

Clinical Trial Protocol

Iranian Registry of Clinical Trials

27 Jul 2026

Comparative Effects of Kaltenborn Mobilization Versus Maitland Mobilization on Pain and Functional Status in Patients with Patellofemoral Pain Syndrome

Protocol summary

Study aim

To check and compare the comparative effects of kaltenborn mobilization versus maitland mobilization on pain and functional status in patients with patellofemoral pain syndrome

Design

It will be a single blinded Randomized Clinical trial. A total of 40 participants will be recruited according to the criteria. Lottery method will be used for the recruitment of patients in two equal groups.

Settings and conduct

The study will be conducted in Allied hospital Faisalabad and Physiotherapy clinics Faisalabad.

Participants/Inclusion and exclusion criteria

Age range between 25-55 years Possible isolated pain to the anterior knee when the examiner applies pressure on the upper part of the patella while the patient engages in an isometric contraction of the quadriceps muscle. The test is also deemed positive if the patient is unable to maintain the contraction for more than two seconds. Have a history of patellofemoral pain syndrome, with symptoms persisting for at least the past 30. Participants must report pain during weight-bearing activities such as squatting, stair climbing, or prolonged sitting with bent knees. All participants must provide informed consent before enrollment in the study. Patients with structural abnormalities of the knee, such as valgus or varus deformities. Individuals with significant sprains, strains, or tears in the muscles, ligaments, or tendons around the knee. Patients with any recent fractures of the femur, tibia, fibula, or patella Individuals who have experienced a patellar dislocation. Patella Alta: Patients diagnosed with patella alta, where the patella is positioned higher than normal.

Intervention groups

The patient in Group A will receive Kaltenborn Mobilization. The patients enrolled in group B will receive

Maitland Mobilization .

Main outcome variables

Patellofemoral pain syndrome ; knee pain

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20250119064436N1**

Registration date: **2025-04-17, 1404/01/28**

Registration timing: **retrospective**

Last update: **2025-04-17, 1404/01/28**

Update count: **0**

Registration date

2025-04-17, 1404/01/28

Registrant information

Name

Amna Noor

Name of organization / entity

The University of Faisalabad

Country

Pakistan

Phone

+92 41 98271779

Email address

amna37109@gmail.com

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2025-04-15, 1404/01/26

Expected recruitment end date

2025-04-15, 1404/01/26

Actual recruitment start date

2025-04-15, 1404/01/26
Actual recruitment end date
2025-04-15, 1404/01/26
Trial completion date
2025-04-15, 1404/01/26

Scientific title

Comparative Effects of Kaltenborn Mobilization Versus Maitland Mobilization on Pain and Functional Status in Patients with Patellofemoral Pain Syndrome

Public title

Comparative Effects of Kaltenborn Mobilization Versus Maitland Mobilization on Pain and Functional Status in Patients with Patellofemoral Pain Syndrome

Purpose

Health service research

Inclusion/Exclusion criteria

Inclusion criteria:

Inclusion Criteria for Patients: Age range between 25-55 years. Possible isolated pain to the anterior knee when the examiner applies pressure on the upper part of the patella while the patient engages in an isometric contraction of the quadriceps muscle. The test is also deemed positive if the patient is unable to maintain the contraction for more than two seconds. Have a history of patellofemoral pain syndrome, with symptoms persisting for at least the past 30 days. Participants must report pain during weight-bearing activities such as squatting, stair climbing, or prolonged sitting with bent knees. All participants must provide informed consent before enrollment in the study.

Exclusion criteria:

Deformities: Patients with structural abnormalities of the knee, such as valgus or varus deformities .Soft Tissue Injuries: Individuals with significant sprains, strains, or tears in the muscles, ligaments, or tendons around the knee .Fracture: Patients with any recent fractures of the femur, tibia, fibula, or patella.Dislocation of Patella: Individuals who have experienced a patellar dislocation.Patella Alta: Patients diagnosed with patella alta, where the patella is positioned higher than normal.

Age

From **25 years** old to **55 years** old

Gender

Both

Phase

N/A

Groups that have been masked

- Participant

Sample size

Target sample size: **40**

Actual sample size reached: **40**

Randomization (investigator's opinion)

Randomized

Randomization description

Participants will take part in the study after meeting the inclusion criteria. Individuals will be randomly allocated in groups by using simple random sampling or lotary method after taking their written consents. The participants will be allocated in two different group

where group A will receive tibiofemoral joint mobilization while group B will receive Maitland mobilization. NPRS, Goniometer and Kujala Score questionnaire will be used to find out the pain, Range of motion and functional limitation among the patients having Patellofemoral pain syndrome.

