Clinical Trial Protocol
Iranian Registry of Clinical Trials

10 Jun 2026

Effect of lumbar mobilization, muscle energy technique, and slump stretching with exercise in patients with non-specific low back pain: A randomized clinical trial.

Protocol summary

Study aim
The aim of this study is to investigate the effect of postero-anterior mobilization, muscle energy technique, and slump stretching on pain, functional disability, and fear avoidance beliefs in patients with chronic non-specific low back pain

Design
Three-arm parallel group randomised trial with blinded outcome assessment

Settings and conduct
This study will be conducted in Baqiyatallah hospital (Tehran-Iran). A male physical therapist who is a PhD in physical therapy with more than 7 years of clinical experience will apply interventions (postero-anterior mobilization, muscle energy technique, and slump stretching). Moreover, another male physical therapist who is a PhD candidate in physical therapy will assess the participants. The outcome assessor will be blinded to group allocation, and the patients will be requested not to disclose this to him. All participants will also perform stabilization exercises as a form of exercise therapy to strengthen weakened core muscles.

Participants/Inclusion and exclusion criteria
In this study, 36 patients with chronic non-specific low back pain will be randomly assigned into three intervention groups. The inclusion criteria are low back pain persisting for more than 3 months in the absence of an underlying pathology, age between 18 and 40 years, and no serious lumbar and lower extremities pathologies. In addition, the exclusion criteria include smoking, any recent trauma to the musculoskeletal system , body mass index above 30 kg/m2, and absence for 3 consecutive treatment sessions.

Intervention groups
The current study has three intervention groups: 1- Lumbar spine postero-anterior mobilization and stabilization exercises 2- Muscle energy technique and and stabilization exercises 3- Slump stretching and stabilization exercises

Main outcome variables
Pain; Functional disability

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20130409012953N3**
Registration date: **2018-04-29, 1397/02/09**
Registration timing: **prospective**

Last update: **2018-04-29, 1397/02/09**
Update count: **0**

Registration date
2018-04-29, 1397/02/09

Registrant information

Name
Mohammadreza Pourahmadi

Name of organization / entity
Rehabilitation Research Center, Department of Physiotherapy

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Iran (Islamic Republic of)

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Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2018-05-22, 1397/03/01

Expected recruitment end date

2018-08-22, 1397/05/31

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Effect of lumbar mobilization, muscle energy technique, and slump stretching with exercise in patients with non-specific low back pain: A randomized clinical trial.

Public title

Effect of lumbar mobilization, muscle energy technique, and slump stretching with exercise on low back pain

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

Low back pain persisting for more than 3 months in the absence of an underlying pathology Aged between 18 and 40 years No contraindication for exercise No history of surgery in the lumbar region No obvious scoliosis No sensory and motor deficits in the lower extremities No vertebral fracture No severe discopathy

Exclusion criteria:

Smoking Any recent trauma to the musculoskeletal system such as bony, muscular, ligamentous, and soft tissue structures in the lower extremities and trunk that might interfere with the treatment Body mass index above 30 kg/m2 Absence for 3 consecutive treatment sessions

Age

From **18 years** old to **40 years** old

Gender

Both

Phase

N/A

Groups that have been masked

- Outcome assessor

Sample size

Target sample size: **36**

Randomization (investigator's opinion)

Randomized

Randomization description

All eligible chronic non-specific low back pain participants will be randomly assigned to a mobilization (group 1), muscle energy technique (group 2), or a slump stretching (group 3) group with a ratio of 1:1:1. Randomization will be performed using a block-balanced randomization technique with 6 character blocks containing letters A, B, and C. After randomizing, the randomization schedule will be transferred into written instructions and will be placed in sequentially numbered, opaque, and sealed envelopes. The procedure will be performed by an investigator who will not be involved with participants assessment and treatment.

Blinding (investigator's opinion)

Single blinded

Blinding description

In this study, outcomes assessor will not be informed about the intervention that chronic non-specific low back pain patients received during the treatment

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

The Ethics committee at the Baqiyatallah University of Medical Sciences

Street address

Exercise Physiology Research Center, Life Style Institute, Baqiyatallah University of Medical Sciences, South Sheykh Bahayi Street, Molasadra blvd, Vanak Sq, Tehran, Iran

City

Tehran

Province

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Postal code

19395- 5487

Approval date

2017-11-14, 1396/08/23

Ethics committee reference number

IR.BMSU.AC.IR.REC.1396.308

Health conditions studied

1

Description of health condition studied

Chronic non-specific low back pain is defined as pain persisting for a period of greater than 3 months, localized between the costal margin and the inferior gluteal folds, without referred leg pain and that is not caused by a known specific pathology.

