Clinical Trial Protocol
Iranian Registry of Clinical Trials

09 Nov 2026

Investigation of the Effect of Dynamic neuromuscular stabilization (DNS) Exercises on Proprioception, Functional Movement Screening (FMS), Muscle Strength, and Endurance in Individuals with Hearing Impairment

Protocol summary

Study aim
The aim of this study was to investigate the effect of Dynamic neuromuscular stabilization (DNS) exercises on proprioception, functional movement screening (FMS), muscle strength, and endurance in individuals with hearing impairments.

Design
A clinical trial with the control group, with parallel groups, randomized

Settings and conduct
A total of twenty-two male students from Bagcheban School, each with a hearing threshold of 70 decibels, will be randomly assigned to either the control or experimental group. Before each exercise, the examiner defines and shows the correct alignment and ideal performance to the participants. All measurements will be conducted in the gymnasium of Bagcheban School.

Participants/Inclusion and exclusion criteria
Male students between the ages of 10 and 15, with a hearing loss greater than 70 decibels and no prior engagement in regular physical activity, will be included in the study. Exclusion criteria include a history of orthopedic conditions, any seizures within the past two years, and the use of medications that may influence physical performance during exercise or testing

Intervention groups
The intervention group will participate in dynamic neuromuscular stabilization training for 4 weeks, with three 50-minute sessions per week, while the control group will receive no intervention.

Main outcome variables
Proprioception, functional movement screening, muscular strength and endurance.

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20180626040244N6**
Registration date: **2025-05-06, 1404/02/16**
Registration timing: **prospective**

Last update: **2025-05-06, 1404/02/16**
Update count: **0**

Registration date
2025-05-06, 1404/02/16

Registrant information
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Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2025-05-31, 1404/03/10

Expected recruitment end date
2025-06-22, 1404/04/01

Actual recruitment start date
empty

Actual recruitment end date
empty

Trial completion date
empty

Scientific title

Investigation of the Effect of Dynamic neuromuscular stabilization (DNS) Exercises on Proprioception, Functional Movement Screening (FMS), Muscle Strength, and Endurance in Individuals with Hearing Impairment

Public title
The Effect of Dynamic Neuromuscular Stabilization Exercises on Movement and Muscle Function in Individuals with Hearing Impairment

Purpose
Prevention

Inclusion/Exclusion criteria

Inclusion criteria:
Age range: 10 to 15 years old Boys with a hearing level above 70 decibels Without participation in any regular exercise routines

Exclusion criteria:
The history of any orthopedic disease The history of seizure in the past two years. Use of medications affecting training and testing

Age
From **10 years** old to **15 years** old

Gender
Male

Phase
N/A

Groups that have been masked
No information

Sample size
Target sample size: **22**

Randomization (investigator's opinion)
Randomized

Randomization description
The simple randomization method, using sealed envelopes, is employed to assign participants to different groups. Each intervention type is written on a card and placed in a sealed envelope. Participants are listed in the order of their enrollment in the study. After each participant is enrolled, the envelopes are shuffled randomly, and each participant is asked to select one envelope at random. The number of envelopes is determined based on the expected sample size, ensuring that each selected envelope is not re-entered into the randomization process. This method ensures that the number of participants in each experimental group is approximately equal, thereby reducing the risk of discrepancies in group sizes.

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
Ethics committee of Allameh Tabataba'i University

Street address
West Azadi sports complex entrance, Hakim highway

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Approval date
2024-04-30, 1403/02/11

Ethics committee reference number
IR.ATU.REC.1403.019

Health conditions studied

1

Description of health condition studied
Hearing impairment

ICD-10 code
Q16

ICD-10 code description
Congenital malformations of ear causing impairment of hearing

Primary outcomes

1

Description
Proprioception

Timepoint
Before the study starts and after 4 weeks of exercise intervention

Method of measurement
Inclinometer

2

Description
Functional Movement Screening (FMS)

Timepoint
Before the study starts and after 4 weeks of exercise intervention

Method of measurement
Functional movement screening kit

3

Description
Strength

Timepoint
Before the study starts and after 4 weeks of exercise intervention

Method of measurement

Handheld dynamometer

4

Description
Endurance
Timepoint
Before the study starts and after 4 weeks of exercise intervention
Method of measurement
Supine bridge test, side plank, trunk flexors

Secondary outcomes

empty

Intervention groups

1

Description
Intervention Group: Participants in this group will engage in a dynamic neuromuscular stability training program over four weeks, with three sessions each week. The program will include exercises performed in various positions: prone, supine, side-lying, side sitting, quadruped, bear crawl, and squats. These exercises are designed to retrain childhood movement patterns, grounded in the principles of developmental kinesiology. Each session will consist of 10 minutes of warm-up, 35 minutes of core exercises (starting with 10 repetitions, which will increase to 12 repetitions with new movements in subsequent sessions), and 5 minutes of cool-down. Throughout the four-week intervention, participants will complete a total of 12 sessions.
Category
Prevention

2

Description
Control group: This group will not receive any exercises from the assessor and will continue their daily routine activities.
Category
N/A

Recruitment centers

1

Recruitment center
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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
Allameh Tabataba'i 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
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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
Yes - There is a plan to make this available

Data Dictionary
Yes - There is a plan to make this available

Title and more details about the data/document
After the article is published, raw data without identifying the participants will be available by email to the corresponding author of the article.

When the data will become available and for how long
After the article is published, raw data without identifying the participants will be available by email to the corresponding author of the article.

To whom data/document is available
Any author who needs raw data, with a reason

Under which criteria data/document could be used
Any researcher can request data.

From where data/document is obtainable
By email to the responsible author

What processes are involved for a request to access data/document
By email to the responsible author

Comments