

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

10 Jun 2026

### Formulation And Evaluation of Curcumin Gel Along With Ultrasound and Eccentric Exercises On Patellar Tendinopathy Management

#### Protocol summary

Quality of life ,CRP, ESR and Tendon function

#### Study aim

The primary study aim of this study is to investigate the efficacy of an integrative treatment approach combining eccentric exercises with curcumin-enhanced ultrasound therapy for the management of knee tendinopathy.

#### Design

Pragmatic, community based, parallel group, double blinded, randomised controlled trial. Total 90 patients will be enrolled. Patients who met our inclusion criteria randomised into two groups. Control group-A and treatment group-B

#### Settings and conduct

At Muhammad Institute of Medical and Allied Sciences Multan after getting approval from institutional ethical committee

#### Participants/Inclusion and exclusion criteria

Inclusion criteria: Participants between 18 to 60 years of age; patellar tendinopathy, confirmed by a qualified healthcare professional; chronic patellar tendinopathy symptoms for at least 3 months; moderate severity of symptoms; no active inflammatory conditions. Exclusion criteria: Individuals with acute (less than 3 months) patellar tendinopathy or other acute knee injuries; Participants with other significant knee conditions (e.g., patellofemoral pain syndrome, osteoarthritis, ligament injuries, or meniscal tears) that may confound the outcomes or interact with the treatments being tested; surgical interventions involving the patellar tendon or knee in the past 6 months; Individuals with uncontrolled systemic diseases, including rheumatoid arthritis, diabetes mellitus, or severe cardiovascular or neurological conditions that could affect tendon healing or physical activity.

#### Intervention groups

Control group: Curcumin-aloe vera gel + ultrasound + eccentric exercises. Intervention group: Placebo aloe vera gel + ultrasound + eccentric exercises.

#### Main outcome variables

Pain, Knee ROM, Muscle strength ,Tendon thickness ,

#### General information

##### Reason for update

##### Acronym

##### IRCT registration information

IRCT registration number: **IRCT20230202057310N16**

Registration date: **2025-01-22, 1403/11/03**

Registration timing: **registered\_while\_recruiting**

Last update: **2025-01-22, 1403/11/03**

Update count: **0**

##### Registration date

2025-01-22, 1403/11/03

##### Registrant information

##### Name

Imran Ahmad Khan

##### Name of organization / entity

Muhammad Nawaz Shareef University of Agriculture, Multan

##### Country

Pakistan

##### Phone

+92 333 6120602

##### Email address

imran.ahmad@mnsuam.edu.pk

##### Recruitment status

**Recruitment complete**

##### Funding source

##### Expected recruitment start date

2025-01-01, 1403/10/12

##### Expected recruitment end date

2025-04-03, 1404/01/14

##### Actual recruitment start date

empty

##### Actual recruitment end date

empty

**Trial completion date**  
empty

**Scientific title**  
Formulation And Evaluation of Curcumin Gel Along With Ultrasound and Eccentric Exercises On Patellar Tendinopathy Management

**Public title**  
Curcumin Gel Along With Ultrasound and Eccentric Exercises On Patellar Tendinopathy Management

**Purpose**  
Treatment

**Inclusion/Exclusion criteria**  
**Inclusion criteria:**  
Participants between 18 to 60 years of age Clinical diagnosis of patellar tendinopathy, confirmed by a qualified healthcare professional Individuals Experiencing chronic patellar tendinopathy symptoms for at least 3 months Moderate severity of symptoms No active inflammatory conditions (e.g., rheumatoid arthritis) or uncontrolled systemic diseases that might affect tendon healing or the safety of treatments.  
**Exclusion criteria:**  
Individuals with acute (less than 3 months) patellar tendinopathy or other acute knee injuries. Participants with other significant knee conditions (e.g., patellofemoral pain syndrome, osteoarthritis, ligament injuries, or meniscal tears) that may confound the outcomes or interact with the treatments being tested Those who have undergone surgical interventions involving the patellar tendon or knee in the past 6 months. Individuals with uncontrolled systemic diseases, including rheumatoid arthritis, diabetes mellitus, or severe cardiovascular or neurological conditions that could affect tendon healing or physical activity.

**Age**  
From **18 years** old to **60 years** old

**Gender**  
Both

**Phase**  
2-3

**Groups that have been masked**

- Outcome assessor
- Data analyser

**Sample size**  
Target sample size: **90**

**Randomization (investigator's opinion)**  
Randomized

**Randomization description**  
The randomization process will be conducted using computer-generated random numbers to assign participants to treatment groups in a predefined allocation sequence. A stratified or block randomization approach will be used to ensure balance between groups for key variables (e.g., age, gender, baseline disease severity). Medications will be prepared and packaged in identical numbered white boxes according to the allocation sequence. Each box will have a unique medication number corresponding to the assigned

treatment, ensuring blinding. The allocation sequence and treatment codes will be securely stored and accessible only to the principal investigator, who is not involved in participant interactions or outcome assessments.

**Blinding (investigator's opinion)**  
Double blinded

**Blinding description**  
The statistical analyst and outcome assessor will be blinded to treatment allocation by using securely stored randomization codes, accessible only to an independent party. Data will be analyzed using anonymous identifiers, and group allocation will be revealed only after data collection and analysis are complete. This ensures minimization of bias.

