

Clinical Trial Protocol

Iranian Registry of Clinical Trials

11 Sep 2026

The Effect and Retention of Core Stability Exercises With and Without Abdominal Hollowing on Spatiotemporal Gait Parameters, Transversus Abdominis Muscle Activity and Postural Balance in Individuals With Non-Specific Chronic Low Back Pain: A Randomized Controlled Trial

Protocol summary

Study aim

The aim of this study is to compare the effects and persistence of core stability exercises with and without the abdominal drawing-in maneuver on spatiotemporal gait parameters, transversus abdominis muscle activity, pain intensity, and dynamic balance in individuals with chronic non-specific low back pain.

Design

This study is a randomized controlled clinical trial with two parallel groups, involving a total of 30 participants. Participants will be randomly allocated using block randomization to two groups: Core Stability Exercises (CSE) and Core Stability Exercises combined with the Abdominal Drawing-In Maneuver (CSE+ADIM).

Settings and conduct

This randomized clinical trial will be conducted at a physiotherapy clinic in Bandar Abbas. Participants will be randomly assigned to CSE or CSE+ADIM groups and receive 8 weeks of intervention, 3 sessions/week, 40 minutes/session. Assessments will be performed at baseline, post-intervention, and one-month follow-up.

Participants/Inclusion and exclusion criteria

Inclusion criteria: Chronic non-specific low back pain; age 30–45 years; no physiotherapy or drug treatment in the past 6 months. Exclusion criteria: Serious spinal conditions; previous spinal surgery; neurological or musculoskeletal disorders affecting gait; inability to perform study exercises or tests.

Intervention groups

Core Stability Exercise group (CSE): Participants will perform core stability exercises for 8 weeks, 3 sessions per week, 40 minutes per session. Core Stability Exercise plus Abdominal Drawing-In Maneuver group (CSE+ADIM): Participants will perform the same core stability exercise program combined with the abdominal drawing-in maneuver.

Main outcome variables

Spatiotemporal gait parameters; Pain intensity; Dynamic balance; Transversus abdominis muscle activity

General information

Reason for update

Acronym

LBP: Low Back Pain

IRCT registration information

IRCT registration number: **IRCT20260829070822N1**

Registration date: **2026-09-06, 1405/06/15**

Registration timing: **registered_while_recruiting**

Last update: **2026-09-06, 1405/06/15**

Update count: **0**

Registration date

2026-09-06, 1405/06/15

Registrant information

Name

Aazam Abbaszadeh

Name of organization / entity

Country

Iran (Islamic Republic of)

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Recruitment status

recruiting

Funding source

Expected recruitment start date

2026-07-23, 1405/05/01

Expected recruitment end date

2026-10-02, 1405/07/10

Actual recruitment start date
empty

Actual recruitment end date
empty

Trial completion date
empty

Scientific title
The Effect and Retention of Core Stability Exercises With and Without Abdominal Hollowing on Spatiotemporal Gait Parameters, Transversus Abdominis Muscle Activity and Postural Balance in Individuals With Non-Specific Chronic Low Back Pain: A Randomized Controlled Trial

Public title
Effect of Core Stability Exercises With Abdominal Hollowing on Gait, Muscle Activity, and Balance in Chronic Low Back Pain.

Purpose
Treatment

Inclusion/Exclusion criteria
Inclusion criteria:
Individuals with chronic non-specific low back pain lasting more than 12 weeks With no history of physiotherapy or pharmacological treatment during the previous 6 months.
Exclusion criteria:

Age
From **30 years** old to **45 years** old

Gender
Both

Phase
N/A

Groups that have been masked
No information

Sample size
Target sample size: **30**

Randomization (investigator's opinion)
Randomized

Randomization description
Eligible participants will be randomly allocated using block randomization into two groups: the Core Stability Exercise group (CSE) and the Core Stability Exercise combined with the Abdominal Drawing-In Maneuver group (CSE+ADIM). Group allocation will be performed by an individual independent of the assessment and intervention processes to minimize allocation bias.

