Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

Investigating the Effectiveness of an Eight-Week Combined Protocol of Proprioceptive Exercises and Myofascial Release on Improving Muscle Strength and Endurance in Women with Chronic Nonspecific Low Back Pain

Protocol summary

Study aim
To evaluate the effectiveness of an eight-week combined protocol (proprioceptive exercises and myofascial release) in improving muscle strength and endurance in women with chronic nonspecific low back pain

Design
The study is designed as a three-arm, parallel-group clinical trial without a control group, with a single-blind design and matched-triplet block randomization.

Settings and conduct
The study will include 45 women aged 30–50 years with chronic nonspecific low back pain attending Isfahan University of Medical Sciences, divided into three groups of 15: proprioceptive exercises, myofascial release, and combined protocol. Assessments will be performed before and after the intervention by an independent, trained assessor blinded to group allocation and intervention procedures. Outcomes include trunk and hip flexor and extensor strength, and trunk flexor, lateral flexor, and extensor endurance. Strength will be measured using a digital handheld dynamometer and endurance using the McGill tests (60-degree trunk flexor, side plank, and Sorensen tests).

Participants/Inclusion and exclusion criteria
The inclusion criteria comprise women aged 30–50 years with chronic low back pain, a pain intensity score of 2–5 based on the Visual Analog Scale (VAS), and voluntary informed consent to participate in the study. The exclusion criteria include the presence of a specific structural cause of low back pain, a history of spinal surgery, and the diagnosis of a specific neurological disorder.

Intervention groups
A total of 45 participants will be equally divided into three groups of 15, receiving, respectively, proprioceptive exercises, myofascial release, and a combined intervention consisting of both approaches.

Main outcome variables
Muscle Strength and Endurance

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20120729010439N5**
Registration date: **2026-11-20, 1405/08/29**
Registration timing: **prospective**

Last update: **2026-11-20, 1405/08/29**
Update count: **0**

Registration date
2026-11-20, 1405/08/29

Registrant information

Name
Babak Vahdatpour

Name of organization / entity
Isfahan University of Medical Sciences

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Iran (Islamic Republic of)

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Recruitment status
Not yet recruiting

Funding source

Expected recruitment start date
2026-12-06, 1405/09/15

Expected recruitment end date

2027-01-05, 1405/10/15

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Investigating the Effectiveness of an Eight-Week Combined Protocol of Proprioceptive Exercises and Myofascial Release on Improving Muscle Strength and Endurance in Women with Chronic Nonspecific Low Back Pain

Public title

Effectiveness of a Combined Proprioceptive Exercise and Myofascial Release Protocol on Muscle Strength and Endurance

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

Women aged 30–50 years with chronic nonspecific low back pain Low back pain intensity score between 2 and 5 based on the Visual Analog Scale (VAS) Voluntary informed consent to participate in the study

Exclusion criteria:

Presence of a specific structural cause of low back pain History of spinal surgery Diagnosis of a specific neurological disorder

Age

From **30 years** old to **50 years** old

Gender

Female

Phase

N/A

Groups that have been masked

- Outcome assessor

Sample size

Target sample size: **45**

Randomization (investigator's opinion)

Randomized

Randomization description

Participants will be allocated to the intervention groups using matched-triplet block randomization. Initially, participants will be matched into sets of three based on similar baseline pain scores measured using the Visual Analog Scale (VAS). Subsequently, within each set, participants will be randomly assigned in a 1:1:1 allocation ratio to one of three groups: proprioceptive exercises, myofascial release, or the combined intervention protocol. The random allocation sequence will be generated by an independent individual who is not involved in participant recruitment or outcome assessment, using Microsoft Excel software. To prevent allocation bias, sequentially numbered, opaque, sealed envelopes will be used. Outcome assessments will be conducted by an independent assessor who will be blinded to the participants' group assignments.

Blinding (investigator's opinion)

Single blinded

Blinding description

Considering the gender of the study participants, all assessments will be conducted at two time points (pre-test and post-test) by a trained assessor who is independent of the principal investigator. Prior to the commencement of the study, the assessor will receive appropriate training on the administration of the assessment procedures and the recording of results. The pre-test assessments will be performed before participants are allocated to the study groups. Subsequently, participants will be assigned to the study groups using a matching procedure based on their pain scores. The outcome assessor will remain unaware of participants' group allocation and the intervention procedures throughout the study. Therefore, outcome assessments will be conducted under blinded conditions.

