# Clinical Trial Protocol
# Iranian Registry of Clinical Trials

22 Nov 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

**Country**

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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## 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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alirezaot@bmsu.ac.ir

**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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## Person responsible for scientific inquiries

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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**