

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

10 Jun 2026

### Comparison of specific hip strengthening exercises and conventional knee exercises on pain, muscle strength and function in sprinters with patello-femoral pain syndrome

#### Protocol summary

##### Study aim

The aim of the study is to Compare the effects of Hip Strengthening exercises and Conventional Knee exercise on relieve pain, Muscle strength and Improve functional status in sprinters with Patella-femoral pain syndrome.

##### Design

Single blinded randomized clinical trial, parallel group, Concealment of data will be done on group allocation

##### Settings and conduct

the study will be conducted in Pakistan Sports Board, Lahore. Outcome assessor will be blinded to treatment groups

##### Participants/Inclusion and exclusion criteria

The inclusion criteria: Age group between 15-30 years; Positive patellar compression test; Subjects having anterior knee pain for least 4 weeks; Muscle power for quadriceps, hamstring, gluteus medius and gluteus maximus should be grade 3; pain level of 3-cm or more on a 10-cm Numerical pain rating scale. Exclusion Criteria: Any neurological disorder, Injury to lumbosacral region, hip or ankle, Rheumatoid arthritis Patellar instability, dislocation/subluxation history of knee injury recent history (within 3 months) of knee surgery clinical evidence of meniscal lesion, ligamentous instability, patellar tendon pathology, chondral damage, osteoarthritis, or referred pain from the spine.

##### Intervention groups

Intervention Group: Traditional knee exercises and strengthening exercises of hip with resistance. All exercises were performed 3 times a week on alternate days for 6 weeks. Control Group: Conventional knee exercises and weight bearing hip strengthening exercises .All exercises were performed 3 times a week on alternate days for 6 weeks.

##### Main outcome variables

Pain, Muscle Strength, Function

#### General information

##### Reason for update

##### Acronym

##### IRCT registration information

IRCT registration number: **IRCT20210330050789N1**

Registration date: **2021-07-21, 1400/04/30**

Registration timing: **prospective**

Last update: **2021-07-21, 1400/04/30**

Update count: **0**

##### Registration date

2021-07-21, 1400/04/30

##### Registrant information

##### Name

Mahnoor Asif

##### Name of organization / entity

REX Clinic Model town, Lahore Pakistan

##### Country

Pakistan

##### Phone

+92 42 32184993

##### Email address

mahamasif96@gmail.com

##### Recruitment status

**Recruitment complete**

##### Funding source

##### Expected recruitment start date

2021-08-01, 1400/05/10

##### Expected recruitment end date

2021-10-01, 1400/07/09

##### Actual recruitment start date

empty

##### Actual recruitment end date

empty

##### Trial completion date

empty

### Scientific title

Comparison of specific hip strengthening exercises and conventional knee exercises on pain, muscle strength and function in sprinters with patello-femoral pain syndrome

### Public title

Comparison of hip strengthening exercises and knee exercises on pain, muscle strength and function in runners with knee pain

### Purpose

Treatment

### Inclusion/Exclusion criteria

#### Inclusion criteria:

Positive patellar compression test  
Subjects having anterior knee pain for least 4 weeks  
Muscle power for quadriceps, hamstring, gluteus medius and gluteus maximus should be grade 3  
Pain aggravates during any of the following two activities like ascending & descending stairs, squatting, kneeling, jumping, running, jogging  
Average pain level of 3-cm or more on a 10-cm Numerical pain rating scale

#### Exclusion criteria:

neurological disorder  
Injury to lumbosacral region, hip or ankle  
Rheumatoid arthritis  
Pregnancy  
Patellar instability  
history of knee injury signs or symptoms of other pathology  
recent history (within 3 months) of knee surgery  
history of patellar dislocation/subluxation  
clinical evidence of meniscal lesion, ligamentous instability, patellar tendon pathology, chondral damage, osteoarthritis, or referred pain from the spine.

### Age

From **15 years** old to **30 years** old

### Gender

Both

### Phase

N/A

### Groups that have been masked

- Outcome assessor

### Sample size

Target sample size: **28**

### Randomization (investigator's opinion)

Randomized

### Randomization description

Non probability convenient sampling technique will be used for recruitment of data. At the time of group allocation Sample will be randomly allocated into groups through lottery method. Another person from outside will be called out for sample allocation to groups and that person will be unaware of treatment of groups

### Blinding (investigator's opinion)

Single blinded

### Blinding description

An outcome assessor who will be unaware of the treatment of groups will take baseline pre and post measurements

### Placebo

Not used

### Assignment

Parallel

### Other design features

## Secondary Ids

empty

## Ethics committees

### 1

#### Ethics committee

##### Name of ethics committee

Research & Ethics Committee of Riphah International University Lahore, Pakistan

##### Street address

House No 494 Block 2 Sector C1 Township

##### City

Lahore

##### Postal code

54000

#### Approval date

2021-06-14, 1400/03/24

#### Ethics committee reference number

REC/RCR & AHS/21/0404

## Health conditions studied

### 1

#### Description of health condition studied

Patello-Femoral pain syndrome (PFPS) or anterior knee pain can be defined as retropatellar pain during stairs, hopping/jogging, prolonged sitting, kneeling, squatting or pain on palpation of patellar facets, femoral condyles. Patello femoral pain syndrome is also called as "runner's knee" because it is common in people who participate in sports, PFPS is the most prevalent orthopedic condition seen in sports medicine and it is the primary diagnosis in about 25% of all running injuries.

