Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

Immediate effect of Mulligan ‘s bent leg raise versus active release technique on hamstring tightness in asymptomatic individuals

Protocol summary

Study aim
To evaluate the immediate effects of Mulligan's Bent leg raise and active release technique on tightness of hamstring in asymptomatic individuals for range of motion and flexibility

Design
A concealed ,randomized, double blinded clinical trial of 26 participants enrolled in April 2023

Settings and conduct
Setting of the study is MADINA TEACHING HOSPITAL, FAISALABAD The study population is 26 individuals. Double blinding is used for participant selection with sealed envelopes for choosing the intervention groups by lottery method and the data analyzer is also blinded. Participants in a randomized clinical trial can be blinded by not knowing which treatment group they are assigned to. The data analyzer can be blinded by not knowing which treatment group each participant belongs to. This helps reduce bias in analyzing the results. Participants of the study are asymptomatic individuals

Participants/Inclusion and exclusion criteria
Inclusion criteria: Straight leg raise range of motion less than 75°; both male and female participants; Between age 18 to 30 years; Who are willing to participate; Tightness of hamstring measured by Active knee extension test; Normal healthy subjects. Exclusion criteria: Recent Trauma; Spinal Surgery; Fractures; Osteoporosis; low back pain; Orthopedic disease effecting lower limb (meniscal injury, femoral fracture etc.)

Intervention groups
The Intervention group 1 received Mulligan 's bent leg raise technique. Intervention group 2 received Active Release Technique

Main outcome variables
Straight Leg Raise range of motion Active Knee Extension Test Sit and Reach Flexibility Test

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20230413057901N1**
Registration date: **2023-09-20, 1402/06/29**
Registration timing: **retrospective**

Last update: **2023-09-20, 1402/06/29**
Update count: **0**

Registration date
2023-09-20, 1402/06/29

Registrant information

Name
Anum Toheed

Name of organization / entity
The University Of Faisalabad

Country
Pakistan

Phone
+92 308 6634924

Email address
dr.toheed112@gmail.com

Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2023-04-10, 1402/01/21

Expected recruitment end date
2023-06-11, 1402/03/21

Actual recruitment start date
empty

Actual recruitment end date
empty

Trial completion date
empty

Scientific title
Immediate effect of Mulligan ‘s bent leg raise versus active release technique on hamstring tightness in asymptomatic individuals

Public title
Hamstring touching
Purpose
Treatment
Inclusion/Exclusion criteria
Inclusion criteria:
Straight leg raise range of motion less than 75° Both male and female participants Age range of 18 to 40 years Willingness to participate in the study Tightness of hamstring measured by Active knee extension test with angle of popliteal less than 70 ° Normal healthy Subjects
Exclusion criteria:
Recent fractures Neurological disorders Recent trauma Spinal Surgery Osteoporosis Low back pain Orthopedic disease affecting lower limb (meniscal injury, femoral fracture etc.)
Age
From **18 years** old to **30 years** old
Gender
Both

Phase
N/A
Groups that have been masked

- Participant
- Data analyser

Sample size
Target sample size: **26**
Randomization (investigator's opinion)
Randomized
Randomization description
Randomization is done through sealed envelopes; a simple random method is used by means of the Lottery method; concealment of allocation is also done.
Blinding (investigator's opinion)
Double blinded
Blinding description
Participants and data analyzer are blinded. Subjects are unaware of their assigned groups (treatment) due to identical presentation of treatment.In investigator-initiated trials, the patient is not involved in treatment allocation discussions with participants. Care providers are blinded to subjects treatment ensuring unbiased care delivery.Those collecting data are uninformed about treatment allocation ,maintaining objective data gathering. Data safety and monitoring board 's access to treatment information is limited, focusing on safety.
Placebo
Not used
Assignment
Parallel
Other design features
Academic

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Prof dr Aliya Fehmi
Street address
Street no 3
City
Faisalabad
Postal code
38000
Approval date
2023-01-08, 1401/10/18
Ethics committee reference number
TUF/Addl Reg/SB/351

Health conditions studied

1

Description of health condition studied
Hamstring tightness
ICD-10 code
M62. 461
ICD-10 code description
other muscle spasm

Primary outcomes

1

Description
Active knee Extension Test score
Timepoint
Before intervention and immediately after the intervention
Method of measurement
Active knee Extension Test

