3 sets each with 10 repetitions in both PNF and Kinetic chain groups. Kinetic chain exercises: These exercises are performed in the first group and include sling exercises such as wall slides with squat, lawn mower with diagonal squat, robbery with squat, wall pushups with ipsilateral leg extension, resisted scapular retraction with contralateral one-leg squat, and resisted Shoulder internal/external rotation with step is done 3 sets with 10 repetitions each. PNF exercises: These exercises include Rhythmic initiation and Repeated stretch techniques with 10 repetitions in each session and 20 seconds of rest between them. Both techniques in all patterns (Anterior elevation-Posterior depression and Anterior depression-Posterior elevation) are performed on the affected shoulder.

#### **Category**

Treatment - Other

## **Recruitment centers**

### 1

#### **Recruitment center**

##### **Name of recruitment center**

Dayani clinic

##### **Full name of responsible person**

Mohammadreza dayani

##### **Street address**

No. 75 , ASP buildings, southern Sheykh Bahayi

##### **City**

tehran

##### **Province**

Tehran

##### **Postal code**

1437773639

##### **Phone**

+98 21 8861 3954

##### **Email**

vi.mehrnoosh@gmail.com

## **Sponsors / Funding sources**

### 1

#### **Sponsor**

##### **Name of organization / entity**

Tehran University of Medical Sciences

##### **Full name of responsible person**

Akbar fotouhi

##### **Street address**

6th floor of Research and Technology Vice-Chancellor, Central Organization of the University, corner of Quds St, Keshavarz Blvd

##### **City**

Tehran

##### **Province**

Tehran

##### **Postal code**

1417614411

##### **Phone**

+98 21 8899 2970

##### **Email**

afotouhi@tums.ac.ir

##### **Grant name**

##### **Grant code / Reference number**

##### **Is the source of funding the same sponsor organization/entity?**

Yes

##### **Title of funding source**

Tehran University of Medical Sciences

##### **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**

Tehran University of Medical Sciences

##### **Full name of responsible person**

Mehrnoosh Vaezi

**Position**

Student

**Latest degree**

Bachelor

**Other areas of specialty/work**

Physiotherapy

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## Person responsible for scientific inquiries

**Contact**

**Name of organization / entity**

Tehran University of Medical Sciences

**Full name of responsible person**

Mehrnoosh Vaezi

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## Person responsible for updating data

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## Sharing plan

**Deidentified Individual Participant Data Set (IPD)**

Undecided - It is not yet known if there will be a plan to make this available

**Study Protocol**

Undecided - It is not yet known if there will be a plan to make this available

**Statistical Analysis Plan**

Undecided - It is not yet known if there will be a plan to make this available

**Informed Consent Form**

Undecided - It is not yet known if there will be a plan to make this available

**Clinical Study Report**

Undecided - It is not yet known if there will be a plan to make this available

**Analytic Code**

Undecided - It is not yet known if there will be a plan to make this available

**Data Dictionary**

Undecided - It is not yet known if there will be a plan to make this available