Clinical Trial Protocol
Iranian Registry of Clinical Trials

10 Jun 2026

The effect of two common corrective and scapular-focused training approaches on shoulder strength, range of motion, proprioception, shoulder girdle function, and scapulohumeral rhythm in female athletes with scapular dyskinesis

Protocol summary

Study aim

to compare the effects of two common corrective exercises and scapular-focused approaches on the strength, range of motion, and proprioception of the shoulder joint, shoulder girdle function, and scapulo-humeral rhythm in female athletes who are suffering from scapular dyskinesis.

Design

The present study has three groups: Intervention group 1: common corrective exercises. Intervention group 2: scapular-focused exercises, and control group: no exercise. This study is a randomized controlled trial with a control group, with parallel groups and with a sample size of 36 people.

Settings and conduct

The first stage was the selection of subjects based on the inclusion criteria; the second stage was random grouping with blinding of subjects; the third stage was the pre-test; the fourth stage was two months of training; the fifth stage was the post-test. The testing and training locations were the laboratory of the Faculty of Physical Education, Shahid Bahonar University, Kerman, and the Palladium Club and Ardeshir Hemmati Club in Kerman, respectively.

Participants/Inclusion and exclusion criteria

Inclusion criteria People with scapular dyskinesis confirmed by the McClure test exclusion criteria Acute injury to the scapula and shoulder, including fractures and dislocations A history of injury to the aforementioned area in the past six months A history of shoulder surgery Receiving any type of rehabilitation and exercise therapy in the past six months Having pain greater than 3 on the VAS scale

Intervention groups

Experimental group 1:common corrective exercises, Experimental group 2: scapular-focused exercises, and Control group: No exercise.

Main outcome variables

Shoulder joint strength; shoulder joint range of motion; shoulder joint proprioception; shoulder girdle function and scapulo-humeral rhythm

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20250821066942N1**
Registration date: **2026-02-07, 1404/11/18**
Registration timing: **retrospective**

Last update: **2026-02-07, 1404/11/18**
Update count: **0**

Registration date

2026-02-07, 1404/11/18

Registrant information

Name

Zahra Mahdavi Jafari

Name of organization / entity

Shahid Bahonar University of Kerman

Country

Iran (Islamic Republic of)

Phone

+98 34 3132 3188

Email address

zahra.mahdavi.jafari@sport.uk.ac.ir

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2025-04-21, 1404/02/01

Expected recruitment end date

2025-07-23, 1404/05/01

Actual recruitment start date

2025-05-22, 1404/03/01

Actual recruitment end date

2025-08-23, 1404/06/01

Trial completion date

2025-08-23, 1404/06/01

Scientific title

The effect of two common corrective and scapular-focused training approaches on shoulder strength, range of motion, proprioception, shoulder girdle function, and scapulohumeral rhythm in female athletes with scapular dyskinesis

Public title

The effect of two common corrective and scapular-focused training approaches in athletes with scapular dyskinesis

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

Individuals with scapular dyskinesia confirmed by the Mc Clure test Female gender Age 13 to 20 years Playing volleyball or basketball at least three times a week Having skills at the junior league level

Exclusion criteria:

Acute injury to the scapula and shoulder, including fractures and dislocations, because it prevented exercise History of injury to the mentioned area in the past six months History of shoulder surgery Receiving any type of rehabilitation and exercise therapy in the past six months Having pain greater than 3 on the VAS scale

Age

From **13 years** old to **20 years** old

Gender

Female

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **45**

Actual sample size reached: **36**

Randomization (investigator's opinion)

Randomized

Randomization description

The researcher randomly assigns the subjects to one of three study groups, including the corrective exercise program, the scapular-focused program, and the control group, using the website (https://www.randomizer.org). On this website, the researcher must complete the relevant information and then click the calculate button. Questions and answers include: How many sets of numbers do you want to generate? 3. How many numbers per set? 12. Number range: 1-36. Do you wish each number in a set to remain unique? Yes. Do you wish to sort the numbers that are generated? No. The result of the calculation will be 3 sets of 12 unique numbers in each set.

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

Ethics Committee of Kerman University of Medical Sciences

Street address

Ebn-e-Sina St.,Jahad Blvd., Kerman, Iran

City

Kerman

Province

Kerman

Postal code

7616913555

Approval date

2025-08-12, 1404/05/21

Ethics committee reference number

IR.KMU.REC.1404.276

Health conditions studied

1

Description of health condition studied

Scapular dyskinesis

ICD-10 code

M25.819

ICD-10 code description

Other specified joint disorders, unspecified shoulder

Primary outcomes

1

Description

Shoulder joint strength

Timepoint

Measuring the strength variable in the pre-test and measuring it again after the training period in the post-test.

