Clinical Trial Protocol
Iranian Registry of Clinical Trials

08 Nov 2026

Effect of Dynamic Neuromuscular Stabilization exercises on pain, functional tests scores, respiratory function, and quality of life in individuals with chronic non-specific low back pain

Protocol summary

Study aim

The aim of this study is to investigate the effects and durability of 8-week dynamic neuromuscular stabilization (DNS) exercise on pain, functional disability, motor and respiratory performance, and quality of life in individuals aged 30 to 50 with non-specific chronic low back pain.

Design

The overall sample size was calculated to be 32 participants. Considering the likelihood of dropouts in the groups, a total of 18 participants per group was targeted. Randomization was performed using the website https://www.random.org

Settings and conduct

The participants were recruited for the study after visiting a neurologist and being diagnosed with non-specific chronic low back pain. The present research was conducted in Shahrekord.

Participants/Inclusion and exclusion criteria

The entrance criterion for the study included a diagnosis of non-specific chronic low back pain and the ability to perform exercises without assistance. The exit criterion for the exercises included the presence of specific pathological symptoms, irregular participation in the exercises, and inability to perform the exercises.

Intervention groups

The control group followed their regular daily routine, while the exercise group performed an exercise protocol based on the DNS approach, with a frequency of 3 sessions per week for a duration of 8 weeks.

Main outcome variables

Investigate the effects of the novel DNS exercises on individuals with non-specific chronic low back pain. Additionally, it aimed to examine whether the effects of these exercises would persist after a period of 2 months of detraining.

General information

Reason for update

Acronym

DNS

IRCT registration information

IRCT registration number: **IRCT20240107060646N1**
Registration date: **2024-04-20, 1403/02/01**
Registration timing: **retrospective**

Last update: **2024-04-20, 1403/02/01**
Update count: **0**

Registration date

2024-04-20, 1403/02/01

Registrant information

Name

Alireza Rabieezadeh

Name of organization / entity

University of Isfahan

Country

Iran (Islamic Republic of)

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2023-04-03, 1402/01/14

Expected recruitment end date

2023-05-04, 1402/02/14

Actual recruitment start date

2023-04-03, 1402/01/14

Actual recruitment end date

2023-05-04, 1402/02/14

Trial completion date
2023-08-30, 1402/06/08

Scientific title
Effect of Dynamic Neuromuscular Stabilization exercises on pain, functional tests scores, respiratory function, and quality of life in individuals with chronic non-specific low back pain

Public title
Effects of dynamic neuromuscular stabilization exercises on chronic low back pain

Purpose
Supportive

Inclusion/Exclusion criteria

Inclusion criteria:
Having a minimum of three months of non-specific chronic low back pain The ability to sit, stand, and walk without using assistive devices Not engaging in regular exercise

Exclusion criteria:
Having any specific pathology such as disc protrusion, spinal injury or surgery history, neurological disorders, tumors, osteoarthritis, and rheumatoid arthritis diagnosed by a specialist physician Being diagnosed with any medical condition that restricts physical activity by a physician Experiencing unbearable pain and inability to perform exercises Potential lung tissue damage in case of COVID-19 infection Absenteeism of more than one-third of exercise sessions irregularly or absenteeism of three consecutive sessions Lack of willingness to continue participation in the study

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

Gender
Both

Phase
N/A

Groups that have been masked
No information

Sample size
Target sample size: **36**
Actual sample size reached: **29**

Randomization (investigator's opinion)
Randomized

Randomization description
The participants' names are entered in the first column of the Excel spreadsheet. Using the online website https://www.random.org, a random number between 1 and 36 is generated, and the generated numbers are entered in the second column of the spreadsheet in order (corresponding to the participants' names). Then, the sort command is used to sort the second column in ascending order. This way, individuals with numbers 1 to 18 in the second column are assigned to the control group, and individuals with numbers 19 to 36 are assigned to the exercise group.

Blinding (investigator's opinion)
Not blinded

Blinding description

Placebo
Not used

Assignment
Other

Other design features
Participants are assigned to one of two groups: the control group and the experimental group. The control group follows their regular daily routine, while the experimental group follows a specific exercise protocol.

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee
University of Isfahan - Research Ethics Committees Certificate

Street address
Research and Technology Vice-Chancellor, Building No. 4, Isfahan University of Medical Sciences and Health Services, Isfahan

City
Isfahan

Province
Isfehan

Postal code
8174673461

Approval date
2022-03-13, 1400/12/22

Ethics committee reference number
IR.UI.REC.1400.119

Health conditions studied

1

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

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description
Pain is measured using the Visual Analog Scale (VAS). Functional disability is assessed using the Oswestry Disability Index questionnaire. Motor function is measured through Functional Movement Screen (FMS) tests. Spirometry is used to evaluate respiratory performance (FVC, FEV1, and FEV1/FVC). The SF-36 Quality of Life questionnaire is employed for assessing the quality of life.

Timepoint
At the beginning of the study (prior to intervention), 8 weeks after the intervention (posttest), and after 2 months of detraining following the posttest.

Method of measurement

Pain is measured using the Visual Analog Scale. Functional disability is assessed using the Oswestry Disability Index questionnaire. Motor function is measured through Functional Movement Screen tests. Spirometry is used to evaluate respiratory performance (forced vital capacity, forced expiratory volume in the first second, and the ratio of forced expiratory volume in the first second to forced vital capacity). The Short Form 36-item questionnaire is employed for assessing the quality of life.

Secondary outcomes

empty

Intervention groups

1

Description
Intervention group: Exercise group
Category
Rehabilitation

2

Description
Control group: Control group
Category
Rehabilitation

Recruitment centers

1

Recruitment center
Name of recruitment center
Emam Ali Specialized Clinic
Full name of responsible person
Meisam Adimi
Street address
Imam Ali Specialized Clinic, Shariati Boulevard, Shahrekord
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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
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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
University of Isfahan
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
University of Isfahan
Full name of responsible person
Reza Mahdavinejad
Position
Associate professor
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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
If requested by the principal investigator, information regarding the primary outcomes can be shared.

When the data will become available and for how long
The access period will begin 6 months after the publication of the results.

To whom data/document is available
Researchers employed in academic and scientific institutions, as well as individuals working in industry, can proceed to obtain them upon request.

Under which criteria data/document could be used
For scientific and practical purposes.

From where data/document is obtainable
To request the information from the principal investigator, you can either make an in-person visit to the Faculty of Sports Sciences at Isfahan University or correspond via email to r.mahdavinejad@spr.ui.ac.ir.

What processes are involved for a request to access data/document
After verifying the appropriateness of data usage, it will be shared within one week.

Comments