#### ICD-10 code

M25.56

#### ICD-10 code description

Pain in knee

## Primary outcomes

### 1

#### Description

Pain

#### Timepoint

Pain will be measured before intervention and 6 weeks after intervention

#### Method of measurement

Pain will be recorded through Numeric pain rating Scale(NPRS)

### 2

#### Description

Muscle Strength

### **Timepoint**

Muscle Strength will be measured before intervention and 6 weeks after intervention

### **Method of measurement**

Muscle Strength will be measured by Dynamometer

## **3**

### **Description**

Knee Function

### **Timepoint**

Function will be measured before intervention and 6 weeks after intervention

### **Method of measurement**

Function will be measured by Anterior Knee Pain Scale Questionnaire

## **Secondary outcomes**

empty

## **Intervention groups**

### **1**

#### **Description**

Intervention group 1: conventional knee exercises and weight bearing hip strengthening exercise Conventional knee exercises are Squatting(0 to 45 degree/3 sets, 10 repetitions), Seated knee extension (90° - 45°/3 sets,10 repetitions) , Prone knee flexion (0° - 90° / 3 sets,10 repetition), Single leg calf raise (3 sets 10 repetition). Stretching for quadriceps, hamstring, Iliotibial band (3 repetitions with 15 sec hold). Weight bearing Hip strengthening exercises are Single leg Glute bridge (12 reps each side, 3 sets), hip extension with knee flexion in quadruped position on shoulders( 12 reps each side, 3 sets), hip extension with knee extension in quadruped position on shoulder ( 12 reps on each side, 3 sets), side lying hip abduction ( 12 reps on each side, 3 sets) All exercises will be performed 3 times a week on alternate days for 6 weeks Pain will be recorded by NPRS, Muscle Strength will be measured by dynamometer and function will be measured by Anterior Knee Pain Scale Questionnaire(AKPS) All outcome measures will be recorded before intervention and 6 weeks after intervention

#### **Category**

Rehabilitation

### **2**

#### **Description**

Intervention group 2: Conventional knee exercises and hip strengthening exercise with resistance. Conventional knee exercises are Squatting(0 to 45 degree/3 sets, 10 repetitions), Seated knee extension (90° - 45°/3 sets,10 repetitions) , Prone knee flexion (0° - 90° / 3 sets,10 repetition), Single leg calf raise (3 sets 10 repetition). Stretching for quadriceps, hamstring, Iliotibial band (3 repetitions with 15 sec hold). Hip strengthening exercises with resistance are Single leg Glute bridge with resistance(12 reps each side, 3 sets), hip extension with

knee flexion in quadruped position on shoulders with resistance( 12 reps each side, 3 sets), hip extension with knee extension in quadruped position on shoulder with resistance( 12 reps on each side, 3 sets), side lying hip abduction with resistance( 12 reps on each side, 3 sets) For resistance, resistance band/loop band will be used All exercises will be performed 3 times a week on alternate days for 6 weeks Pain will be recorded by NPRS, Muscle Strength will be measured by dynamometer and function will be measured by Anterior Knee Pain Scale Questionnaire(AKPS) All outcome measures will be recorded before intervention and 6 weeks after intervention.

#### **Category**

Rehabilitation

## **Recruitment centers**

### **1**

#### **Recruitment center**

##### **Name of recruitment center**

Pakistan Sports Board Lahore

##### **Full name of responsible person**

Nasrullah Rana

##### **Street address**

Block E 2 Gulberg III, Ferozepur Rd, Lahore, Punjab

##### **City**

Lahore

##### **Postal code**

54000

##### **Phone**

+92 42 99230383

##### **Email**

psblahore@hotmail.com

## **Sponsors / Funding sources**

### **1**

#### **Sponsor**

##### **Name of organization / entity**

Riphah International University Lahore

##### **Full name of responsible person**

Mahnour Asif

##### **Street address**

House No 494 Block 2 Sector C1 Township

##### **City**

Lahore

##### **Postal code**

54000

##### **Phone**

+92 42 35465074

##### **Email**

mahamasif96@gmail.com

#### **Grant name**

#### **Grant code / Reference number**

#### **Is the source of funding the same sponsor organization/entity?**

No

#### **Title of funding source**

Self funded

**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**

Persons

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

REX Clinic, Model town, Lahore Pakistan

**Full name of responsible person**

Mahnoor Asif

**Position**

Clinical Physiotherapist

**Latest degree**

Bachelor

**Other areas of specialty/work**

Physiotherapy

**Street address**

House No 494 Block 2 Sector C1 Township

**City**

Lahore

**Province**

Punjab

**Postal code**

54000

**Phone**

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

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**Latest degree**

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Punjab

**Postal code**

54000

**Phone**

+92 42 35465074

**Fax****Email**

mahamasif96@gmail.com

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

No - There is not a plan to make this available

**Justification/reason for indecision/not sharing IPD**

There is no further information

**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**

Undecided - It is not yet known if there will be 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