Clinical Trial Protocol
Iranian Registry of Clinical Trials

10 Jun 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
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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. Indiviuals 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

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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

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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