Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 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 dyskinesis

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 unware 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 dyskinesis

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 begining 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 builgings, southern Sheykh Bahayi

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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

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1417614411

Phone

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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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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