Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

Comparative Effects of Post Isometric Relaxation Technique and Mulligan Traction Straight Leg Raise Technique Along with Retro walking on Hamstring Flexibility in Knee Osteoarthritis

Protocol summary

Study aim

The objective of this study is to check comparative effects of post isometric relaxation technique and mulligan traction straight leg raise technique along with retro walking on pain, hamstrings flexibility, quadriceps strength in knee osteoarthritis pain. To check effects of hamstrings flexibility and quadriceps strength on knee range of motion and functional activity in knee osteoarthritic patients

Design

Parallel group, Randomised trial

Settings and conduct

Settings: Madina Teaching Hospital FSD, Physio Fixx Physiotherapy center Faisal Hospital, FSD, Revive Healthcare Clinic, FSD, Sarfraz Healthcare Clinic, FSD, InMotion Physiotherapy and Rehabilitation Clinic, FSD Participant, Care provider, investigator and outcome assessor will be blinded .

Participants/Inclusion and exclusion criteria

Inclusion criteria: Knee pain with crepitus sound, Radiographically finding Grade II-III, Both genders having age 40-60, Morning stiffness <30 minutes, tight Hamstrings muscles, NPRS score of 5 or greater than 5 Exclusion criteria: Any history of trauma to the knee ligament, pathology, recent surgery or any neurological impairment, severe valgus or varus deformity, active infection or inflammation, unwilling participants

Intervention groups

Baseline treatment: moist heat on hamstrings muscles, quadriceps isometrics by foam roller before treatment and retro walking at maximum pace for 5 minutes after treatment will be given to both groups A and B. Group A (Post isometric relaxation technique) will be treated with baseline treatment and PIR Technique. Repetition 3 to 4 times per day; three sessions per week on alternative days. Group B (Mulligan Traction Straight Leg raise technique) will be treated with baseline treatment and TSLR technique. Repetition 3 to 4 times per day, three sessions per week on alternative days.

Main outcome variables

Pain, Knee Range of Motion, Functional Activity and Cadence

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20230606058395N1**
Registration date: **2023-06-26, 1402/04/05**
Registration timing: **registered_while_recruiting**

Last update: **2023-06-26, 1402/04/05**
Update count: **0**

Registration date

2023-06-26, 1402/04/05

Registrant information

Name

TAHREEM MUNIR

Name of organization / entity

The University of Faisalabad

Country

Pakistan

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2023-06-09, 1402/03/19

Expected recruitment end date

2023-07-09, 1402/04/18

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Comparative Effects of Post Isometric Relaxation Technique and Mulligan Traction Straight Leg Raise Technique Along with Retro walking on Hamstring Flexibility in Knee Osteoarthritis

Public title

Comparative Effects of PIR Technique and Mulligan TSLR Technique alng with Retrowalking in Knee OA

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

Knee pain with crepitus sound for 6 months or more Both genders having age 40-60 Morning stiffness lasting <30 minutes Bony tenderness with no palpable warmth Tight Hamstrings muscles Numeric Pain Rate Scale (NPRS) score of 5 or greater than 5 Radiographic finding Grade II-III according to Kellgren Lawrence Scale Bilateral or Unilateral Involvement

Exclusion criteria:

Any history of trauma to the knee ligament or any neurological impairment Any other pathology (e.g. fractures, bursitis, backache, radiating pain to the leg) History of recent steroid injection since 3 months Severe valgus or varus deformity History of recent lower limb or spinal surgeries Signs of active infection or inflammation to the knee joint Participants who are unwilling to participate in study

Age

From **40 years** old to **60 years** old

Gender

Both

Phase

N/A

Groups that have been masked

- Participant
- Care provider
- Investigator
- Outcome assessor

Sample size

Target sample size: **48**

Randomization (investigator's opinion)

Randomized

Randomization description

Randomization will be done by double lottery method while allocating individuals in Group A and Group B equally divide.

Blinding (investigator's opinion)

Double blinded

Blinding description

Double Blinding As participant do not know about treatment or in which treatment Group, he/she was allocated. The care provider also do not know the individual group. Investigator and outcome assessor will only collect outcome of the individuals instead of knowing the group and treatment allocation.

