

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

10 Jun 2026

### Effect of Localized and Comprehensive Injury Prevention Exercises on Performance, Stability, Upper Limb Function, and Rotator Cuff Muscle Endurance in Adolescent Swimmers

#### Protocol summary

##### Study aim

To determine the effect of eight weeks of local and comprehensive injury prevention exercises on sports performance, upper limb stability and function, and rotator cuff muscle endurance in adolescent swimmers

##### Design

A clinical trial with three parallel groups, double-blind, randomized, with a sample size of 26 participants and phase 3. Randomization was performed using the RAND function in Microsoft Excel.

##### Settings and conduct

This was a randomized parallel clinical trial on healthy adolescent swimmers at Tadbir and Omid Swimming Pool, Ilam. The study evaluated the effect of injury prevention exercises on shoulder function and endurance. Participants provided consent and were assigned to three groups: control, local, and comprehensive, with interventions lasting eight weeks, three sessions per week. Outcome assessors and data analysts were blinded.

##### Participants/Inclusion and exclusion criteria

Inclusion Criteria: Male gender; Adolescent swimmers aged between 10 and 17 years; Non-professional (amateur) participants; Completion and signing of written informed consent form Exclusion Criteria: Presence of any disease or history of injury; History of surgery in the shoulder girdle region

##### Intervention groups

Control group: Performed routine weekly swimming  
Local exercises group: Performed stretching, activation, and strengthening exercises for the shoulder muscles  
Comprehensive exercises group: Performed shoulder stretching, activation, and strengthening exercises, in addition to scapular stabilizer exercises, core muscle exercises, and integrated neuromuscular training

##### Main outcome variables

Upper limb stability in the closed kinetic chain; Upper

limb dynamic stability; Rotator cuff muscle endurance; Front crawl performance of adolescent swimmers

#### General information

##### Reason for update

##### Acronym

IPES

##### IRCT registration information

IRCT registration number: **IRCT20180521039762N3**

Registration date: **2025-10-28, 1404/08/06**

Registration timing: **retrospective**

Last update: **2025-10-28, 1404/08/06**

Update count: **0**

##### Registration date

2025-10-28, 1404/08/06

##### Registrant information

##### Name

Afshin Moghadasi

##### Name of organization / entity

University of Isfahan

##### Country

Iran (Islamic Republic of)

##### Phone

+98 31 3793 4208

##### Email address

afshin.moghadasi@yahoo.com

##### Recruitment status

**Recruitment complete**

##### Funding source

##### Expected recruitment start date

2025-04-11, 1404/01/22

##### Expected recruitment end date

2025-04-16, 1404/01/27

##### Actual recruitment start date

2025-04-11, 1404/01/22  
**Actual recruitment end date**  
2025-04-14, 1404/01/25  
**Trial completion date**  
2025-06-19, 1404/03/29

**Scientific title**  
Effect of Localized and Comprehensive Injury Prevention Exercises on Performance, Stability, Upper Limb Function, and Rotator Cuff Muscle Endurance in Adolescent Swimmers

**Public title**  
Effect of Injury Prevention Exercises on Shoulder Muscle Endurance and Performance in Adolescent Swimmers

**Purpose**  
Prevention

**Inclusion/Exclusion criteria**  
**Inclusion criteria:**  
Male gender Adolescent swimmers aged between 10 and 17 years Amateur participants Completion and signing of written informed consent form  
**Exclusion criteria:**  
Having any disease or injury History of surgery in the shoulder girdle region

**Age**  
From **10 years** old to **17 years** old

**Gender**  
Male

**Phase**  
3

**Groups that have been masked**

- Outcome assessor
- Data analyser

**Sample size**  
Target sample size: **30**  
Actual sample size reached: **26**

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

**Randomization description**  
In this study, simple individual randomization was used. The random sequence was generated using Microsoft Excel with the RAND function. Each participant was randomly assigned to one of three study groups (control, local exercises, comprehensive exercises). For allocation concealment, sealed opaque envelopes were used to ensure that both participants and assessors were unaware of the assigned group.

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

**Blinding description**  
In this study, outcome assessors and data analysts were blinded to group assignments to prevent bias in data collection and analysis. Participants were aware of their assigned group because they needed to receive full information about the intervention. The principal investigator and personnel responsible for administering the exercises were also aware of group assignments. The Data Safety and Monitoring Committee was not involved in this study.

**Placebo**

Not used  
**Assignment**  
Parallel  
**Other design features**

## Secondary Ids

empty

## Ethics committees

### 1

#### Ethics committee

##### Name of ethics committee

Ethics Committee of Payame Noor University

##### Street address

Payame Noor University, NakhI St, Artesh Blvd, Tehran, Tehran Province, Iran

##### City

Tehran

##### Province

Tehran

##### Postal code

19395-4697

#### Approval date

2024-11-16, 1403/08/26

#### Ethics committee reference number

IR.PNU.REC.1403.406

## Health conditions studied

### 1

#### Description of health condition studied

Shoulder injuries in adolescent swimmers

#### ICD-10 code

M75

#### ICD-10 code description

Shoulder lesions

## Primary outcomes

### 1

#### Description

Upper limb stability in the closed kinetic chain; Measured using the Davis test, indicating the ability to control upper limb movements in stable positions

#### Timepoint

Before the intervention and after the completion of the 8-week exercise intervention

