Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

Comparison of the effect and durability of eight weeks of designed corrective exercises and NASM exercise on muscle activation, kinetics, and kinematics of the push-up in Adolescent Handball Players with Type II Scapular Dyskinesis

Protocol summary

Study aim

Investigation of the Effect of 8-Week Retention of Selected Exercises and NASM exercises on Electromyographic Activity and Kinetic and Kinematic Factors of the Ground Swimming Movement in Adolescent Handball Players with Type 2 Scapular Dyskinesis

Design

A controlled clinical trial with parallel groups, double-blind, rand function of Excel software was used for randomization. The initial sample size was 100 people.

Settings and conduct

Handball players in Tehran with type II scapular dyskinesis were selected through cluster sampling and randomly assigned to three groups: researcher-designed corrective exercises, NASM-based exercises, and a control group. Muscle performance, kinetic, and kinematic variables of land-based swimming were assessed at the Mofaghiyan Center before and after six weeks. Pre- and post-intervention data were statistically analyzed to compare the effects of the two exercise protocols.

Participants/Inclusion and exclusion criteria

Inclusion Criteria: Males aged 16–18 Scapular dyskinesis without pain (medial scapular winging) Minimum 2 years sports experience with at least one season in provincial or national club competitions No shoulder or shoulder girdle injuries No neurological symptoms or significant postural abnormalities No use of nervous system affecting medication Exclusion Criteria: Development of musculoskeletal pain or injury after exercises Pain score above 4

Intervention groups

Group 1: Received selected designed exercises Group 2: Received exercises from the National Academy of Sports Medicine (NASM) Group 3: The group that does not receive any training

Main outcome variables

Independent Variables: Training type (Selected program, NASM, Control) **Dependent Variables:** Scapular dyskinesis score, scapular movement, and muscle EMG during push-ups.

General information

Reason for update

he pilot study and preliminary activities were conducted in November and December 2025. However, owing to the prevailing conditions in the country and limited access to the participating sports clubs and the biomechanics laboratory, the commencement of screening and recruitment for the main trial was postponed until 17 May 2026. The pilot study was conducted separately from the main trial, and no pilot data will be included in the analysis of the main trial. Before this date, no participant was enrolled in the main trial, and no baseline assessment, randomisation, or study intervention was conducted. The expected recruitment start and end dates were therefore updated to reflect the actual study timeline.

Acronym

SD

IRCT registration information

IRCT registration number: **IRCT20250719066551N1**
Registration date: **2026-02-16, 1404/11/27**
Registration timing: **prospective**

Last update: **2026-09-14, 1405/06/23**
Update count: **1**

Registration date

2026-02-16, 1404/11/27

Registrant information

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Name of organization / entity
The university of guilan
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Recruitment status
Recruitment complete
Funding source

Expected recruitment start date
2026-05-17, 1405/02/27
Expected recruitment end date
2026-09-22, 1405/06/31
Actual recruitment start date
empty
Actual recruitment end date
empty
Trial completion date
empty

Scientific title
Comparison of the effect and durability of eight weeks of designed corrective exercises and NASM exercise on muscle activation, kinetics, and kinematics of the push-up in Adolescent Handball Players with Type II Scapular Dyskinesis

Public title
Study of selected exercises on kinetic and kinematic factors of adolescent handball players with scapular dyskinesia
Purpose
Prevention
Inclusion/Exclusion criteria
Inclusion criteria:
Male participants Shoulder disorder without pain Aged 16–18 years Minimum 2 years sports experience At least one season in club competitions Signed informed consent Willingness to participate
Exclusion criteria:
History of sports training other than handball Presence of shoulder muscle tears, adhesive capsulitis, impingement syndrome, rheumatoid arthritis, or diabetes mellitus History of shoulder injury or surgery in the past 6 m Use of medications that affect the nervous system Presence of significant postural abnormalities Inclusion of individual's neurological symptoms
Age
From **16 years** old to **18 years** old
Gender
Male

Phase
2-3
Groups that have been masked

- Participant
- Outcome assessor

Sample size
Target sample size: **60**
More than 1 sample in each individual
Number of samples in each individual: **20**
There are 20 participants in each of the three groups
Randomization (investigator's opinion)
Randomized
Randomization description
The population included 100 individuals from six clubs. Four clusters were randomly selected, and samples were then randomly drawn from these clusters using statistical software.
Blinding (investigator's opinion)
Double blinded
Blinding description
The participants of the experiment were from 6 clubs in Tehran. Two clubs, selected training one and two clubs, selected training two, and two clubs, were used as controls. They were unaware of the other friends. The coaches who were supposed to carry out the training program were unaware of the type of training of the other group and how the athletes were divided.
Placebo
Not used
Assignment
Parallel
Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Ethics committee of guilan University
Street address
5 km of ghazvin road, Persian Gulf Highway, Rasht
City
Rasht
Province
Guilan
Postal code
۴۱۹۹۶۱۳۷۷۶
Approval date
2025-03-10, 1403/12/20
Ethics committee reference number
IR.GUILAN.REC.1403.211

Health conditions studied

1

Description of health condition studied
Scapular dyskinesia
ICD-10 code
ICD-10 code description

Primary outcomes

1

Description
Scapular dyskinesia,
Timepoint
At the beginning of the study and 1.5 months after the end of the exercise intervention at the end of the study
Method of measurement
Motion Analysis

2

Description
kinetic and kinematic factors of push up
Timepoint
At the beginning of the study and 1.5 months after the end of the exercise intervention at the end of the study
Method of measurement
Motion Analysis, Force Plate

3

Description
Muscle activation
Timepoint
At the beginning of the study and 1.5 months after the end of the exercise intervention at the end of the study
Method of measurement
Electromyography

Secondary outcomes

empty

Intervention groups

1

Description
Three groups were tested. The first group was the control group, which was randomly selected. No training intervention was performed in this group, and kinetic and kinematic factors and muscle activity were performed in two stages.
Category
Prevention

2

Description
Intervention Group 1: 20 people were randomly assigned to this group. After examining kinetic and kinematic factors and muscle activity, they received selected exercises designed by the researcher for 8 weeks, and then the desired factors were measured again.
Category
Rehabilitation

3

Description
20 people were randomly assigned to this group. After examining kinetic and kinematic factors and muscle activity, they received NASM training for 8 weeks, and then the desired factors were measured again.
Category
Rehabilitation

Recruitment centers

1

Recruitment center
Name of recruitment center
Mofaqian Research Center
Full name of responsible person
Dr. Javad Mofaqian
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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Gilan university
Full name of responsible person
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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
Gilan university
Proportion provided by this source
5
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

Guilan University

Full name of responsible person

Dr. Hasan Daneshmandi

Position

Professor of Guilan University

Latest degree

Ph.D.

Other areas of specialty/work

Corrective Exercise and Sport Injuries

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Other areas of specialty/work

Corrective exercise and sport injuries

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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

Not applicable

Data Dictionary

Not applicable

Title and more details about the data/document

Demographic information is available about the participants, and all measured data in the study, as well as primary and secondary variables, are accessible and published.

When the data will become available and for how long

A period of 6 months after the publication of the article

To whom data/document is available

Researchers working in academic and scientific institutions and people working in industry can apply.

Under which criteria data/document could be used

Designed exercises and data analysis can be used.

From where data/document is obtainable

m.mazidi100@gnail.com

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

It can take up to 10 business days from the time of email request to the time of receipt of documents.

Comments