ICD-10 code

M54.5

ICD-10 code description

Low back pain

Primary outcomes

1

Description

Pain

Timepoint

Before intervention and 3, 6 sessions after intervention

Method of measurement

Numeric Pain Rating Scale

2

Description
Lumbar spine flexion and extension range of motion
Timepoint
Before intervention and 3, 6 sessions after intervention
Method of measurement
Smartphone application (iHandy level)

3

Description
Functional disability
Timepoint
Before intervention and 3, 6 sessions after intervention
Method of measurement
Persian version of Roland-Morris Disability Questionnaire and Oswestry Disability Questionnaire

Secondary outcomes

1

Description
Fear avoidance beliefs
Timepoint
Before intervention and 3, 6 sessions after intervention
Method of measurement
Persian version of fear-avoidance beliefs questionnaire

Intervention groups

1

Description
Intervention group 1: Lumbar spine postero-anterior mobilization and stabilization exercises- In this group, each participant will receive approximately 10 minutes of lumbar spine mobilization to the hypomobile segments identified during the initial examination. Each participant will be positioned in prone on a treatment table with a small pillow will be placed under the abdomen to enhance his/her comfort. A graded posterior–anterior mobilization (grade II and III) will be provided to the most provocative vertebral segment for three sets of 40-second oscillations. All other hypomobile lumbar segments will be mobilized for two sets of 40-second oscillations. Following mobilization, the participants will perform lumber stabilization exercise. Each participant will perform two sets of 10 repetitions of wall squat, bridge, pelvic tilt, and quadruped arm and leg lifts.
Category
Rehabilitation

2

Description
Intervention group 2: Muscle energy technique and stabilization exercises- The participant will sit upright on a treatment table with the hands resting on the opposite shoulders. The physical therapist will stand close to the participant and will ask him/her to perform lumbar flexion movement to the maximum available range. Then, the participant will be instructed to perform a submaximal isometric contraction (20-25% maximum voluntary isometric contraction) of the paraspinal muscles against the physical therapist resistive force and maintain this contraction for 5 seconds. Afterward, the participant will be asked to relax the contraction and the physical therapist will move the trunk into the new range. This technique will be repeated three time in each treatment session. Following muscle energy technique, the participants will perform lumber stabilization exercise. Each participant will perform two sets of 10 repetitions of wall squat, bridge, pelvic tilt, and quadruped arm and leg lifts.
Category
Rehabilitation

3

Description
Intervention group 3: Slump stretching and stabilization exercises- Slump stretching exercises will be provided by the physical therapist. The participant will be positioned in long sitting, feet against a wall to maintain neutral dorsiflexion angle, trunk will be flexed to enhance dural elongation, while the physical therapist will apply cervical overpressure to ensure a consistent pressure just at the onset of symptom provocation. Five repetitions of 30-second holds will be performed. Following slump stretching, the participants will perform lumber stabilization exercise. Each participant will perform two sets of 10 repetitions of wall squat, bridge, pelvic tilt, and quadruped arm and leg lifts.
Category
Rehabilitation

Recruitment centers

1

Recruitment center
Name of recruitment center
Department of orthopedic- Baqiyatallah hospital
Full name of responsible person
Mohammad Reza Pourahmadi
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School of Rehabilitation Sciences, Iran University of Medical Sciences, Madadkaran All., Shahnazari St., Madar Sq., Mirdamad Blvd., Tehran
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Sponsors / Funding sources

1

Sponsor

Name of organization / entity
Baqiyatallah University of Medical Sciences

Full name of responsible person
Alireza Shamsoddini

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Exercise Physiology Research Center, Life Style Institute, Baqiyatallah University of Medical Sciences, South Sheykh Bahayi Street, Molasadra blvd, Vanak Sq, Tehran

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Grant name

Grant code / Reference number

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

Title of funding source
Baqiyatallah University of Medical Sciences

Proportion provided by this source
100

Public or private sector
Public

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
Iran University of Medical Sciences

Full name of responsible person
Mohammad Reza Pourahmadi

Position
Physical Therapist

Latest degree
Ph.D.

Other areas of specialty/work
Physiotherapy

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Position
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Person responsible for updating data

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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
Yes - There is a plan to make this available
Data Dictionary
Yes - There is a plan to make this available
Title and more details about the data/document
Deidentified individual participant data collected for the primary and secondary outcome measures will be shared if necessary.
When the data will become available and for how long
Starting 6 months after publication
To whom data/document is available
The data will be available for physical therapists working in academic institutions and also clinicians working in the field of musculoskeletal disorders
Under which criteria data/document could be used
The raw data and results of this study can be used in future relevant systematic reviews. Thus, the raw data and results of this study will be available for researchers working in the field of low back pain.
From where data/document is obtainable
Applicants can contact Dr. Mohammad Reza Pourahmadi (PT, PhD) by email. Email address: pourahmadipt@gmail.com
What processes are involved for a request to access data/document
Applicants should explain in detail about their project and how the data/documents of this study will be used in their project. Then, the data/documents files will be sent by email to applicants on request. This process may takes 10-12 working days.
Comments