Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

Comparison of effectiveness of neuromuscular electrical stimulation and proprioception neuromuscular facilitation on EMG and balance in knee osteoarthritis

Protocol summary

Summary

1) Objectives: The purpose of this study is the comparison of effectiveness of neuromuscular electrical stimulation and proprioceptive neuromuscular facilitation on EMG and balance of knee osteoarthritis patients. 2) Design: In this study patients will be evaluated through main outcomes and then randomly assigned into 4 treatment groups. Patients will be treated for 4 weeks 3 session each week and will have reassessment after treatments and 1 month follow up. 3) Setting and conduct: Variables are balance, muscle electrical activity, pain and function which will be measured respectively by Biodex balance, EMG, VAS and WOMAC questioner. The instruments that will be used in this study is electro stimulator 620P, teraband for PNF pattern performance and ice pack in the ice therapy group. 4) Participants including major eligibility criteria: Those patients suffering from knee arthritis aged between 35-54 years old that will be referred from a specialist, achieving WOMAC score at least 25 and VAS score at least 4 will be included. 5) Intervention: Patients will be randomly allocated to 4 groups: 1) Routine physical therapy with NMES and PNF on quadriceps and hamstring muscles 2) Routine physical therapy with PNF on hamstring and quadriceps 3) Routine physical therapy with icing for hamstring and PNF for quadriceps 4) Routine physical therapy with routine exercise 6) Main variables: Pain, function, balance and electromyography (EMG)

General information

Acronym

IRCT registration information

IRCT registration number: **IRCT2017011226443N3**
Registration date: **2017-05-01, 1396/02/11**
Registration timing: **registered_while_recruiting**
Last update:
Update count: **0**

Registration date

2017-05-01, 1396/02/11

Registrant information

Name
Ahmad Reza Asgari Ashtiani
Name of organization / entity
Zahedan University of Medical Sciences
Country
Iran (Islamic Republic of)
Phone
+98 54 3329 5438
Email address
drasgari@zaums.ac.ir

Recruitment status

Recruitment complete

Funding source

Vice chancellor for research, Zahedan University of Medical Sciences

Expected recruitment start date

2017-02-19, 1395/12/01

Expected recruitment end date

2017-07-21, 1396/04/30

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Comparison of effectiveness of neuromuscular electrical stimulation and proprioception neuromuscular facilitation on EMG and balance in knee osteoarthritis

Public title

Comparison of effectiveness of neuromuscular electrical stimulation and proprioception neuromuscular facilitation on EMG and balance in knee osteoarthritis

Purpose
Treatment

Inclusion/Exclusion criteria
Main inclusion ctiteria: Confirmation of knee osteoarthritis diagnosis by an specialist; WOMAC score 25 at least; VAS 4 at least; age between 35 it 54 Main exclusion criteria: History of knee fracture, tendon, meniscus and ligament tearing; rheumatoid arthritis; hip or ankle musculoskeletal disorders; central or peripheral neuropathy; history of physical therapy in last month; corticosteroid injection in last month; unconscious patients; neoplasy disorders, deep vain thrombosis, neurological dysfunction; sever obesity; pace maker

Age
From **35 years** old to **54 years** old

Gender
Both

Phase
2-3

Groups that have been masked
No information

Sample size
Target sample size: **54**

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 Zahedan University of Medical Sciences

Street address
Deputy of Research, Zahedan University of Medical Sciences, Jannat Blvd., Dr. Hesabi Sq.

City
Zahedan

Postal code

Approval date
2016-12-18, 1395/09/28

Ethics committee reference number
IR.ZAUMS.REC.1395.234

Health conditions studied

1

Description of health condition studied
knee osteoarthritis

ICD-10 code
M17.1

ICD-10 code description
Other primary gonarthrosis

Primary outcomes

1

Description
electeromyographic activity

Timepoint
before and after intervention and 1 month later

Method of measurement
EMG

Secondary outcomes

1

Description
pain

Timepoint
before and after intervention and 1 month later

Method of measurement
VAS

2

Description
balance

Timepoint
before and after intervention and 1 month later

Method of measurement
biodex balance system

3

Description
function

Timepoint
before and after intervention and 1 month later

Method of measurement
WOMAC questionnaire

Intervention groups

1

Description
Second interventional group: Routine physical therapy treatment with quadriceps and hamstring strengthening by PNF pattern

Category
Rehabilitation

2

Description
First interventional group: Routine physical therapy treatment with quadriceps strengthening by PNF pattern and hamstring inhibition by ice
Category
Rehabilitation

3

Description
Third interventional group: Routine physical therapy with quadriceps and hamstring strengthening by PNF pattern and NMES
Category
Rehabilitation

4

Description
Control group: Routine physical therapy
Category
Rehabilitation

Recruitment centers

1

Recruitment center
Name of recruitment center
Razmjou Moghadam clinic
Full name of responsible person
Bahareh Khodadadi
Street address
Kafami street. Razmjou Moghadam laboratory. Zahedan
City
Zahedan

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Vice Chancellor for Research, Zahedan University of Medical Sciences
Full name of responsible person
Dr. Mohsen Taheri
Street address
Jannat Blvd., Dr. Hesabi Sq, Zahedan University of Medical Sciences, Deputy of Research
City
Zahedan
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Vice Chancellor for Research, Zahedan 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
Zahedan University of Medical Science
Full name of responsible person
Bahareh Khodadadi Bohlouli
Position
master student
Other areas of specialty/work
Street address
Dr.Hesabi square, Zahedan University of Medical Science,School of Rehabilitation Sciences, Department of Physiotherapy
City
Zahedan
Postal code
Phone
+98 54 3329 5836
Fax
Email
bahereh_khodadadi@yahoo.com
Web page address

Person responsible for scientific inquiries

Contact
Name of organization / entity
Zahedan University of Medical Sciences
Full name of responsible person
Dr. Ahmad Reza Asgari Ashtiyani
Position
Ph.D in Physiotherapy
Other areas of specialty/work
Street address
Dr.Hesabi square, Zahedan University of Medical Science,School of Rehabilitation Sciences,Department of Physiotherapy
City
Zahedan
Postal code
Phone
+98 54 3329 5836
Fax
Email
ahmadaskary@gmail.com
Web page address

Person responsible for updating data

Contact

Name of organization / entity
Zahedan University of Medical Sciences

Full name of responsible person
Dr. Ahmad Reza Asgari Ashtiyani

Position
Ph.D in Physiotherapy

Other areas of specialty/work

Street address
Dr.Hesabi square, Zahedan University of Medical Science,School of Rehabilitation Sciences, Department of Physiotherapy

City
Zahedan

Postal code

Phone
00

Fax

Email

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