Clinical Trial Protocol
Iranian Registry of Clinical Trials

07 Nov 2026

Comparison of the core stability exercises with internal and external focus of attention on pain, quality of life and lumbar proprioception in people with chronic nonspecific low back pain.

Protocol summary

Study aim

To compare the effects of core stability exercises with an internal attentional focus, an external attentional focus, and no specific attentional focus on pain, quality of life, and proprioception (specific and nonspecific) in individuals with chronic nonspecific low back pain.

Design

The present clinical trial was a randomized, double-blind, parallel-group trial with an active control group. It included three groups and a total sample size of 30 participants, with 10 participants in each group. Simple randomization using the lottery method was employed.

Settings and conduct

Study setting: Sports Injury and Corrective Exercise Laboratory, Faculty of Sports and Health Sciences, University of Tehran Following screening and confirmation of eligibility by a spine specialist, pain (VAS), quality of life (SF-36), and specific(target angle reproduction error during lumbar flexion and extension) and nonspecific (Y-Balance Test) proprioception were assessed. Participants were then randomly assigned to three groups. Participants and the assessor were blinded to group allocation, and sessions were scheduled to prevent interaction between groups.

Participants/Inclusion and exclusion criteria

Men aged 20–40 years with chronic nonspecific low back pain who met the previously stated inclusion criteria, provided informed consent, and received final approval from a specialist physician to participate in the study.

Intervention groups

(1) core stability exercises without emphasis on a specific attentional focus (active control group); (2) core stability exercises with an internal attentional focus (attention to the contracting muscles); and (3) core stability exercises with an external attentional focus (attention to the effects of movement or environmental features).

Main outcome variables

Lumbar Proprioception; Pain

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20261017071462N1**
Registration date: **2026-10-31, 1405/08/09**
Registration timing: **retrospective**

Last update: **2026-10-31, 1405/08/09**
Update count: **0**

Registration date

2026-10-31, 1405/08/09

Registrant information

Name
Reza rajabi
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University of Tehran, Iran
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Iran (Islamic Republic of)
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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2022-10-23, 1401/08/01

Expected recruitment end date

2022-12-21, 1401/09/30

Actual recruitment start date

2022-11-22, 1401/09/01

Actual recruitment end date
2023-01-18, 1401/10/28
Trial completion date
2023-03-15, 1401/12/24

Scientific title
Comparison of the core stability exercises with internal and external focus of attention on pain, quality of life and lumbar proprioception in people with chronic nonspecific low back pain.

Public title
Comparison of the core stability exercises with internal and external focus of attention on pain, quality of life and lumbar proprioception in people with chronic nonspecific low back pain.
Purpose
Supportive
Inclusion/Exclusion criteria
Inclusion criteria:
Men aged 20–40 years with chronic nonspecific low back pain lasting longer than 3 months. Pain intensity ranging from 3 to 7 on the Visual Analogue Scale (VAS). No history of spinal surgery or specific spinal injuries, such as vertebral fractures. No history of traumatic brain injury and no known balance disorders. No radiating pain to the lower extremities. No lower-extremity injuries within the past 6 months. Absence of identifiable spinal deformities, such as scoliosis, as assessed by a spine specialist. No participation in other therapeutic interventions or specific exercise programs during the study period. Final approval from a spine specialist confirming eligibility to participate in core stabilization exercises. Confirmation of informed consent by participants to participate in the study.
Exclusion criteria:
Presence of specific low back pain, as diagnosed by a specialist physician. Use of medications that affect pain or neuromuscular function, as assessed by a specialist physician.
Age
From **20 years** old to **40 years** old
Gender
Male

Phase
N/A
Groups that have been masked

- Participant
- Outcome assessor

Sample size
Target sample size: **30**
Actual sample size reached: **30**
Randomization (investigator's opinion)
Randomized
Randomization description
Following the baseline assessment, simple individual randomization was performed. Each eligible participant was assigned a number, and the numbers were randomly drawn from a box to allocate participants to one of three groups(Lottery Method): core stability exercises without a specific attentional focus (active control), core stability exercises with an internal attentional focus, and core stability exercises with an external attentional focus. The allocation ratio was 1:1:1.
Blinding (investigator's opinion)
Double blinded
Blinding description
Participants were unaware of their group allocation and the specific intervention assigned to them. The outcome assessor was also unaware of the participants' group assignments and the type of exercises administered to each group.
Placebo
Not used
Assignment
Parallel
Other design features
I hope this message finds you well. The requested dates were somewhat ambiguous. We interpreted the participant recruitment start date as the date when announcements inviting individuals to participate in the study began, rather than the date when the exercise intervention commenced.

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Research Ethics Committee of the Faculty of Sports and Health Sciences, University of Tehran
Street address
North Kargar Street
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Province
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Postal code
14398-13118
Approval date
2022-06-19, 1401/03/29
Ethics committee reference number
IR.UT.SPORT.REC.1401.010

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

Lumbar proprioception is assessed by measuring joint repositioning error (JRE) using an isokinetic dynamometer before and after a six-week core stability exercise intervention. A reduction in joint repositioning error indicates improved lumbar proprioceptive accuracy.

