Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

The effect of adding dual task to functional training on proprioception, range of motion, pain, and kinesiophobia in people with chronic non-specific low back pain

Protocol summary

Study aim

Investigating the effect of adding dual task to functional exercises on proprioception, range of motion, pain, and fear of movement in people with chronic nonspecific low back pain

Design

The sample size of the study was estimated using G*Power software. Calculations were made based on a statistical power of 0.8, a significance level of α = 0.05, and a medium effect size of 0.25, and the final sample size increased to 45 people.

Settings and conduct

Dezful City Energy Plus Club.

Participants/Inclusion and exclusion criteria

Inclusion criteria: Diagnosis of chronic non-specific low back pain by a specialist Pain duration ≥ 3 months Age range 25-60 years Pain intensity 3-7 on the Numeric Pain Rating Scale (NPRS) Body mass index (BMI) < 30 kg/m2 Exclusion criteria: History of spinal surgery Regular exercise for back pain in the past 6 months Use of analgesic, anti-inflammatory, opioid, or immunosuppressive medications Movement, mental, cognitive, hearing, visual, or communication disabilities (preventing full protocol implementation) History of spinal trauma or fracture, cancer, severe osteoporosis, neurodegenerative diseases (such as Parkinson's), or illiteracy

Intervention groups

Experimental group 1: (Single-task exercise): Performed the exercise protocol without additional cognitive task. Experimental group 2: (Dual exercise + exercise protocol): Performed the basic low back pain exercise protocol with simultaneous cognitive task (dual task). Control group: A passive intervention.

Main outcome variables

lumbar proprioception, lumbar range of motion, pain intensity, fear of movement.

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20180627040251N19**
Registration date: **2026-07-15, 1405/04/24**
Registration timing: **prospective**

Last update: **2026-07-15, 1405/04/24**
Update count: **0**

Registration date

2026-07-15, 1405/04/24

Registrant information

Name

Hassan Sadeghi

Name of organization / entity

Kharazmi University

Country

Iran (Islamic Republic of)

Phone

+98 21 2222 8001

Email address

hassan.sadeghi81@yahoo.com

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2026-07-21, 1405/04/30

Expected recruitment end date

2026-09-21, 1405/06/30

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title
The effect of adding dual task to functional training on proprioception, range of motion, pain, and kinesiophobia in people with chronic non-specific low back pain

Public title
The effect of adding dual task to functional training on proprioception, range of motion, pain, and kinesiophobia in people with chronic non-specific low back pain

Purpose
Treatment

Inclusion/Exclusion criteria

Inclusion criteria:
Diagnosis of chronic non-specific low back pain by a specialist physician Duration of pain ≥ 3 months Age range 25 to 60 years Self-reported pain intensity 3 to 7 using the Numeric Pain Rating Scale (NPRS) Body mass index (BMI) less than 30 kg/m2

Exclusion criteria:
History of spinal surgery Having a regular exercise program related to back pain exercises in the past 6 months Undergoing treatment for pain or taking analgesic, anti-inflammatory, opioid or immunosuppressive drugs If they have a motor, mental or cognitive disability, or hearing, vision or communication disorders that prevent them from completing the protocol, they will be excluded from the study Individuals with a history of spinal trauma or fracture, cancer, (severe osteoporosis, spondyloarthropathy, spondylolisthesis, systemic inflammatory disease, illiteracy, diagnosed neurodegenerative diseases (such as Parkinson's) will be excluded from the study

Age
From **25 years** old to **60 years** old

Gender
Both

Phase
N/A

Groups that have been masked

- Outcome assessor

Sample size
Target sample size: **45**

Randomization (investigator's opinion)
Randomized

Randomization description
This study is a three-group randomized clinical trial with a pretest-posttest design and randomized control groups in the form of a randomized clinical trial (RCT). Eligible participants will be randomly divided into the following three groups: Experimental Group 1: (Single-task exercise): Perform the exercise protocol without additional cognitive task. Experimental Group 2: (Dual exercise + exercise protocol): Perform the basic low back pain exercise protocol with a simultaneous cognitive task (dual task). Control group: An inactive intervention.

Blinding (investigator's opinion)
Single blinded

Blinding description
This study is a **single-blind randomized controlled clinical trial**. The study follows a **pretest–posttest design** with two intervention groups and one control group. In this study, the outcome assessor will be blinded to group allocation.

Placebo
Not used

Assignment
Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee
Kharazmi University Ethics Committee

Street address
Tehran – Shahid Mofatteh Street, before Enghelab Street – No. 43.

City
Tehran

Province
Tehran

Postal code
۱۴۹۱۱-۱۵۷۱۹

Approval date
2026-05-26, 1405/03/05

Ethics committee reference number
IR.KHU.REC.1405.028

Health conditions studied

1

Description of health condition studied
chronic non-specific low back pain

ICD-10 code
M54.5

ICD-10 code description
Low back pain

Primary outcomes

1

Description
Back proprioception

Timepoint
Outcome variables are measured at two time points: before and after the fatigue protocol.