Blinding (investigator's opinion)

Single blinded

Blinding description

Each participants will be asked to choose between two pieces of paper, with group A and group B written on them. Participants will be allocated into treatment groups according to the piece of paper they choose. The patients will not know, in which group he/she is enrolled to avoid bias.

Placebo

Not used

Assignment

Other

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics committee of The University of Faisalabad

Street address

west canal, Faisalabad

City

Faisalabad

Postal code

38000

Approval date

2025-04-15, 1404/01/26

Ethics committee reference number

TUF/Reg/SB/BASR/052

2

Ethics committee

Name of ethics committee

Ethics Committee of The University of Faisalabad

Street address

west canal,Faialabad

City

Faisalabad

Postal code

38000

Approval date

2025-04-15, 1404/01/26

Ethics committee reference number

TUF/Reg/SB/BASR/052

Health conditions studied

1

Description of health condition studied

Non specific knee pain

ICD-10 code

M-63

ICD-10 code description

Disorders of muscles

Primary outcomes

1

Description

Patellofemoral pain

Timepoint

Patellofemoral pain will be measured three times. Before the start of 1st session, after 2 weeks and third time after 4 weeks.

Method of measurement

Visual analogue scale

2

Description

Patellofemoral pain

Timepoint

Patellofemoral pain will be measured three times. Before the start of 1st session, after 2 weeks and third time after 4 weeks.

Method of measurement

Visual analogue scale

Secondary outcomes

1

Description

Range of Motion (ROM)

Timepoint

Range of motion will be measured three times. Before the start of 1st session, after 2 weeks and third time after 4 weeks.

Method of measurement

Goniometer

Intervention groups

1

Description

Intervention group A will receive Kaltenborn Mobilization to improve the knee's range of motion, specifically focusing on enhancing flexion and extension. It will receive Moist heat, quads and hamstring strengthening 10 repetitions in each session.

Category

Other

2

Description

Intervention group B will receive Maitland Mobilization that mainly focuses on patellofemoral joint in order to increase movements of knee joint. It will receive Moist heat, quads and hamstring strengthening 10 repetitions in each session.

Category

Other

Recruitment centers

1

Recruitment center

Name of recruitment center

The University of Faisalabad

Full name of responsible person

Dr. Amna Noor

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

The University of Faisalabad

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?

No

Title of funding source

All financial expenses are bear by myself

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**

Other

Person responsible for general inquiries**Contact****Name of organization / entity**

The University of Faisalabad

Full name of responsible person

Dr. Amna Noor

Position

Student

Latest degree

Master

Other areas of specialty/work

Physiotherapy

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Person responsible for updating data**Contact****Name of organization / entity**

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Position

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Sharing plan**Deidentified Individual Participant Data Set (IPD)**

Undecided - It is not yet known if there will be a plan to make this available

Study Protocol

Undecided - It is not yet known if there will be a plan to make this available

Statistical Analysis Plan

Undecided - It is not yet known if there will be a plan to make this available

Informed Consent Form

Yes - There is a plan to make this available

Clinical Study Report

Undecided - It is not yet known if there will be a plan to make this available

Analytic Code

Undecided - It is not yet known if there will be a plan to make this available

Data Dictionary

Undecided - It is not yet known if there will be a plan to make this available

Title and more details about the data/document

Comparative Effects of Kaltenborn Mobilization Versus Maitland Mobilization on Pain and Functional Status in Patients with Patellofemoral Pain Syndrome The common musculoskeletal condition that causes kneecap pain is named as patellofemoral pain syndrome, this condition becomes worse by extended sitting, stair climbing and squatting. There are two techniques which are used one is Kaltenborn and other is Maitland. Kaltenborn technique are performed as passive movements. Maitland Mobilization uses rhythmic oscillations in order to encourage the synovial fluid's flow throughout the joint

When the data will become available and for how long

Starting in January 2025 and ending in July 2025.

To whom data/document is available

The university of faisalabad

Under which criteria data/document could be used

Age range between 25-55 years Possible isolated pain to the anterior knee when the examiner applies pressure on the upper part of the patella while the patient engages in an isometric contraction of the quadriceps muscle. The test is also deemed positive if the patient is unable to maintain the contraction for more than two seconds Have a history of patellofemoral pain syndrome, with symptoms persisting for at least the past 30 days Participants must report pain during weight-bearing

activities such as squatting, stair climbing, or prolonged sitting with bent knees All participants must provide informed consent before enrollment in the study.

From where data/document is obtainable

Physiotherapy clinics in Faisalabad

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

Kujala score questionerre goniometer

Comments