Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 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 accessor 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
Mahnoor 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
+92 42 35465074
Email
mahamasif96@gmail.com

Person responsible for scientific inquiries

Contact
Name of organization / entity
REX Clinic, Model Town, Lahore
Full name of responsible person
Mahnoor Asif
Position
Clinical Physiotherpaist
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
+92 42 35465074
Email
mahamasif96@gmail.com

Person responsible for updating data

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
+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