Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

Effectiveness of Mulligan’s Bent Leg Raise Technique on Hamstring Flexibility in Patients with Knee Osteoarthritis

Protocol summary

Study aim
To determine the effectiveness of Bent Leg Raise approach on Hamstring Flexibility in Patients with Knee Osteoarthritis.

Design
Single Blind, Randomized Controlled Clinical Trial

Settings and conduct
Chaudary Muhammad Akram Research Teaching Hospital (CMARTH) Lahore

Participants/Inclusion and exclusion criteria
The Subjects in ae 40-65 years gender male and female with Osteoarthritis of Grade II and III following Lawrence Kellgren Criteria of Knee OA Radiological classification , with limitation in their Hamstring Range of Motion less than 100-20 Degrees will be included . While Subjects with knee pain, recent injury, trauma in last year and other diagnosed disease like Rheumatoid Arthritis and Patellofemoral syndrome etc. will be excluded

Intervention groups
Group -A In group A Bent Leg Raise with three repetitions as per rule of Brain Mulligan joint Mobilization with Movement concept (MWM) will be given to subjects.

Main outcome variables
Range of Motion , Active Knee Extension Test and KOOS knee Survey

General information

Reason for update

Acronym
Bent Leg Raise Technique

IRCT registration information
IRCT registration number: **IRCT20190912044754N2**
Registration date: **2021-03-22, 1400/01/02**
Registration timing: **prospective**

Last update: **2021-03-22, 1400/01/02**
Update count: **0**

Registration date
2021-03-22, 1400/01/02

Registrant information

Name
Tahir Mahmood
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Recruitment status
Not yet recruiting

Funding source

Expected recruitment start date
2642-06-10, 2021/03/20

Expected recruitment end date
2642-10-17, 2021/07/25

Actual recruitment start date
empty

Actual recruitment end date
empty

Trial completion date
empty

Scientific title
Effectiveness of Mulligan’s Bent Leg Raise Technique on Hamstring Flexibility in Patients with Knee Osteoarthritis

Public title
Effectiveness of Mulligan’s Bent Leg Raise Technique on Hamstring Flexibility in Patients with Knee Osteoarthritis

Purpose
Treatment

Inclusion/Exclusion criteria

Inclusion criteria:
The Subjects age 40-65 years , of both gender male and

female with Osteoarthritis of Grade II and III following Lawrence Kellgren Criteria of Knee OA Radiological classification , subjects with limitation in their Hamstring Range of Motion less than 100-20 Degrees

Exclusion criteria:

Subjects with knee pain, recent injury, trauma in last year a nd other diagnosed disease like Rheumatoid Arthritis and Patellofemoral syndrome etc.

Age

From **40 years** old to **65 years** old

Gender

Both

Phase

N/A

Groups that have been masked

- Outcome assessor

Sample size

Target sample size: **96**

Randomization (investigator's opinion)

Randomized

Randomization description

The randomization will generated by online Randomizer.

Blinding (investigator's opinion)

Single blinded

Blinding description

The assessor will not have any information about the treatment given in both groups

Placebo

Used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Azra Naheed Centre for Research and Development

Street address

Main Raiwind Road

City

Lahore

Postal code

54000

Approval date

2642-05-31, 2021/03/10

Ethics committee reference number

SU/ANCRD/IERC/06

Health conditions studied

1

Description of health condition studied

Osteoarthritis and Hamstring Flexibility

ICD-10 code

S76.312A

ICD-10 code description

Strain of muscle, fascia and tendon of the posterior muscle group at thigh level, left thigh, initial encounter

Primary outcomes

1

Description

Hamstring Flexibility

Timepoint

Baseline , after 2 weeks and 4 weeks

Method of measurement

Active Knee Extension Test

2

Description

Range of Motion

Timepoint

Baseline , after 2 weeks and 4 weeks

Method of measurement

Inclinometer

Secondary outcomes

1

Description

Knee Functioning

Timepoint

Baseline ,2 weeks and after 4 weeks

Method of measurement

KOOS knee Survey

Intervention groups

1

Description

Intervention group A: In group A Bent Leg Raise with three repetitions as per rule of Brain Mulligan joint Mobilization with Movement concept (MWM) will be applied to subjects and 3 session of 10 repetitions with 3 times/week and total of 12 sessions will be given to subjects.

Category

Rehabilitation

2

Description

Control group: Group B treated with Routine Physical Therapy in which Straight Leg Raise stretching method with ,3 session of 10 repetitions ,3 times/week with total of 12 sessions will be given to subjects, along with home plan exercise .

Category

Placebo

Recruitment centers

1

Recruitment center

Name of recruitment center
Azra Naheed Centre for Research and Development

Full name of responsible person
Umer Maqsood

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http://cmatrh.org.pk/

Sponsors / Funding sources

1

Sponsor

Name of organization / entity
Chaudhry Muhammad Akram Teaching & Research Hospital

Full name of responsible person
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Grant name
NA

Grant code / Reference number
NA

Is the source of funding the same sponsor organization/entity?
No

Title of funding source
NA

Proportion provided by this source
5

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
Agile Insitute of Rehabilitation Sciences ,Bahawalpur

Full name of responsible person
Tahir Mahmood

Position
Senior Lecturer/Physiotherapist

Latest degree
Master

Other areas of specialty/work
Physiotherapy

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Person responsible for scientific inquiries

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Sharing plan

Deidentified Individual Participant Data Set (IPD)

Yes - There is 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

Not applicable

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

Not applicable

Title and more details about the data/document

It will depend upon the journal where it will be published

When the data will become available and for how long

It will depend upon the journal where it will be published

To whom data/document is available

Researchers , scholars, physiotherapist

Under which criteria data/document could be used

None

From where data/document is obtainable

Direct contact with Responsible

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

Access as per policy

Comments

None