

# 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**

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**Email**

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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

**Street address**

House no.1 block A muhafiz town, Sargodha.

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**Postal code**

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**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**

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**Other areas of specialty/work**

Physiotherapy

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**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

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Student

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**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