

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

11 Sep 2026

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

##### Acronym

SD

##### IRCT registration information

IRCT registration number: **IRCT20250719066551N1**

Registration date: **2026-02-16, 1404/11/27**

Registration timing: **retrospective**

Last update: **2026-02-16, 1404/11/27**

Update count: **0**

##### Registration date

2026-02-16, 1404/11/27

##### Registrant information

##### Name

Maryam Mazidi

##### Name of organization / entity

The university of guilan

##### Country

Iran (Islamic Republic of)

##### Phone

+98 938 178 7230

##### Email address

m.mazidi100@gmail.com

##### Recruitment status

**Recruitment complete**

##### Funding source

**Expected recruitment start date**

2025-11-06, 1404/08/15

**Expected recruitment end date**

2025-12-06, 1404/09/15

**Actual recruitment start date**

empty

**Actual recruitment end date**

empty

**Trial completion date**

empty

**Scientific title**

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

**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  
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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**  
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**Latest degree**

Ph.D.

**Other areas of specialty/work**

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**Position**

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**Latest degree**

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**Other areas of specialty/work**

Corrective exercise and sport injuries

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**Province**

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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@gmail.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**