Clinical Trial Protocol
Iranian Registry of Clinical Trials

09 Nov 2026

Comparative effects of Daily Adjustable Progressive Resistance Exercises technique and Close kinetic chain exercises on extensor lag in post-operative knee stiffness

Protocol summary

Study aim
To determine the effects of DAPRE technique and close kinetic chain exercises on pain intensity, ROM, function, strength among post-operative knee stiffness.

Design
Randomize clinical trial, not blind trial, 2 group.

Settings and conduct
Pakistan Society of Rehabilitation of Disabled Persons (PSRD).

Participants/Inclusion and exclusion criteria
INCLUSION CRITERIA:• Post-operative knee stiffness (patients with 1-3 month stiffness), Both male and female , age 30-60 years, Willing to participate in research. EXCLUSION CRITERIA:• Pre-operative knee stiffness,Severe cardiopulmpnary disease,Patients undergoing chemotherapy,Any traumatic injury/ Acute inflammatory muscular pathology.

Intervention groups
Group A: DAPRE Technique with conventional therapy. In DAPRE technique, four sets of exercises were performed. The first two sets of exercise consisted of ten and then six repetitions, per- formed against one-half and three-fourths of the previously established working weight. The full working weight was used on the third set, and the patient performed as many repetitions as possible. After performing each of the third and fourth sets, patients rested for 1 min. 6 weeks (3 sessions/week) • Hot pack: 10 min • Stretching of calf and hamstring muscle: 10 min Group B: Close kinetic chain exercises with conventional therapy. Close kinetic chain exercises for extensor lag is seated leg press, double or single one third knee bend, step up and down exercise, wall slide with weight. Treatment time will be 30 minutes and three session per week will be applied on alternate day for up to 6 weeks. Pre interventional readings will be taken at baseline & post interventional readings at 6 weeks • Hot pack: 10 min • Stretching of calf and hamstring muscle: 10 min.

Main outcome variables
Pain(NPRS), KNEE functional improvement(WOMAC), Knee ROM(universal goniometer), Strength.

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20210108049966N1**
Registration date: **2021-02-27, 1399/12/09**
Registration timing: **retrospective**

Last update: **2021-02-27, 1399/12/09**
Update count: **0**

Registration date
2021-02-27, 1399/12/09

Registrant information

Name
Shanza Tanveer

Name of organization / entity
Riphah International University

Country
Pakistan

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+92 48 3215215

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Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2020-10-20, 1399/07/29

Expected recruitment end date
2020-11-30, 1399/09/10

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Comparative effects of Daily Adjustable Progressive Resistance Exercises technique and Close kinetic chain exercises on extensor lag in post-operative knee stiffness

Public title

Comparative effects of Daily Adjustable Progressive Resistance Exercises technique and Close kinetic chain exercises on extensor lag in post-operative knee stiffness

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

Post-operative knee stiffness (patients with 1-3 month stiffness).• Both male and female , age 30-60 years.• Willing to participate in research

Exclusion criteria:

Pre-operative knee stiffness• Severe cardiopulmonary disease• Patients undergoing chemotherapy• Any traumatic injury/ Acute inflammatory muscular pathology• TKR & hip pathology and replacement• Meniscal tear

Age

From **30 years** old to **60 years** old

Gender

Both

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **22**

Randomization (investigator's opinion)

Randomized

Randomization description

Randomization was done through sealed envelope method on sample size of 22 individuals selected on inclusion & exclusion criteria in order to minimize biasness. Written informed consent will be taken. Lottary method will be used for allocation. Number of chits will be equal to total sample size, odd numbers for Group A allocation and even numbers for group B allocation.Each patient will be requested to draw a chit from the box.

Blinding (investigator's opinion)

Not blinded

Blinding description

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Riphah International University

Street address

28- M Quaid e Azam Industrial Estate, Kot Lakhpat, Lahore.

City

Lahore

Postal code

54000

Approval date

2020-12-29, 1399/10/09

Ethics committee reference number

RCR/RCR & AHS/20/021

Health conditions studied

1

Description of health condition studied

Stiffness is defined as an inadequate range of motion (ROM) that results in functional limitations in activities of daily living. Although early studies reported stiffness in >50% of patients with TKA. Postoperative stiffness (loss of motion) caused by arthrofibrosis has a deleterious effect on knee function. There is a common belief that the timing of surgery has an effect on the risk of stiffness after anterior cruciate ligament (ACL) reconstruction surgery.

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description

Pain

Timepoint

Before treatment and after treatment (6th week).

Method of measurement

Numeric pain reading scale (NPRS)

2

Description

Functional performance

Timepoint

Before treatment and after treatment (6th week).

Method of measurement

WOMAC index

3

Description

Knee range of motion

Timepoint

Before treatment and after treatment (6th week).

Method of measurement
Universal goniometer

4

Description
Strength
Timepoint
Before treatment and after treatment (6th week).
Method of measurement
Sphygmomanometer

Secondary outcomes

empty

Intervention groups

1

Description
Intervention group: Group A, 11 participants will receive Conventional physiotherapy treatment in addition to DAPRE technique by leg extension machine. In DAPRE technique, four sets of exercises were performed. The first two sets of exercise consisted of ten and then six repetitions, per- formed against one-half and three-fourths of the previously established working weight. Working weight is the amount of weight a patient uses during an individual session. The full working weight was used on the third set, and the patient performed as many repetitions as possible. After performing each of the third and fourth sets, patients rested for 1 min. 6 weeks (3 sessions per week) • Hot pack: 10 min • Stretching of calf and hamstring muscle: 10 min
Category
Treatment - Other

2

Description
Intervention group: Group B 11 participants will receive Conventional physiotherapy treatment in addition to close kinetic chain exercises. Close kinetic chain exercises for extensor lag is seated leg press, double or single one third knee bend, step up and down exercise, wall slide with weight. Treatment time will be 30 minutes and three session per week will be applied on alternate day for up to 6 weeks. Pre interventional readings will be taken at baseline & post interventional readings at 6th week. 6 weeks (3 sessions per week) • Hot pack: 10 min • Stretching of calf and hamstring muscle: 10 min.
Category
Treatment - Other

Recruitment centers

1

Recruitment center
Name of recruitment center
Pakistan Society for the Rehabilitation of the Disabled
Full name of responsible person
Shanza Tanveer
Street address
House no.1 block A muhafiz town, Sargodha
City
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Web page address

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Pakistan Society for the Rehabilitation of the Disabled, Lahore.
Full name of responsible person
Shanza Tanveer
Street address
House no.1 block A muhafiz town,, Sargodha.
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Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
No
Title of funding source
Pakistan Society for the Rehabilitation of the Disabled,Lahore.
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
Other

Person responsible for general inquiries

Contact
Name of organization / entity
Riphah International University Lahore, Pakistan
Full name of responsible person
Shanza Tanveer

Position
Student
Latest degree
Bachelor
Other areas of specialty/work
Physiotherapy
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Person responsible for updating data

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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 decision & information is decided yet.
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