

Clinical Trial Protocol

Iranian Registry of Clinical Trials

10 Jun 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 cardiopulmonary 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, performed 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

Phone

+92 48 3215215

Email address

cheematanvir666@gmail.com

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. Lottery 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, performed 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

Sargodha

Postal code

40100

Phone

+92 48 3215215

Fax**Email**

cheematanvir666@gmail.com

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.

City

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Postal code

40100

Phone

+92 48 3215215

Email

cheematanvir666@gmail.com

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

Street address

House no.1 block A muhafiz town, Sargodha.

City

Sargodha

Province

Punjab

Postal code

40100

Phone

+92 48 3215215

Fax**Email**

cheematanvir666@gmail.com

Web page address**Person responsible for scientific inquiries****Contact****Name of organization / entity**

Riphah College of Rehabilitation Sciences (RCRS)

Full name of responsible person

Shanza Tanveer

Position

Student

Latest degree

Bachelor

Other areas of specialty/work

Physiotherapy

Street address

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Phone

+92 48 3215215

Fax**Email**

cheematanvir666@gmail.com

Web page address**Person responsible for updating data****Contact****Name of organization / entity**

Riphah College of Rehabilitation Sciences (RCRS)

Full name of responsible person

Shanza Tanveer

Position

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cheematanvir666@gmail.com

Web page address**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