Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

Comparing the Effect of Core Stability Exercise with and without the use of Virtual Reality System on Pain, Physical Function and Muscle activity in Athletes with non-Specific Chronic Low Back Pain : A Randomized Controlled Clinical Trial

Protocol summary

Study aim
Comparing the Effect of Core Stability Exercise with and without the use of Virtual Reality System on Pain, Physical Function and Muscle activity in Athletes with non-Specific Chronic Low Back Pain

Design
The clinical trial has one control group and two experimental groups with parallel groups, randomized, on 45 athletes with chronic non-specific low back pain, which randomization is done by lottery.

Settings and conduct
The research process includes pre-test, intervention for 6 weeks and post-test. The place of the process is building number 2 of Shahid Beheshti University Faculty of Sports Sciences.

Participants/Inclusion and exclusion criteria
Entry conditions: The presence of non-specific chronic low back pain diagnosed by an orthopedic specialist The individual has been suffering from non-specific chronic low back pain for at least 3 months Having a pain intensity between 3 and 7 based on the Visual Analog Scale A minimum of 2 years of regular athletic experience BMI between 18.5 and 26 body fat percentage of less than 20% for men and less than 28% for women Non-entry conditions: history of any surgery on the spine and lower limbs Having symptoms or a history of nerve root compression Having an acute disc herniation

Intervention groups
Intervention group 1: This group will do core stability exercises for 6 weeks. Intervention group 2: This group will perform core stability exercises for 6 weeks simultaneously using the virtual reality system. In the virtual reality system, truck driving and roller coaster simulator games are run and can be controlled by head movements. Control group: This group does their daily activities during the research period.

Main outcome variables
pain using a visual analogue scale , core muscle endurance using McGill tests, functional disability using the Quebec questionnaire , muscle activity using EMG and balance with the Biodex device

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20240810062711N1**
Registration date: **2025-01-02, 1403/10/13**
Registration timing: **registered_while_recruiting**

Last update: **2025-01-02, 1403/10/13**
Update count: **0**

Registration date
2025-01-02, 1403/10/13

Registrant information

Name
Saeed Karbasi Ravari

Name of organization / entity
The University of Shahid Beheshti

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Iran (Islamic Republic of)

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Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2024-12-05, 1403/09/15
Expected recruitment end date
2025-02-03, 1403/11/15
Actual recruitment start date
empty
Actual recruitment end date
empty
Trial completion date
empty

Scientific title
Comparing the Effect of Core Stability Exercise with and without the use of Virtual Reality System on Pain, Physical Function and Muscle activity in Athletes with non-Specific Chronic Low Back Pain : A Randomized Controlled Clinical Trial

Public title
Comparing the Effect of Core Stability Exercise with and without the use of Virtual Reality System on Pain, Physical Function and Muscle activity in Athletes with non-Specific Chronic Low Back Pain
Purpose
Basic scienece
Inclusion/Exclusion criteria
Inclusion criteria:
The presence of non-specific chronic low back pain diagnosed by an orthopedic specialist The individual has been suffering from non-specific chronic low back pain for at least 3 months Having a pain intensity between 3 and 7 based on the Visual Analog Scale A minimum of 2 years of regular athletic experience BMI between 18.5 and 26 body fat percentage of less than 20% for men and less than 28% for women
Exclusion criteria:
history of any surgery on the spine and lower limbs Having symptoms or a history of nerve root compression Having an acute disc herniation
Age
From **18 years** old to **40 years** old
Gender
Both

Phase
N/A
Groups that have been masked
No information
Sample size
Target sample size: **45**
Randomization (investigator's opinion)
Randomized
Randomization description
In this study, simple randomization will be performed using SPSS software. The steps are planned as follows: 1- First, a random variable will be created using the Transform > Compute Variable tool. This variable will be defined with the formula TRUNC(RV.UNIFORM(0,1) * 3) + 1, which randomly assigns individuals to one of three groups (1, 2, or 3). 2- The data will be sorted based on this variable using the Data > Sort Cases tool. 3- Finally, participants will be randomly divided into three groups: the control group (number 1) and two experimental groups (numbers 2 and 3). This method represents a simple and transparent randomization process that will be applied in the future for the execution of the study.
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
Research Ethics Committees of Shahid Beheshti University
Street address
No 24 - Khaghani Street - Shariati Street - Tehran
City
Tehran
Province
Tehran
Postal code
1913994543
Approval date
2023-06-30, 1402/04/09
Ethics committee reference number
IR.SBU.REC.1402.173

Health conditions studied

1

Description of health condition studied
non-Specific Chronic Low Back Pain
ICD-10 code
M54.5
ICD-10 code description
Low Back Pain

Primary outcomes

1

Description
Pain
Timepoint
before the start of the intervention and after 6 weeks of the intervention
Method of measurement
Visual Analogue Scale

2

Description
Core Muscle Endurance
Timepoint
before the start of the intervention and after 6 weeks of the intervention
Method of measurement
McGill core muscle endurance tests

3

Description
Functional Disability
Timepoint
before the start of the intervention and after 6 weeks of the intervention
Method of measurement
Quebec questionnaire

4

Description
Balance
Timepoint
before the start of the intervention and after 6 weeks of the intervention
Method of measurement
Biodex Balance test device

5

Description
Muscle Activity
Timepoint
before the start of the intervention and after 6 weeks of the intervention
Method of measurement
Electromyography

Secondary outcomes

empty

Intervention groups

1

Description
Intervention group 1: This group will do core stability exercises for 6 weeks.
Category
Treatment - Other

2

Description
Intervention group 2: This group will perform core stability exercises for 6 weeks simultaneously using the virtual reality system. In the virtual reality system, truck driving and roller coaster simulator games are run and can be controlled by head movements.
Category
Treatment - Other

3

Description
Control group: This group does their daily activities during the research period.
Category
Treatment - Other

Recruitment centers

1

Recruitment center
Name of recruitment center
Shahid Beheshti University
Full name of responsible person
Saeed Karbasi Ravari
Street address
No 24 , Khaghani Street , Shariati Street
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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
The University of Shahid Beheshti
Full name of responsible person
Seyedeh Mehri Hamidi Sangdehi
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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
The University of Shahid Beheshti
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 Shahid Beheshti
Full name of responsible person
Saeed Karbasi Ravari
Position
Master Student
Latest degree
Bachelor
Other areas of specialty/work
sport injuries and corrective exercise
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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
The final results of the current research will be published in the form of statistical analysis in the form of articles or dissertations and not in the form of raw data of individual participants.
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
Yes - There is 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
The information and statistical analyzes carried out in the format of articles and dissertations will be shared from the results of this research. Thesis title: Comparing the Effect of Core Stability Exercise with and without the use of Virtual Reality System on Pain, Physical Function and Muscle activity in Athletes with non-Specific Chronic Low Back Pain : A Randomized Controlled Clinical Trial
When the data will become available and for how long
The access period starts after the registration of the final thesis in the period of January 2025 to January 2026.
To whom data/document is available

Researchers interested in the field of chronic low back pain, core stability exercises and virtual reality system

Under which criteria data/document could be used

It is possible to cite the results of this research by mentioning the source for other researchers.

From where data/document is obtainable

Researchers can contact the author through the following email address in order to obtain information about the article: s.karbasiravari@mail.sbu.ac.ir

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

Applicants to receive information after introducing their field of study and why they want to study the information of the present study in the text of the email can receive their desired data up to a maximum period of 2 weeks after receiving the said email and checking it by the author.

Comments