

# 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

Registration timing: **prospective**

#### 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.

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

Update count: **0**

#### Registration date

2023-06-24, 1402/04/03

#### Design

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

#### Registrant information

##### Name

Fatemeh Ariyan

##### Name of organization / entity

##### Country

Iran (Islamic Republic of)

##### Phone

+98 66 3340 3440

##### Email address

fatemehariyan67@gmail.com

#### 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.

#### Recruitment status

**Recruitment complete**

#### Funding source

#### 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.

#### Expected recruitment start date

2023-07-10, 1402/04/19

#### Expected recruitment end date

2023-11-20, 1402/08/29

#### Main outcome variables

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

#### Actual recruitment start date

empty

#### Actual recruitment end date

empty

#### Trial completion date

empty

### General information

#### Reason for update

#### Acronym

#### IRCT registration information

IRCT registration number: **IRCT20230609058429N1**

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

#### 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

##### City

Kermanshah

##### 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  $\pm 3$  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

##### Street address

No. 136, 10th St, Ghaziabad

##### City

Khorramabad

##### Province

Lorestan

##### Postal code

6714414971

##### Phone

+98 916 968 0890

##### Email

fatemehariyan67@gmail.com

## Sponsors / Funding sources

### 1

#### Sponsor

##### Name of organization / entity

Razi University of Kermanshah

##### Full name of responsible person

fatemeh ariyan

##### Street address

No. 136, 10th St ,Ghaziabad

##### City

Khorramabad

##### Province

Lorestan

##### Postal code

6714414971

##### Phone

+98 916 968 0890

##### Email

fatemehariyan67@gmail.com

#### 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

**Postal code**

6714414971

**Phone**

083-34277605-6

**Email**

fatemehariyan67@gmail.com

**Person responsible for updating data****Person responsible for general inquiries****Contact****Name of organization / entity**

Razi University of Kermanshah

**Full name of responsible person**

fatemeh ariyan

**Position**

Student

**Latest degree**

Master

**Other areas of specialty/work**

Sport Medicine

**Street address**

No. 136, 10th St, Ghaziabad

**City**

Khorramabad

**Province**

Lorestan

**Postal code**

No. 136, 10th St ,Gh

**Phone**

+98 83 3427 7605

**Email**

fatemehariyan67@gmail.com

**Contact****Name of organization / entity**

Razi University of Kermanshah

**Full name of responsible person**

fatemeh ariyan

**Position**

Student

**Latest degree**

Master

**Other areas of specialty/work**

Sport Medicine

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**Postal code**

6714414971

**Phone**

083-34277605-6

**Email**

fatemehariyan67@gmail.com

**Person responsible for scientific inquiries****Contact****Name of organization / entity**

Razi University of Kermanshah

**Full name of responsible person**

fatemeh ariyan

**Position**

Student

**Latest degree**

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**Other areas of specialty/work**

Sport Medicine

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**Province**

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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