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

The University of Faisalabad

Street address

Street 5, Madan pura Faisalabad

City

Faisalabad

Postal code

38900

Approval date

2023-05-25, 1402/03/04

Ethics committee reference number

TUF/AddiREg/SB/360

Health conditions studied

1

Description of health condition studied

Knee Osteoarthritis

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description

Knee Pain

Timepoint

Before intervention and 4 weeks after intervention

Method of measurement

Numeric Pain Rate Scale

2

Description

Range of motion

Timepoint

Before intervention and 4 weeks after intervention

Method of measurement

Universal Goniometer

Secondary outcomes

1

Description
Functional Ability
Timepoint
Before intervention and 4 weeks after intervention
Method of measurement
WOMAC Questionnare

2

Description
Cadence
Timepoint
Before intervention and 4 weeks after intervention
Method of measurement
Pedometer

Intervention groups

1

Description
Baseline treatment was given to both groups A and B. Where moist heat applied for 10 minutes to the hamstrings muscles in supine position. Quadriceps isometrics by foam roller 10 rep with 5-7 hold, then Group A was treated by (Post isometric relaxation technique). In Group A, the participants received a treatment known as the baseline treatment and Post-Isometric Relaxation (PIR) Technique. Patient Positioning: During this technique, the patient was positioned in a supine lying position, and the therapist stood on the side affected by the condition. Procedure: The involved leg's knee was gently extended, while the involved leg's hip was flexed. Then therapist placed the patient's calf on their shoulder and positioned their hands across the upper leg, just above the knee joint. Next, the therapist passively flexed the hip of the affected leg until they encountered resistance. Isometric contraction: The patient was instructed to gently push down on the therapist's shoulder with their leg, exerting resistance against the therapist's effort to extend the hip while inhaling air by normal breathing. This created an isometric contraction, which was held for approximately 5-8 seconds, with appropriate breathing instructions provided to the patient. After the contraction, the patient was instructed to relax and do exhalation, then therapist gently flexed the whole leg at hip joint until the next point of resistance was reached. Repetition: This cycle was repeated 3 to 4 times per day, with three sessions per week on alternate days. After technique application, 2 minutes interval and then retro walking was advised to both group individuals to do at flat surface at their maximum pace for 5-10 minutes.
Category
Rehabilitation

2

Description
Baseline treatment was given to both groups A and B. Where moist heat applied for 10 minutes to the hamstrings muscles in supine position. Quadriceps isometrics by foam roller 10 rep with 5-7 hold, then Group B will be treated with baseline treatment and TSLR technique involves sustained traction applied to the limb. Patient actively does the SLR and both the therapist and the patient note the range. Therapist now grasp patient lower leg proximal to the ankle joint and raise it off the bed to a position just short of the painful range. Therapist flexes his knees and holds the clasped leg to his chest. When the therapist extends his knees this will effectively apply a longitudinal traction to the leg provided the bed is low enough and the therapist is tall enough. Sustain this traction and undertake a straight leg raise as far as it will go provided there is no pain. Then pain free SLR with traction is given for 3 times, three sessions per week. After technique application, 2 minutes interval and then retro walking was advised to both group individuals to do at flat surface at their maximum pace for 5-10 minutes.
Category
Rehabilitation

Recruitment centers

1

Recruitment center
Name of recruitment center
Revive Healthcare Center Faisalabad
Full name of responsible person
Rabia Khan
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2

Recruitment center
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Sponsors / Funding sources

1

Sponsor
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The University of Faisalabad
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Grant name
Rubina
Grant code / Reference number
009201
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
The University of Faisalabad
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
Academic

Person responsible for general inquiries

Contact
Name of organization / entity
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Rubina Zulfiqar
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

Yes - There is 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

Yes - There is 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

for primary and secondary outcome

When the data will become available and for how long

4 months after publication, starting in the January 2024

To whom data/document is available

Working people in academic institutions

Under which criteria data/document could be used

Articlle

From where data/document is obtainable

Email

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

Emails

Comments