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Research Ethics Committees of School of Medicine - Isfahan University of Medical Sciences

Street address

Isfahan University of Medical Sciences, Hezar Jerib Street

City

Isfahan

Province

Isfehan

Postal code

8179964167

Approval date

2026-11-15, 1405/08/24

Ethics committee reference number

IR.MUI.MED.REC.1405.329

Health conditions studied

1

Description of health condition studied

Chronic Nonspecific Low Back Pain

ICD-10 code

M54.5

ICD-10 code description

Low back pain

Primary outcomes

1

Description
Muscle strength
Timepoint
Before and immediately after the intervention
Method of measurement
Digital Handheld Dynamometer

2

Description
Muscular Endurance
Timepoint
Before and immediately after the intervention
Method of measurement
McGill Trunk Muscle Endurance Tests

Secondary outcomes

empty

Intervention groups

1

Description
Intervention group: all participants in this group will perform proprioceptive exercises for 8 weeks, with three sessions per week. Weeks 1–2: The exercises will include transversus abdominis activation in the supine position (10 repetitions, holding each contraction for 10 seconds); transversus abdominis and multifidus activation in the prone position (10 repetitions, holding each contraction for 10 seconds); transversus abdominis and multifidus activation in the quadruped position (10 repetitions, holding each contraction for 10 seconds); and diaphragmatic activation in the supine and quadruped positions (10 repetitions, 3 sets). Weeks 3–4: The exercises will include glute bridge (10 repetitions, with a 10-second isometric hold); single-leg glute bridge (10 repetitions, with a 10-second isometric hold); transversus abdominis and multifidus co-contraction in the sitting position (10 repetitions, holding each contraction for 10 seconds); and transversus abdominis and multifidus co-contraction in the sitting position with forward bending (10 repetitions, holding each contraction for 10 seconds). Weeks 5–6: The exercises from the first and second phases will be continued, with the addition of bird-dog (10 repetitions, 3 sets, with a 3–5-second isometric hold per repetition); dead bug (10 repetitions, 3 sets, with a 3–5-second isometric hold per repetition); and standing hip flexion with lumbar support (10 repetitions, holding each contraction for 10 seconds). Weeks 7–8: All exercises from the previous phases will be continued, with the addition of side plank (2 sets of 40 seconds); plank (2 sets of 40 seconds); and cat-camel exercise (10 repetitions, 3 sets).
Category
Rehabilitation

2

Description
Intervention group: all participants in this group will undergo myofascial release for 8 weeks, with three sessions per week. Weeks 1–2: Cross-hand technique will be performed for 3 repetitions of 90 seconds each, with rest periods consisting of two 30-second intervals. Weeks 3–5: Cross-hand technique will be performed for 4 repetitions of 90 seconds each, with rest periods consisting of two 30-second intervals. Weeks 6–8: Cross-hand technique will be performed for 5 repetitions of 90 seconds each, with rest periods consisting of two 15-second intervals.
Category
Rehabilitation

3

Description
Intervention group: all participants in this group will undergo a combined protocol consisting of proprioceptive exercises (identical to those performed by the first group) and myofascial release (identical to that performed by the second group) for 8 weeks, with three sessions per week.
Category
Rehabilitation

Recruitment centers

1

Recruitment center
Name of recruitment center
Physical Medicine and Rehabilitation Clinic, Isfahan University of Medical Sciences
Full name of responsible person
Babak Vahdatpour
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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Esfahan University of Medical Sciences
Full name of responsible person
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Grant name

Grant code / Reference number

Is the source of funding the same sponsor organization/entity?
No

Title of funding source
Isfahan 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
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Esfahan University of Medical Sciences
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Babak Vahdatpour
Position
Professor
Latest degree
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Person responsible for updating data

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Sharing plan

Deidentified Individual Participant Data Set (IPD)
No - There is not a plan to make this available

Justification/reason for indecision/not sharing IPD
No further information is available.

Study Protocol
No - There is not a plan to make this available

Statistical Analysis Plan

No - There is not a plan to make this available

Informed Consent Form

No - There is not a plan to make this available

Clinical Study Report

No - There is not a plan to make this available

Analytic Code

No - There is not a plan to make this available

Data Dictionary

No - There is not a plan to make this available