Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

Comparative Effectiveness of Patellar Mobilization and Open Chain Exercises in Managing Patellofemoral Pain Syndrome among Sports Club Players of District Gujranwala: A Randomized Controlled Trial

Protocol summary

Study aim

To compare the effectiveness of patellar mobilization versus open chain exercises in reducing pain and improving knee range of motion and function among sports club players with patellofemoral pain syndrome (PFPS) in Gujranwala.

Design

A two-arm, single-center, parallel-group, single-blind, randomized controlled trial with 126 planned participants. Individuals were randomly allocated in a 1:1 ratio using computer-generated random numbers; outcome assessors were blinded.

Settings and conduct

This single-centred trial was conducted at World Fitness Centre and affiliated sports clubs in Gujranwala, Pakistan.

Participants/Inclusion and exclusion criteria

Inclusion Criteria: male and female sports club players (18–40 years) with unilateral or bilateral knee pain for more than one month, diagnosed with PFPS on clinical examination. Exclusion Criteria: fracture or traumatic knee pain, lower-limb surgery, knee dislocation/subluxation, Osgood-Schlatter disease, or neurological/systemic disorders (neuropathy, rheumatoid arthritis).

Intervention groups

Group A (Patellar mobilization): Received a 5-minute warm-up followed by 20 minutes of medial and lateral patellar glides (3 sets of 15 repetitions). Conducted 3 times a week for 4 weeks. Group B (Open chain exercises): Received a 5-minute warm-up followed by 30 minutes of open chain exercises (1 set of 15 repetitions each). Conducted 3 times a week for 4 weeks.

Main outcome variables

- Primary Outcome Measure: Pain intensity on the Numeric Pain Rating Scale (NPRS). - Secondary Outcome Measures: Active knee flexion and extension range of motion (ROM) measured by a goniometer, and functional status on the Kujala Scale.

General information

Reason for update

Acronym

PM-OKC PFPS Trial

IRCT registration information

IRCT registration number: **IRCT20260529069564N5**
Registration date: **2026-10-19, 1405/07/27**
Registration timing: **retrospective**

Last update: **2026-10-19, 1405/07/27**
Update count: **0**

Registration date

2026-10-19, 1405/07/27

Registrant information

Name

Sajjan Iqbal Memon

Name of organization / entity

Chiniot General Hospital, Korangi

Country

Pakistan

Phone

+92 302 9771128

Email address

sajjan.memon@yahoo.com

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2025-01-15, 1403/10/26

Expected recruitment end date

2025-06-30, 1404/04/09

Actual recruitment start date

2025-01-30, 1403/11/11

Actual recruitment end date

2025-06-30, 1404/04/09

Trial completion date

2026-06-30, 1405/04/09

Scientific title

Comparative Effectiveness of Patellar Mobilization and Open Chain Exercises in Managing Patellofemoral Pain Syndrome among Sports Club Players of District Gujranwala: A Randomized Controlled Trial

Public title

Comparing Kneecap Mobilization and Strengthening Exercises for Knee Pain in Sports Club Players

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

Demographics: Male and female sports club players aged between 18 to 40 years Clinical Presentation: Unilateral or bilateral anterior knee pain persisting for more than one month, with PFPS diagnosed on clinical examination.

Exclusion criteria:

Trauma & Surgery: History of fracture, traumatic knee pain, or past lower-extremity surgery. Other Knee Pathologies: Knee dislocation/subluxation or Osgood-Schlatter disease. Systemic Conditions: Neurological or systemic disorders such as neuropathy, rheumatoid arthritis or inflammatory joint disease.

Age

From **18 years** old to **40 years** old

Gender

Both

Phase

N/A

Groups that have been masked

- Participant
- Outcome assessor

Sample size

Target sample size: **150**

Actual sample size reached: **126**

Randomization (investigator's opinion)

Randomized

Randomization description

Method of Randomization: Simple randomization with a fixed 1:1 allocation ratio. Unit of Randomization: Individual participant. Randomization Strata: Not applicable; no stratification was used. Tools Used in Randomization: Computer-generated random numbers with sealed envelops.