Method of measurement

Using a hand-held dynamometer in internal and external shoulder rotation movements

2

Description
Shoulder joint range of motion
Timepoint
Measuring the range of motion variable in the pre-test and measuring it again after the training period in the post-test.
Method of measurement
Using a universal goniometer in internal and external shoulder rotation movements

3

Description
Shoulder joint proprioception
Timepoint
Measuring the proprioception variable in the pre-test and measuring it again after the training period in the post-test.
Method of measurement
Using a digital inclinometer to measure the error rate of reconstructing the 90-degree abduction angle

4

Description
Upper limb function
Timepoint
Measuring the Upper limb function variable in the pre-test and measuring it again after the training period in the post-test.
Method of measurement
By CKCUEST test

5

Description
Scapulo-humeral rhythm
Timepoint
Measuring the Scapulo-humeral rhythm variable in the pre-test and measuring it again after the training period in the post-test.
Method of measurement
By two digital inclinometers

Secondary outcomes

empty

Intervention groups

1

Description
First intervention group: The group receiving common corrective exercises to correct scapular dyskinesis. This group performed neuromuscular and strengthening exercises targeting the scapula area for 8 weeks, 3 days a week, in a gym under the direct supervision of the researcher, following the protocol outlined by Hotta et al. (2018).
Category
Rehabilitation

2

Description
Second intervention group: The group receiving scapular-focused exercises to correct shoulder dyskinesis. This group performed shoulder-stretching and strengthening exercises for 6 weeks at home every day under the indirect supervision of the researcher, according to the protocol of Tang et al. (2024).
Category
Rehabilitation

3

Description
Control group: The group with no training.
Category
Other

Recruitment centers

1

Recruitment center
Name of recruitment center
Shahid Bahonar University of Kerman
Full name of responsible person
Zahra Mahdavi Jafari
Street address
Imam Khomeini Highway., Research Square
City
Kerman
Province
Kerman
Postal code
7616913439
Phone
+98 34 3132 3188
Email
zahra.mahdavi.jafari@sport.uk.ac.ir

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Shahid Bahonar University of Kerman
Full name of responsible person
Mansour Sahebozamani
Street address
Imam Khomeini Highway., Research Square
City
Kerman
Province
Kerman
Postal code
7616913439
Phone
+98 34 3132 3188

Email
sahebozamani@uk.ac.ir
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Shahid Bahonar University of Kerman
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
Shahid Bahonar University of Kerman
Full name of responsible person
Zahra Mahdavi Jafari
Position
PhD student
Latest degree
Master
Other areas of specialty/work
Sport injuries and corrective exercises
Street address
Imam Khomeini Highway, Research Square, Shahid Bahonar University, Faculty of Sport Sciences
City
Kerman
Province
Kerman
Postal code
7616913439
Phone
+98 34 3132 3188
Email
zahra.mahdavi.jafari@sport.uk.ac.ir

Person responsible for scientific inquiries

Contact
Name of organization / entity
Shahid Bahonar University of Kerman
Full name of responsible person
Zahra Mahdavi Jafari
Position
PhD student
Latest degree
Master
Other areas of specialty/work
Sport injuries and corrective exercises
Street address
Imam Khomeini Highway, Research Square, Shahid Bahonar University, Faculty of Sport Sciences
City
Kerman
Province
Kerman
Postal code
7616913439
Phone
+98 34 3132 3188
Email
zahra.mahdavi.jafari@sport.uk.ac.ir

Person responsible for updating data

Contact
Name of organization / entity
Shahid Bahonar University of Kerman
Full name of responsible person
Zahra Mahdavi Jafari
Position
Phd student
Latest degree
Master
Other areas of specialty/work
Sports injuries and corrective exercises
Street address
Imam Khomeini Highway, Research Square, Shahid Bahonar University, Faculty of Sport Sciences
City
Kerman
Province
Kerman
Postal code
7616913439
Phone
+98 34 3132 3188
Email
zahra.mahdavi.jafari@sport.uk.ac.ir

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
Not applicable
Analytic Code
Not applicable
Data Dictionary
Not applicable
Title and more details about the data/document
With permission from the supervisor and coordination with the specialized department of sport pathology and biomechanics of Shahid Bahonar University of Kerman, all information can be shared after being de-identified.

When the data will become available and for how long

After publishing the article/articles extracted from the study

To whom data/document is available

The data can be displayed and shared upon reasonable and formal request by the Iranian Clinical Trial Registry Center, journals, and individuals/academic researchers who are conducting research and scientific activities in this field.

Under which criteria data/document could be used

Data analysis and use of documentation can only be done on the condition that their results are reported in scientific articles conducted by academic researchers and authors. The requirements for sending data and documentation include: 1. Sending an email (preferably with a valid academic address) to one of the study researchers 2. A brief and logical explanation regarding how the data or documentation will be used.

From where data/document is obtainable

By request from researcher Zahra Mahdavi Jafari zahra.mahdavi.jafari@sport.uk.ac.ir

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

The applicant can receive the necessary information by contacting researcher Zahra Mahdavi Jafari and coordinating with the specialized department of Sports Pathology and Biomechanics at Shahid Bahonar University of Kerman.

Comments