

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

10 Jun 2026

### COMPARISON OF THE THERAPEUTIC EFFECT OF INTERFERENTIAL CURRENT STIMULATION ALONE AND COMBINED WITH EXERCISE-THERAPY IN PATIENTS WITH KNEE OSTEOARTHRITIS

#### Protocol summary

##### Summary

Introduction: Knee osteoarthritis (KOA) is the most common cause of chronic disability among the elderly. Due to importance of the knee joint in weight-bearing and walking, people with knee osteoarthritis often experience limitations in daily activities. Various treatment methods are recommended for management of knee osteoarthritis. In this study, two methods of 'interferential' and 'interferential plus exercise-therapy' were compared. Methods and materials: This study was conducted on 32 patients with KOA aged 45- 65 years with at least six months of complaint about knee pain. After convenient sampling, patients were randomly divided into two groups: group I (interferential plus exercise-therapy) and group II (interferential). Both groups were treated in 8 treatment sessions. Pain intensity and functional status were evaluated by Numeric Rating Scale (NRS) and Western Ontario and McMaster Universities osteoarthritis index questionnaire (WOMAC), respectively. Statistical analysis was done using Wilcoxon Signed Rank Test to compare before and after intervention in each group and Mann-Whitney Test for between-groups comparison. Results: Improvement in group I in pain intensity (NRS), knee flexion ROM, strength of knee extensor muscles and WOMAC questionnaire criteria was significantly higher than that in group II ( $p < 0.05$ ) but there was no significant difference between the two groups in knee extension ROM and strength of knee flexor muscles ( $p > 0.05$ ). Discussion & Conclusion: Our results indicated that both interferential and exercise-therapy can improve patients with KOA. It is concluded that interferential therapy alone can be somewhat effective in reducing pain and improving function in patients with KOA, however to achieve maximum recovery in these patients, exercise-therapy plays a key role.

#### General information

##### Acronym

##### IRCT registration information

IRCT registration number: **IRCT2016021624149N26**  
Registration date: **2016-04-26, 1395/02/07**  
Registration timing: **retrospective**

Last update:

Update count: **0**

##### Registration date

2016-04-26, 1395/02/07

##### Registrant information

##### Name

Fahimeh Kamali

##### Name of organization / entity

Shiraz University of Medical Sciences

##### Country

Iran (Islamic Republic of)

##### Phone

+98 71 1627 1551

##### Email address

kamalif@sums.ac.ir

##### Recruitment status

**Recruitment complete**

##### Funding source

This research was performed as a thesis, financially supported by Shiraz University of Medical Sciences (Shiraz, Iran)

##### Expected recruitment start date

2012-01-11, 1390/10/21

##### Expected recruitment end date

2012-03-10, 1390/12/20

##### Actual recruitment start date

empty

##### Actual recruitment end date

empty

**Trial completion date**  
empty

**Scientific title**  
COMPARISON OF THE THERAPEUTIC EFFECT OF INTERFERENTIAL CURRENT STIMULATION ALONE AND COMBINED WITH EXERCISE-THERAPY IN PATIENTS WITH KNEE OSTEOARTHRITIS

**Public title**  
THE THERAPEUTIC EFFECT OF INTERFERENTIAL CURRENT AND EXERCISE-THERAPY IN PATIENTS WITH KNEE OSTEOARTHRITIS

**Purpose**  
Treatment

**Inclusion/Exclusion criteria**  
Inclusion criteria were the age between 45 and 65 years, bilateral knee pain lasting at least for 6 months, morning stiffness lasting more than 30 minutes, crepitation during active knee movements and radiographic findings of KOA (such as joint space narrowing and osteophyte) Patients with the history of intra-articular steroid injection in the previous 6 months, and fracture, arthroplasty or surgery in the lower limbs were excluded from this study, as were subjects with cardio-pulmonary dysfunction, malignancy, lower limb's acute inflammatory conditions and radicular pain, patients with rheumatoid arthritis (RA) and patients who had received physiotherapy treatments at the previous four months

**Age**  
From **45 years** old to **65 years** old

**Gender**  
Both

**Phase**  
1

**Groups that have been masked**  
*No information*

**Sample size**  
Target sample size: **32**

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

**Randomization description**

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

**Blinding description**

**Placebo**  
Not used

**Assignment**  
Parallel

**Other design features**

## Secondary Ids

empty

## Ethics committees

1

### Ethics committee

**Name of ethics committee**

ethics committee of shiraz university of medical sciences  
**Street address**  
zand st  
**City**  
shiraz  
**Postal code**  
**Approval date**  
2011-10-30, 1390/08/08  
**Ethics committee reference number**  
ct-90-5780

## Health conditions studied

1

### Description of health condition studied

knee osteoarthritis

### ICD-10 code

### ICD-10 code description

## Primary outcomes

1

### Description

pain intensity

### Timepoint

before and after intervention

### Method of measurement

numeric rating scale (NRS)

## Secondary outcomes

1

### Description

functional activities

### Timepoint

before and after intervention

### Method of measurement

WOMAC questionnaire

## Intervention groups

1

### Description

1- interferential + exercise therapy 2- exercise therapy

### Category

Rehabilitation

## Recruitment centers

1

### Recruitment center

#### Name of recruitment center

shiraz university of medical sciences - rehabilitation school

#### Full name of responsible person

Fahimeh Kamali  
**Street address**  
**City**  
Shiraz

## Sponsors / Funding sources

1

### Sponsor

**Name of organization / entity**  
student research committee of shiraz university of  
medical sciences  
**Full name of responsible person**  
Fahime Kamali  
**Street address**  
shiraz university of medical sciences  
**City**  
Shiraz

### Grant name

### Grant code / Reference number

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

Yes

### Title of funding source

student research committee of shiraz university of  
medical sciences

### Proportion provided by this source

100

### Public or private sector

*empty*

### Domestic or foreign origin

*empty*

### Category of foreign source of funding

*empty*

### Country of origin

### Type of organization providing the funding

*empty*

## Person responsible for general inquiries

### Contact

**Name of organization / entity**  
shiraz university of medical sciences  
**Full name of responsible person**  
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## Person responsible for scientific inquiries

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## Person responsible for updating data

### Contact

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**Web page address**

## Sharing plan

### Deidentified Individual Participant Data Set (IPD)

*empty*

### Study Protocol

*empty*

### Statistical Analysis Plan

*empty*

### Informed Consent Form

*empty*

### Clinical Study Report

*empty*

### Analytic Code

*empty*

### Data Dictionary

*empty*