Blinding (investigator's opinion)

Single blinded

Blinding description

Outcome assessors were blinded to group allocation. Blinding of the treating physiotherapists was not feasible due to the nature of the interventions. The participants were masked.

Placebo

Not used

Assignment

Parallel

Other design features

Number of Groups (Arms): 2 groups. Allocation Ratio: 1:1. Sampling / Recruitment Technique: Non-probability convenience sampling. Study Setting: World Fitness Centre and affiliated sports clubs, Gujranwala. Intervention Duration: 4 weeks total, with 3 sessions per week. Sample size: 126 (63 per group), G*Power, effect size 0.65, alpha 0.05, power 0.95, plus 20% attrition allowance.

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Institutional Review Board of Gujranwala Institute of Medical and Emerging Sciences (GIMES)

Street address

Main Campus: Ali Pur Chattha Road (near Gujranwala Medical College)

City

Gujranwala

Postal code

52250

Approval date

2024-01-10, 1402/10/20

Ethics committee reference number

Ref: GIMES/REC/S/25/000940

Health conditions studied

1

Description of health condition studied

Patellofemoral disorders

ICD-10 code

M22.2

ICD-10 code description

Patellofemoral disorders

Primary outcomes

1

Description

Pain Intensity

Timepoint

Measured at Baseline (Week 0) and Post-Intervention (Week 4).

Method of measurement

Numeric Pain Rating Scale (NPRS)

Secondary outcomes

1

Description
Knee Range of Motion (ROM)
Timepoint
Measured at Baseline (Week 0) and Post-Intervention (Week 4).
Method of measurement
Universal goniometer (measuring active flexion and extension in degrees).

2

Description
Functional Status
Timepoint
Measured at Baseline (Week 0) and Post-Intervention (Week 4).
Method of measurement
Kujala Anterior Knee Pain Scale (score 0–100; higher is better).

Intervention groups

1

Description
Intervention group:
Category
Treatment - Other

2

Description
Intervention group:
Category
Treatment - Other

Recruitment centers

1

Recruitment center
Name of recruitment center
World Fitness Center and affiliated sports clubs, Gujranwala
Full name of responsible person
Dr. Mubeen Arshad
Street address
Wapda Town Main Market (Opposite Main Park), or B-3, Phase Block 3, Phase B, Wapda Town; Madni Road, Khyali.
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Phone
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Email
wtfitnesscenter.pk@gmail.com
Web page address
https://web.facebook.com/p/WT-Fitness-Center-100066609282699/?_rdc=1&_rdr

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Gujranwala Institute of Medical and Emerging Sciences (GIMES)
Full name of responsible person
Dr. Mubeen Arshad
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Fax
Email
principal@gimes.com.pk
Web page address
https://gimes.com.pk/
Grant name
Thesis Project
Grant code / Reference number
Ref No: GIMES/REC/S/25/000940
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Gujranwala Institute of Medical and Emerging Sciences (GIMES)
Proportion provided by this source
100
Public or private sector
Private
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
Gujranwala Institute of Medical and Emerging Sciences (GIMES)
Full name of responsible person
Dr. Mubeen Arshad
Position
Physiotherapist
Latest degree
Bachelor
Other areas of specialty/work
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Person responsible for scientific inquiries

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Person responsible for updating data

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Email
mubeenarshad1999@gmail.com
Web page address

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
A de-identified dataset of demographic information and outcome measures (NPRS, knee ROM, Kujala Scale) and the study protocol will be available on reasonable request.
When the data will become available and for how long
just after the publication.
To whom data/document is available
Qualified academic researchers and clinicians affiliated with recognized institutions; not for commercial use.
Under which criteria data/document could be used
Academic research, scientific verification, or secondary meta-analyses, subject to a data use agreement prohibiting re-identification.
From where data/document is obtainable
From the supervisor and principal investigators, Department of Physical Therapy, GIMES, Gujranwala, by formal email; (Mubeen Arshad – mubeenarshad1999@gmail.com)
What processes are involved for a request to access data/document
Researchers submit a written request describing objectives, methodology and intended use; requests are reviewed within approximately 2–4 weeks.
Comments
No personally identifiable participant information will be shared. Data will be provided in accordance with ethical approval requirements and participant confidentiality protections.