

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

10 Jun 2026

### Effects of Sling Exercise Training on improve the Strength of Muscles , Range of Motion, and Functional Outcomes following Total knee Arthroplasty

#### Protocol summary

##### Study aim

The present study aims are intervention of a new active sling exercise therapy on enhancement of strength of muscles, and knee range of motion, and functional outcomes following total knee arthroplasty patients.

##### Design

Randomized, non-blinded clinical trial on 60 female knee arthroplasty patients with the age range of 50 to 70 years who are eligible to enter the study will be selected in two intervention and one control groups.

##### Settings and conduct

60 female patients undergoing total knee arthroplasty under the supervision of the same specialist doctor referring to Arian Physiotherapy Center located in Isfahan, will be selected and will be placed in one of the two intervention groups or the control group. At the beginning of the research, the WOMAC quality of life questionnaire, the strength of the examined muscles (Quadriceps and Hamstrings) and the range of motion of the knee joint will be measured. Then, the training protocols will be applied for eight weeks and after completion, the initial measurements will be made again.

##### Participants/Inclusion and exclusion criteria

entry conditions: Having a female gender with an age range of 50-70 years, performing a total knee arthroplasty in the last 2 months by specific doctor; Conditions of non-entry: suffering from acute cardiovascular problems or a specific disease that prevents sports activities.

##### Intervention groups

The first intervention group performed 3 sessions per week for 8 weeks, performed sling exercises therapy after the physiotherapy, the second intervention group performed the rehabilitation exercise protocol for total knee arthroplasty after the physiotherapy, and the control group without exercise intervention after the physiotherapy .

#### Main outcome variables

Strength of Quadriceps, Hamstrings muscles, Knee Range of motion(Flexion and Extension), Functional outcomes.

#### General information

##### Reason for update

##### Acronym

##### IRCT registration information

IRCT registration number: **IRCT20221226056934N1**  
Registration date: **2023-02-25, 1401/12/06**  
Registration timing: **registered\_while\_recruiting**

Last update: **2023-02-25, 1401/12/06**

Update count: **0**

##### Registration date

2023-02-25, 1401/12/06

##### Registrant information

##### Name

Nooshin Rajaeian

##### Name of organization / entity

##### Country

Iran (Islamic Republic of)

##### Phone

+98 31 4532 2194

##### Email address

noushin.rajaeian@gmail.com

##### Recruitment status

**Recruitment complete**

##### Funding source

##### Expected recruitment start date

2023-02-24, 1401/12/05

##### Expected recruitment end date

2023-04-04, 1402/01/15

##### Actual recruitment start date

empty  
**Actual recruitment end date**  
empty  
**Trial completion date**  
empty  
**Scientific title**  
Effects of Sling Exercise Training on improve the Strength of Muscles , Range of Motion, and Functional Outcomes following Total knee Arthroplasty  
**Public title**  
Effects of Sling Exercise Training on improve the Strength of Muscles , Range of Motion, and Functional Outcomes following Total knee Arthroplasty  
**Purpose**  
Treatment  
**Inclusion/Exclusion criteria**  
**Inclusion criteria:**  
Total Knee Arthroplasty since 2 months  
**Exclusion criteria:**  
**Age**  
From **50 years** old to **70 years** old  
**Gender**  
Female  
**Phase**  
N/A  
**Groups that have been masked**  
*No information*  
**Sample size**  
Target sample size: **60**  
**Randomization (investigator's opinion)**  
Randomized  
**Randomization description**  
Simple Random Sampling: The people of the society will be numbered first and after the lottery will be randomly placed in three groups (two intervention and one control).  
**Blinding (investigator's opinion)**  
Not blinded  
**Blinding description**  
**Placebo**  
Not used  
**Assignment**  
Factorial  
**Other design features**

## Secondary Ids

empty

## Ethics committees

### 1

#### Ethics committee

##### Name of ethics committee

Ethics committee of Sport Science Research Institute Of Iran

##### Street address

No.3, 5th St., Mir Emad St., Motahari Ave

##### City

Tehran  
**Province**  
Tehran  
**Postal code**  
1587958711

#### Approval date

2023-02-19, 1401/11/30

#### Ethics committee reference number

IR.SSRC.REC.1401.110

## Health conditions studied

### 1

#### Description of health condition studied

Rehabilitation of Total Knee Arthroplasty

#### ICD-10 code

#### ICD-10 code description

## Primary outcomes

### 1

#### Description

Strength of Quadriceps and Hamstring muscles

#### Timepoint

At the beginning of the study before the intervention and after 8 weeks

#### Method of measurement

J-Tech American dynamometer

### 2

#### Description

Knee joint flexion and extension range of motion

#### Timepoint

At the beginning of the study before the intervention and after 8 weeks

#### Method of measurement

Goniometer

### 3

#### Description

Knee Functionals Outcomes

#### Timepoint

At the beginning of the study before the intervention and after 8 weeks

#### Method of measurement

WOMAC quality of life questionnaire

## Secondary outcomes

empty

## Intervention groups

### 1

#### Description

Intervention group 1: Three sessions a week for 8 weeks of Sling exercises

**Category**

Rehabilitation

**2****Description**

Intervention group 2: Rehabilitation protocol after Total knee Arthroplasty

**Category**

Rehabilitation

**Recruitment centers****1****Recruitment center****Name of recruitment center**

Arian Physiotherapy and Rehabilitation Clinic

**Full name of responsible person**

Mojtaba Ghazi Isfahani

**Street address**

No. 35., 1st West St., Parvin Etesami Blvd

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Shahinshahr

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Isfahan

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**Phone**

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**Email**

noushin.rajaeian@gmail.com

**Sponsors / Funding sources****1****Sponsor****Name of organization / entity**

Islamic Azad University

**Full name of responsible person**

Majid Toghiani

**Street address**

University Blvd., Arghwanieh St., Jey Ave.

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**Province**

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info@khuisf.ac.ir

**Grant name****Grant code / Reference number****Is the source of funding the same sponsor organization/entity?**

Yes

**Title of funding source**

Islamic Azad University

**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**

Islamic Azad University

**Full name of responsible person**

Nooshin Rajaeian

**Position**

دانشجو

**Latest degree**

Master

**Other areas of specialty/work**

Sport science(sport injury and corrective exercise therapy)

**Street address**

No. 46, East 13th Ave., Atar Blvd

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**Postal code**

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

Islamic Azad University

**Full name of responsible person**

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**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**

Yes - There is 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**

Not applicable

**Data Dictionary**

Not applicable

**Title and more details about the data/document**

All potential data are released after de-identification of individuals in the form of information on main outcomes.

**When the data will become available and for how long**

The access period starts 6 months after the results are published.

**To whom data/document is available**

All researchers, lecturers and students of medical sciences can receive the printed article from the relevant journal

**Under which criteria data/document could be used**

Non-identifiable data will be made available to health science researchers for study.

**From where data/document is obtainable**

Send email to Noushin Rajaeian .  
noushin.rajaeian@gmail.com

**What processes are involved for a request to access data/document**

After sending the documents by the applicant researcher via email; Data will be sent around two weeks later.

**Comments**