Secondary outcomes

1

Description
Sit and reach flexibility test
Timepoint
Before intervention and after immediate application of intervention
Method of measurement
range of motion of extension of hip for hamstring flexibility

2

Description
Straight leg raise
Timepoint
Before intervention and after immediate application of intervention

Method of measurement
range of motion of hip extension

Intervention groups

1

Description
Intervention group 1: Mulligan's BLR: Subjects in this group undergo a single session of this exercise on their dominant side. Participant's Position is lying on their backs at the plinth's edge with knee and hip at 90° heel coming off the plinth and flexion. Walk while adopting the affected side's stance. The inner hand's shoulder is positioned beneath the popliteal fossa. With both hands, the therapist holds the lower portion of the thigh. The femur's long axis is subjected to longitudinal traction, and the therapist bends the hip until they feel resistance. The contract-relax technique is used when a patient complains of stretch pain or the therapist experiences resistance because of tight muscles. The participant is requested to gently push the therapist's shoulder (hold for five seconds) If there is no pain, the therapist can now further flex the patient's hip. Before adding more hip flexion, the hip can be moved into abduction, external rotation, or extra traction if patients report pain during this technique. Remain in the final position for roughly 20 seconds. Perform the procedure three more times and then evaluate the results of the mobilization
Category
Treatment - Other

2

Description
Intervention group 2: Active Release Group : Active Release Technique (ART) was applied to subjects once on the dominant side. The ART procedure consists of 3 phases.• The subject was asked to lay supine on the plinth, and the hamstring muscle was gently pulled throughout its whole length as the leg was stretched in various postures to better train the muscle• At the insertion and origin of the hamstring muscle, light stress was applied• Since the hamstring connects to the adductors and gluteus muscle, which may be the cause of hamstring tightness, gentle stress was applied around these muscles
Category
Treatment - Other

Recruitment centers

1

Recruitment center
Name of recruitment center
The University of Faisalabad
Full name of responsible person
Dr Mariam Mahmood
Street address
Street no 3
City
Faisal and
Postal code
38000
Phone
+92 331 6634924
Email
dr.toheed112@gmail.com
Web page address
https://scholar.google.com/

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
The University of Faisalabad
Full name of responsible person
Anum Toheed
Street address
Street no 3
City
Faisalabad
Postal code
38000
Phone
+92 308 6634924
Email
dr.toheed112@gmail.com
Web page address
https://scholar.google.com/
Grant name
Anum Toheed
Grant code / Reference number
1234
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
The University of Faisalabad
Proportion provided by this source
1
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
The University of Faisalabad
Full name of responsible person
Anum Toheed
Position
Student
Latest degree

Master
Other areas of specialty/work
Physiotherapy
Street address
Street no 3
City
Faisalabad
Province
Punjab
Postal code
38000
Phone
+92 308 6634924
Email
dr.toheed112@gmail.com
Web page address
https://scholar.google.com/

Person responsible for scientific inquiries

Contact
Name of organization / entity
The university of Faisalabad
Full name of responsible person
Mariam Mahmood
Position
Professor
Latest degree
Master
Other areas of specialty/work
Physiotherapy
Street address
Street no 3
City
Faisalabad
Province
Punjab
Postal code
38000
Phone
+92 301 4223896
Email
mariam.mehmood@tuf.edu.pk
Web page address
https://scholar.google.com/

Person responsible for updating data

Contact
Name of organization / entity
The University of Faisalabad
Full name of responsible person
Mariam Mahmood
Position
Professor
Latest degree
Master
Other areas of specialty/work
Physiotherapy
Street address
4
City
Faisalabad
Province
Punjab
Postal code
38000
Phone
+92 301 4223896
Email
mariam.mehmood@tuf.edu.pk
Web page address
https://scholar.google.com/

Sharing plan

Deidentified Individual Participant Data Set (IPD)
Yes - There is a plan to make this available
Study Protocol
Yes - There is a plan to make this available
Statistical Analysis Plan
No - There is not 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
Yes - There is 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
IPD will be included their demographic information, medical history ,treatment assignment and outcome measurements.
When the data will become available and for how long
08-11-2023
To whom data/document is available
Academic
Under which criteria data/document could be used
For research purpose only
From where data/document is obtainable
dr.toheed112@gmail.com
What processes are involved for a request to access data/document
Inquirer must provide cover letter stating their reason to obtain data and details of the research. If any researcher share their approval letter and summary of the ongoing research. Within a day applicant will be responded.
Comments