Clinical Trial Protocol
Iranian Registry of Clinical Trials

20 Jun 2026

The effect of eight weeks of Neuromuscular Dynamic Stability (DNS) exercise on motor performance indicators, kinematic gait, and lower limb injury indices in physical education students with poor lumbar-pelvic control.

Protocol summary

Study aim
The effect of eight weeks of Neuromuscular Dynamic Stability (DNS) exercise on motor performance indicators, kinematic gait and lower limb injury indices in physical education students with poor lumbar-pelvic control.

Design
In this study, 30 patients (girls, 15,17 years old) are randomly divided into one of the following groups: intervention and control groups.

Settings and conduct
All participants sign a written informed consent form before enrollment. Participants will be informed about this study and how to register through advertisements and social networks.

Participants/Inclusion and exclusion criteria
Inclusion criteria: Physical education students of Khorramabad schools , age range 15 to 17, second year of high school Exclusion criteria: having a history of injury in the last 6 months in the trunk and lower limbs. History of back surgery.

Intervention groups
Group 1: The intervention group will receive dynamic neuromuscular exercises three times a week. Group 2: The control group will not receive any intervention.

Main outcome variables
Balance , Lumbar pelvic control , Landing mechanics , Movement function of the lower limb

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20230609058429N1**
Registration date: **2023-06-24, 1402/04/03**
Registration timing: **prospective**

Last update: **2023-06-24, 1402/04/03**
Update count: **0**

Registration date
2023-06-24, 1402/04/03

Registrant information
Name
Fatemeh Ariyan
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Iran (Islamic Republic of)
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Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2023-07-10, 1402/04/19

Expected recruitment end date
2023-11-20, 1402/08/29

Actual recruitment start date
empty

Actual recruitment end date
empty

Trial completion date
empty

Scientific title
The effect of eight weeks of Neuromuscular Dynamic Stability (DNS) exercise on motor performance indicators, kinematic gait, and lower limb injury indices in physical education students with poor lumbar-pelvic

control.

Public title
The effect of eight weeks of Neuromuscular Dynamic Stability (DNS) exercise on motor performance indicators, kinematic gait, and lower limb injury indices
Purpose
Treatment
Inclusion/Exclusion criteria
Inclusion criteria:
Physical education students of Khorramabad schools The age range is 15 to 17 years, second year of high school The age range is 15 to 17 years, the second year of high school
Exclusion criteria:
Having a history of injury in the past 6 months in the trunk and lower limbs. Having a history of surgery in the back area. People with inflammatory disease of the spine The presence of any significant abnormality in the alignment of the body. People with a history of fracture in the spine, people with a history of tumor in the lower back.
Age
From **15 years** old to **17 years** old
Gender
Female

Phase
N/A
Groups that have been masked

- Outcome assessor

Sample size
Target sample size: **30**
Randomization (investigator's opinion)
Randomized
Randomization description
A researcher generates an allocation sequence with a block size of two using an online random number generator (Random.org). Patients will be randomly divided into one of two treatment groups in a ratio of 1:1 as follows: intervention group (n = 15) or control group (n = 15). The randomization is a number from 1 to 42 that is prepared in advance and placed in sealed opaque envelopes in a box. Participants will be told which intervention they were randomized to after eight weeks at the end of the study.
Blinding (investigator's opinion)
Single blinded
Blinding description
Assessors will be blinded to group allocation. Investigators responsible for data analysis will use a coded dataset to ensure blinding. Patients will not be blinded to the exercise study, but will not know which treatment group they will be assigned to.
Placebo
Not used
Assignment
Parallel
Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Research Ethics Committee of Razi University of
Street address
Razi University, University Street ,Taq Bostan, Kermanshah
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Province
Kermanshah
Postal code
6714414971
Approval date
2020-08-11, 1399/05/21
Ethics committee reference number
IR.RAZI.REC.1402.004

Health conditions studied

1

Description of health condition studied
Lower limb injury
ICD-10 code
ICD-10 code description

Primary outcomes

1

Description
Dynamic balance
Timepoint
Data will be assessed at the two measurement time points from the participants:• Before intervention;• After intervention•
Method of measurement
Y balance test will be used to evaluate the dynamic balance of the subjects. The reliability of this test for assessing dynamic balance and correlation coefficient is reported as 0.86 to 0.96

2

Description
Static balance
Timepoint
Data will be assessed at the two measurement time points from the participants:• Before intervention;• After intervention•
Method of measurement
To measure static balance, the test of standing on one leg (stork or stork) will be used, which will be included in the validity (0.79-0.64) and reliability (0.99-0.93) for this

test.

Secondary outcomes

1

Description
Assessment of lumbar-pelvic control
Timepoint
The data will be measured at two time points: • before the intervention • after the intervention •
Method of measurement
In the sample of the current research, the pressure biofeedback device modeled and made in the United States of America, with a measurement range of 0-200 mm of mercury, and an accuracy of ±3 MHz pressure, in blue color, will be used to evaluate lumbar-pelvic control;

2

Description
Landing mechanics
Timepoint
The data will be measured at two time points: • before the intervention • after the intervention •
Method of measurement
The LESS test is a clinical tool for dynamic movements that is used to identify inappropriate patterns during landing after jumping. It is performed in such a way that a person stands on a 30 cm box, then jumps forward from the box with both feet so that it lands at a distance of half its height, and then as soon as it lands, it jumps up to the maximum height and again. return to its original place. This test evaluates landing technique based on 9 images of landing and using 17 different questions on how to perform jump-landing skills using the system - two sagittal and frontal views.

3

Description
Motor function of the lower limb
Timepoint
The data will be measured at two time points: • before the intervention • after the intervention •
Method of measurement
In the present study, four tests (one-leg jump test, 3-step jump test, 6-meter jump test in time, cross jump test) will be used in order to evaluate the performance of the lower limb.

Intervention groups

1

Description
Intervention group: The intervention group will undergo neuromuscular stability training interventions for eight weeks.
Category
Rehabilitation

2

Description
Control group: This group does their routine activities for 8 weeks and does not participate in any training.
Category
Rehabilitation

Recruitment centers

1

Recruitment center
Name of recruitment center
Khorramabad schools
Full name of responsible person
fatemehariyan
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Sponsors / Funding sources

1

Sponsor
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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
Razi University of Kermanshah
Proportion provided by this source
100
Public or private sector
Private

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