Blinding (investigator's opinion)
Not blinded

Blinding description

Placebo
Not used

Assignment
Parallel

Other design features

Secondary Ids
empty

Ethics committees

1

Ethics committee

Name of ethics committee

kerman university of medical sciences

Street address

Daroopaksh

City

بندرعباس

Province

Hormozgan

Postal code

7915868451

Approval date

2026-07-20, 1405/04/29

Ethics committee reference number

IR.KMU.REC.1405.146

Health conditions studied

1

Description of health condition studied

Investigating the effect of two types of core stabilization exercises on balance, gait pattern, and abdominal muscle activity in patients with chronic nonspecific low back pain.

ICD-10 code

M54.5

ICD-10 code description

Low back pain

Primary outcomes

1

Description

Spatiotemporal gait parameters include gait speed, step length, and cadence, and their changes will be assessed as indicators of gait performance and gait pattern in individuals with chronic non-specific low back pain.

Timepoint

The primary outcome will be assessed at three time points: at baseline before the intervention, immediately after completion of the intervention, and at follow-up to evaluate the persistence of the intervention effects.

Method of measurement

Spatiotemporal gait parameters, including gait speed, step length, and cadence, will be measured using Kinovea software through video analysis of gait.

Secondary outcomes

1

Description

1-Transversus abdominis muscle activity will be assessed using the Unit Biofeedback Pressure device by evaluating muscle performance during the abdominal drawing-in

maneuver. Measurements will be performed at baseline, immediately after the intervention, and at one-month follow-up.2-Pain intensity will be assessed using the Visual Analog Scale (VAS). Measurements will be performed at baseline, immediately after the intervention, and at one-month follow-up.3-Dynamic balance will be assessed using the Y-Balance Test. Measurements will be performed at baseline, immediately after the intervention, and at one-month follow-up.

Timepoint

Secondary outcomes, including transversus abdominis muscle activity, pain intensity, and dynamic balance, will be assessed at three time points: baseline, immediately after completion of the intervention, and at one-month follow-up.

Method of measurement

Transversus abdominis muscle activity will be assessed using the Unit Biofeedback Pressure device, pain intensity using the Visual Analog Scale (VAS), and dynamic balance using the Y-Balance Test.

Intervention groups

1

Description

Intervention group:

Category

Rehabilitation

Recruitment centers

1

Recruitment center

Name of recruitment center

Taskin Physiotherapy

Full name of responsible person

Aazam Abbaszadeh

Street address

Persian Gulf Boulevard - Corner of third Khordad Street - Gambron Health Center - 3rd Floor - Unit 30

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Email

a.abbaszadeh.1985@gmail.com

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Shahid Bahonar University of Kerman

Full name of responsible person

Aazam Abbaszadeh

Street address

Daroopaksh - Shahid Ansari

City

Bandar Abbas

Province

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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

Shahid Bahonar University of Kerman

Proportion provided by this source

10

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

Shahid Bahonar university of Kerman

Full name of responsible person

Aazam Abbaszadeh

Position

PHD candidate

Latest degree

Master

Other areas of specialty/work

Sport injuries and corrective exercises

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Person responsible for scientific

inquiries

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Position

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Latest degree

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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

Not applicable

Data Dictionary

Not applicable

Title and more details about the data/document

The only part of the information, such as information in the main results or similar, can be shared.

When the data will become available and for how long

Start the access period begins 6 months after the publication of the research results in a scientific journal

To whom data/document is available

The data will be available to all scientific researchers.

Under which criteria data/document could be used

It may only be used to assist in scientific research and with the written permission of the researcher.

From where data/document is obtainable

To receive data/documents, contact the researcher via email and phone.

What processes are involved for a request to access data/document

Data/documents are made available to other researchers via email.

Comments