

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

09 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

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,Faisalabad

**City**

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**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

##### Street address

west canal, Faisalabad

##### City

Faisalabad

##### Postal code

38000

##### Phone

+92 309 8271779

##### Fax

##### Email

amnanoor21028@gmail.com

##### Web page address

## Sponsors / Funding sources

### 1

#### Sponsor

##### Name of organization / entity

The University of Faisalabad

##### Full name of responsible person

Dr. Amna Noor

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West canal, Faisalabad

##### City

Faisalabad

##### Postal code

38000

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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

**Street address**

West canal, Faisalabad

**City**

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**Province**

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**Phone**

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

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**Full name of responsible person**

Dr. Amna Noor

**Position**

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**Latest degree**

Master

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The University of Faisalabad

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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**