Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 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

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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, Nakhl 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

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Phone

+98 21 2332 0000

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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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Assistant professor

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Person responsible for updating data

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Afshin Moghadasi

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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
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, Nakhl 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.