Timepoint

Measurement of lumbar proprioception before the start of the exercise intervention and after completion of the six-week core stability exercise program.

Method of measurement

The joint repositioning error is measured using an isokinetic dynamometer by calculating the deviation of the reproduced angle from the target angle while the participant's eyes are closed. The error is reported in degrees.

2

Description

Pain intensity is measured using the Visual Analogue Scale (VAS), also known as the pain ruler, before the start of the exercise intervention and after completion of the six-week core stability exercise program. A reduction in the scale score indicates a decrease in pain intensity.

Timepoint

Measurement of pain intensity before the start of the exercise intervention and after completion of the six-week core stability exercise program.

Method of measurement

The Visual Analogue Scale (VAS) consists of a 10-cm line with two endpoints labeled “No pain” and “Worst pain imaginable.” The participant indicates their pain intensity by marking a point on the line. The pain score is calculated by measuring the distance from the starting point to the mark and is expressed in millimeters or centimeters.

Secondary outcomes

1

Description

Proprioception is assessed indirectly using the Y-Balance Test before the exercise intervention and after completion of the six-week core stability exercise program. This test serves as a non-specific method for evaluating functions related to proprioception and sensorimotor control by assessing an individual's ability to maintain dynamic balance. An improvement in the test score indicates improved dynamic balance performance.

Timepoint

Dynamic balance was assessed using the Y-Balance Test before the start of the exercise intervention and after completion of the six-week core stability exercise program.

Method of measurement

The participant stands on one leg and reaches as far as possible with the other leg in three directions: anterior, posteromedial, and posterolateral. The maximum reach distance in each direction is recorded and calculated according to the test protocol to assess dynamic balance performance.

2

Description

Quality of life is assessed using the 36-Item Short Form Health Survey (SF-36) before the start of the exercise intervention and after completion of the six-week core stability exercise program. The questionnaire assesses various dimensions of physical and mental health. Higher scores indicate improved health-related quality of life.

Timepoint

Quality of life is assessed using the SF-36 questionnaire before the start of the exercise intervention and after completion of the six-week core stability exercise program.

Method of measurement

The participant completes the SF-36 quality-of-life questionnaire. The final score is calculated according to the standard scoring guidelines and reported on a scale of 0 to 100, with higher scores indicating better health-related quality of life.

Intervention groups

1

Description

Intervention group: Intervention Group 1 (Active Control): Participants performed core stability exercises for six weeks, three sessions per week, with each session lasting 60 minutes, without any specific attentional focus (neither internal nor external).

Category

N/A

2

Description

Intervention group: Intervention Group 2: Participants performed core stability exercises for six weeks, three sessions per week, with each session lasting 60 minutes, with an emphasis on internal focus of attention, that is, focusing on the activity and contraction of the muscles involved during exercise.

Category

N/A

3

Description

Intervention group: Intervention Group 3: Participants performed core stability exercises for six weeks, three sessions per week, with each session lasting 60 minutes, with an emphasis on external focus of attention, that is, focusing on the effect or outcome of the movement during exercise.

Category

N/A

Recruitment centers

1

Recruitment center

Name of recruitment center
Faculty of Sports and Health Sciences, University of Tehran

Full name of responsible person
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Sponsors / Funding sources

1

Sponsor

Name of organization / entity
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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?
Yes

Title of funding source
Faculty of Sports and Health Sciences, University of Tehran

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
The University of Tehran

Full name of responsible person
Reza Rajabi

Position
Professor

Latest degree
Ph.D.

Other areas of specialty/work
Sport Medicine

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Position
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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
For ethical reasons and to protect the confidentiality of participants' information, individual-level data from this study will not be publicly available. Furthermore, in accordance with university regulations and policies, raw data cannot be shared. Aggregated or analyzed data may be made available to qualified researchers upon formal request and subject to the completion of the required legal procedures.

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
Undecided - It is not yet known if there will be a plan to make this available

Clinical Study Report
Undecided - It is not yet known if there will be a plan to make this available

Analytic Code
Not applicable

Data Dictionary
Undecided - It is not yet known if there will be a plan to make this available

Title and more details about the data/document
Aggregated data related to the study outcomes, research findings, and relevant statistical results will be made publicly available following publication of the article in a scientific journal.

When the data will become available and for how long
Following publication in a journal

To whom data/document is available
Academic and scientific institutions, researchers, and students

Under which criteria data/document could be used
Only with proper citation and referencing of the study.

From where data/document is obtainable
Corresponding author's email address; journal of publication

What processes are involved for a request to access data/document
Upon emailing the corresponding author, the requester may be provided with the information that the researcher is permitted to share, subject to the completion of the required legal procedures and a reasonable request specifying the intended purpose of using the study.

Comments
To protect the privacy and rights of the participants, their identifying information and individually identifiable data will not be disclosed. The research findings and results will be published in a scientific article to contribute to the improvement of health and facilitate the use of the study findings by other researchers.