Method of measurement
Lumbar proprioception is assessed using a hand-held goniometer and the method of Newcomer et al. (2000). The subject, standing with eyes closed, recreates a 30-degree angle of lumbar flexion in three attempts. The mean absolute error of the three repetitions in degrees is

recorded as the reconstruction error score, with higher scores indicating poorer proprioception.

Secondary outcomes

1

Description
Lumbar range of motion
Timepoint
Outcome variables are measured at two time points: before and after the protocol.
Method of measurement
The range of motion of lumbar flexion and extension is measured using the modified Schober test. After marking reference points on the spine, the subject is asked to bend forward and backward as much as possible. The distance between the two points is measured with a tape measure, and the average of the three repetitions is recorded as the final score.

2

Description
Pain
Timepoint
Outcome variables are measured at two time points: before and after the protocol.
Method of measurement
Pain intensity is measured using a visual analog scale (VAS) consisting of a 10-cm horizontal line with two ends, "no pain" (score 0) and "worst possible pain" (score 10). The subject is asked to mark a point on the line and the distance from the zero point is recorded as the pain score. This assessment will be performed at pre-test and post-test.

3

Description
kinesiophobia
Timepoint
Outcome variables are measured at two time points: before and after the protocol.
Method of measurement
kinesiophobia is measured using the Tampa Scale (TSK) consisting of 17 questions on a 4-point Likert scale (1 to 4). The range of scores varies from 17 to 68, with higher scores indicating greater fear of movement. A score of 37 or less is interpreted as low fear and a score above 37 as high fear of movement.

Intervention groups

1

Description
Intervention group:(Single-task training): Performing the training protocol without additional cognitive task
Category
Rehabilitation

2

Description
Intervention group: (Dual exercise + training protocol): Performing a basic back pain training protocol along with a simultaneous cognitive task (dual task).
Category
Rehabilitation

3

Description
Control group: No exercise intervention.
Category
Rehabilitation

Recruitment centers

1

Recruitment center
Name of recruitment center
Kharazmi University
Full name of responsible person
Shokouh Yousef Shanesaz
Street address
Shahid Keshvari Sports Complex, Kosha Street, between Shohareh and Hesari, Shahid Haghani Highway, Tehran (Mirdamad neighborhood
City
Tehran
Province
Tehran
Postal code
33111-15447
Phone
+98 21 2222 8001
Email
info@khu.ac.ir

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Kharazmi University
Full name of responsible person
Dr Alireza Harifi
Street address
Vice-Chancellery for Research and Technology, 43 Shahid Mofatteh Street, just before the intersection with Enghelab Street, Tehran, Islamic Republic of Iran.
City
Tehran
Province
Tehran
Postal code
۱۴۹۱۱-۱۵۷۱۹
Phone
+98 21 2222 8001
Email

Research@khu.ac.ir

Grant name

Grant code / Reference number

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

Yes

Title of funding source

Kharazmi University

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

Kharazmi University

Full name of responsible person

Shokouh Yousef Shanesaz

Position

Postgraduate student

Latest degree

Bachelor

Other areas of specialty/work

Sport Medicine

Street address

No. 385, Nezami Street, between Motahari and Khayyam

City

Dezful

Province

Khouzestan

Postal code

6461175579

Phone

+98 61 4252 0083

Email

shanesazshokouh@gmail.com

Person responsible for scientific inquiries

Contact

Name of organization / entity

Kharazmi University

Full name of responsible person

Hassan Sadeghi

Position

Assistant Professor

Latest degree

Ph.D.

Other areas of specialty/work

Sport Medicine

Street address

Shahid Keshvari Sports Complex, Kosha Street, between Shohareh and Hesari, Shahid Haghani Highway, Tehran (Mirdamad neighborhood)

City

Tehran

Province

Tehran

Postal code

33111-15447

Phone

+98 21 2222 8001

Email

hassan.sadeghi81@yahoo.com

Person responsible for updating data

Contact

Name of organization / entity

Kharazmi University

Full name of responsible person

Hassan Sadeghi

Position

Assistant Professor

Latest degree

Ph.D.

Other areas of specialty/work

Sport Medicine

Street address

Shahid Keshvari Sports Complex, Kosha Street, between Shohareh and Hesari, Shahid Haghani Highway, Tehran (Mirdamad neighborhood)

City

Tehran

Province

Tehran

Postal code

33111-15447

Phone

+98 21 2222 8001

Email

hassan.sadeghi81@yahoo.com

Sharing plan

Deidentified Individual Participant Data Set (IPD)

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

Study Protocol

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

Statistical Analysis Plan

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

Informed Consent Form

No - There is not 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

No - There is not a plan to make this available

Data Dictionary

No - There is not a plan to make this available