**Placebo**  
Used

**Assignment**  
Parallel

**Other design features**

**Secondary Ids**  
empty

**Ethics committees**

**1**

**Ethics committee**  
**Name of ethics committee**  
The Institutional Ethical Committee of Muhammad Institute of Medical and Allied Sciences  
**Street address**  
Bosan Road  
**City**  
Multan  
**Postal code**  
66000

**Approval date**  
2024-11-29, 1403/09/09

**Ethics committee reference number**  
MIMAS/24/08/IAK

**Health conditions studied**

**1**

**Description of health condition studied**  
Patellar Tendinopathy

**ICD-10 code**  
M76.50

**ICD-10 code description**  
Patellar tendinitis, unspecified knee

**Primary outcomes**

**1**

**Description**  
Pain

**Timepoint**

Before interventions and 8 weeks after intervention

**Method of measurement**

Numerical Pain rating scale and Western Ontario and McMaster Universities Osteoarthritis Index

**2**

**Description**

Knee range of motion (ROM)

**Timepoint**

Before interventions and 8 weeks after intervention

**Method of measurement**

Goniometer

**3**

**Description**

Tendon thickness

**Timepoint**

Before interventions and 8 weeks after intervention

**Method of measurement**

ultrasound

**4**

**Description**

Tendon function

**Timepoint**

Before interventions and 8 weeks after intervention

**Method of measurement**

Victorian Institute of Sport Assessment-Achilles (VISA-A)

**Secondary outcomes**

**1**

**Description**

Muscle Strength

**Timepoint**

Before interventions and 8 weeks after intervention

**Method of measurement**

Hand dynamometer

**2**

**Description**

Erythrocyte sedimentation rate (ESR)

**Timepoint**

Before interventions and 8 weeks after intervention

**Method of measurement**

Lab test

**3**

**Description**

Quality of life

**Timepoint**

Before interventions and 8 weeks after intervention

**Method of measurement**

SF-36 scale

**4**

**Description**

C-Reactive proteins

**Timepoint**

Before interventions and 8 weeks after intervention

**Method of measurement**

Lab test

**Intervention groups**

**1**

**Description**

Intervention group: Group A: Curcumin-aloe vera gel + ultrasound + eccentric exercises; Ultrasound Application: - Administer therapeutic ultrasound using a frequency of 3 MHz in pulsed mode (intensity of 1-1.5 W/cm<sup>2</sup>) for 5-10 minutes on the patellar tendon area. Apply curcumin-aloe vera gel before ultrasound therapy to enhance penetration. Treatment frequency: 3 times per week. Focus on slow eccentric loading exercises for the quadriceps, such as decline squats. - Exercise progression: Gradually increase weight/resistance over 8 weeks. - Sessions: 3-4 times per week, supervised by a physiotherapist.

**Category**

Treatment - Drugs

**2**

**Description**

Control group: Group B: Placebo-aloe vera gel + ultrasound + eccentric exercises (Ultrasound Application: - Administer therapeutic ultrasound using a frequency of 3 MHz in pulsed mode (intensity of 1-1.5 W/cm<sup>2</sup>) for 5-10 minutes on the patellar tendon area. Apply placebo-aloe vera gel before ultrasound therapy to enhance penetration. Treatment frequency: 3 times per week. Focus on slow eccentric loading exercises for the quadriceps, such as decline squats. - Exercise progression: Gradually increase weight/resistance over 8 weeks. - Sessions: 3-4 times per week, supervised by a physiotherapist.

**Category**

Rehabilitation

**Recruitment centers**

**1**

**Recruitment center**

**Name of recruitment center**

Muhammad physical therapy clinic and rehabilitation center, Multan

**Full name of responsible person**

Komal Ammar Bukhari

**Street address**

Bosan Road

**City**

Multan

**Postal code**

66000

**Phone**

+92 312 6827130

**Email**

komalbukhari608@gmail.com

## Sponsors / Funding sources

### 1

#### Sponsor

**Name of organization / entity**

Muhammad Institute of Medical and Allied Sciences,  
Multan

**Full name of responsible person**

Qurat-UI-Ain

**Street address**

Multan

**City**

MULTAN

**Postal code**

66000

**Phone**

+92 312 6827130

**Email**

qain0635@gmail.com

**Grant name**

Student fund

**Grant code / Reference number**

MIMAS/25/08/Aroosa

**Is the source of funding the same sponsor organization/entity?**

Yes

**Title of funding source**

Muhammad Institute of Medical and Allied Sciences,  
Multan

**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**

Academic

## Person responsible for general inquiries

#### Contact

**Name of organization / entity**

Muhammad Institute of Medical and Allied Sciences,  
Multan, Pakistan.

**Full name of responsible person**

Maliha Khalid Khan

**Position**

Lecturer

**Latest degree**

Medical doctor

**Other areas of specialty/work**

Physiotherapy

**Street address**

Multan

**City**

MULTAN

**Province**

Punjab

**Postal code**

66000

**Phone**

+92 312 6827130

**Email**

malihatareen1997@gmail.com

## Person responsible for scientific inquiries

#### Contact

**Name of organization / entity**

Muhammad Nawaz Sharif University of Agriculture

**Full name of responsible person**

Imran Ahmad Khan

**Position**

Coordinator Department of Pharmacy

**Latest degree**

Ph.D.

**Other areas of specialty/work**

Medical Pharmacy

**Street address**

Old shuja Abad road Multan

**City**

----Select----

**Province**

Punjab

**Postal code**

66000

**Phone**

+92 333 6120602

**Email**

imran.ahmad@mnsuam.edu.pk

## Person responsible for updating data

#### Contact

**Name of organization / entity**

Muhammad Institute of Medical and Allied Sciences,  
Multan, Pakistan

**Full name of responsible person**

Aroosa Jabeen

**Position**

Punjab

**Latest degree**

Bachelor

**Other areas of specialty/work**

Physiotherapy

**Street address**

Multan

**City**

MULTAN

**Province**

Punjab

**Postal code**

66000

**Phone**

+92 326 8581608

**Email**

aroosajabeen908@gmail.com

**Sharing plan****Deidentified Individual Participant Data Set (IPD)**

Undecided - It is not yet known if there will be 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**

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