#### Method of measurement

Measured using the Davis test

### 2

#### Description

Upper limb dynamic stability; Measured using the Y Balance Test, indicating control and coordination of hand and arm movements in multiple directions

#### Timepoint

Before the intervention and after the completion of the 8-week exercise intervention

**Method of measurement**

Measured using the Y Balance Test

**3**

**Description**

Rotator cuff muscle endurance; Measured using the repetitive external shoulder rotation test with dumbbells, indicating the ability of muscles to perform repeated activity

**Timepoint**

Before the intervention and after the completion of the 8-week exercise intervention

**Method of measurement**

Measured using the repetitive external shoulder rotation test with dumbbells

**4**

**Description**

Front crawl performance; Measured using the 50-meter front crawl time, number of strokes, and stroke-to-time ratio, indicating overall swimming performance

**Timepoint**

Before the intervention and after the completion of the 8-week exercise intervention

**Method of measurement**

Measured using 50-meter front crawl time, number of strokes, and stroke-to-time ratio

**Secondary outcomes**

empty

**Intervention groups**

**1**

**Description**

Intervention Group 1 (Local Exercise Group): Participants performed stretching, activation, and strengthening exercises for the shoulder muscles. Each session lasted between 30 to 75 minutes and was conducted three times per week for 8 weeks.

**Category**

Prevention

**2**

**Description**

Intervention Group 2 (Comprehensive Exercise Group): In addition to stretching, activation, and strengthening exercises for the shoulder muscles, participants performed exercises for the scapular stabilizing muscles, core muscles, and integrated neuromuscular training. Each session lasted the same duration as Intervention Group 1, and the program was conducted three times per week for 8 weeks.

**Category**

Prevention

**3**

**Description**

Control group: Participants only followed their regular weekly swimming routine and did not receive any additional exercise intervention.

**Category**

Other

**Recruitment centers**

**1**

**Recruitment center**

**Name of recruitment center**

Tadbir and Omid Sports Complex Swimming Pool

**Full name of responsible person**

Yaghoob Baziyar

**Street address**

Tadbir and Omid Sports Complex Swimming Pool, Imam Khomeini Square, Moallem Boulevard

**City**

Abdanan

**Province**

Ilam

**Postal code**

6971751154

**Phone**

+98 991 331 2953

**Email**

tadbir.omid.pool@gmail.com

**Sponsors / Funding sources**

**1**

**Sponsor**

**Name of organization / entity**

Payame Noor University

**Full name of responsible person**

Dr. Majid Zamani

**Street address**

Payame Noor University, Nakhl Street, Artesh Boulevard

**City**

Tehran

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+98 21 2332 0000

**Email**

zamahani@pnu.ac.ir

**Grant name**

**Grant code / Reference number**

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

No

**Title of funding source**

Payame Noor University

**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**

Payame Noor University

**Full name of responsible person**

Afshin Moghadasi

**Position**

Assistant Professor

**Latest degree**

Ph.D.

**Other areas of specialty/work**

Sports Injury and Corrective Exercises

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**Person responsible for updating data**

**Contact**

**Name of organization / entity**

Payame Noor University

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193954697

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**Email**

moghadasi@pnu.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**

Yes - There is a plan to make this available

**Analytic Code**

Yes - There is a plan to make this available

**Data Dictionary**

Yes - There is a plan to make this available

**Title and more details about the data/document**

After completion of data analysis, de-identified individual participant data—including demographic information and outcomes related to the primary and secondary variables—will be available upon reasonable written request from qualified researchers, subject to approval by the principal investigator. All identifiable information will be removed or anonymized before sharing.

**When the data will become available and for how long**

Access to de-identified participant data will be available starting six months after publication of the study results and will remain accessible for five years thereafter.

**To whom data/document is available**

The data will be available to researchers and academic

faculty members from universities or research institutions who have a relevant research proposal and obtain approval from an ethics committee.

**Under which criteria data/document could be used**

The data may only be used for scientific and educational research purposes. Data use must align with approved research objectives and have prior ethical committee approval. Applicants are required to submit a research proposal, a data use agreement, and a confidentiality commitment. Any commercial use, unauthorized publication, or analysis beyond the approved scope is strictly prohibited.

**From where data/document is obtainable**

Requests for access to the data or related documents should be addressed to Dr. Afshin Moghaddasi, Assistant Professor, Payame Noor University. Postal Address: Payame Noor University, Nakhli Street, Artesh Boulevard, Tehran, Iran, Postal Code: 193954697 Phone: +982122450000 Email: moghadasi@pnu.ac.ir

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

The process for requesting data or documents is as follows: 1. The applicant prepares a research proposal along with a data access request form and a confidentiality agreement, and submits them via email to Dr. Afshin Moghaddasi. 2. The request is reviewed by the University Ethics and Research Committee to ensure that the intended use of the data aligns with the study protocol and ethical guidelines. 3. Upon approval, access to the de-identified participant data or requested documents is granted, and the relevant files or download link are sent via email. 4. The entire process typically takes 2 to 4 weeks after receiving the complete request, depending on the data volume and review time.

**Comments**

All provided data and documents will be accessible after removing any personally identifiable information of participants. Any use of the data must comply with the approved research objectives, and publication of results should cite the original study. Applicants are also required to adhere to all data protection regulations and maintain confidentiality of the information.