Clinical Trial Protocol
Iranian Registry of Clinical Trials

10 Jun 2026

The Effect of Traditional and Embodied Cognition Training Methods on Aerobics Exercise Learning and Improvement of Fitness Factors in Female Students

Protocol summary

Study aim
The aim of this study is to compare the effectiveness of two methods, traditional training and embodied cognition training, on the learning of aerobic movements and the improvement of physical fitness factors in female university students.

Design
This trial will be conducted with two intervention groups (traditional training and embodied cognition training) involving 60 students.

Settings and conduct
This research will be conducted at the faculty of physical education, Kharazmi University. for this purpose, 60 students aged 18-24 will be allocated to two intervention groups (traditional training and embodied cognition training). a pre-test will be conducted, followed by 16 weeks of training, and then post-test will be performed.

Participants/Inclusion and exclusion criteria
Inclusion Criteria: Healthy students aged 18 to 24 years will be allocated to intervention groups 1 and 2.
Exclusion Criteria: Students engaged in professional athletic activity will not participate in the study.

Intervention groups
Intervention groups 1 and 2 (traditional training and embodied cognition training) will receives 16 weeks of physical fitness exercises and rhythmic movements.

Main outcome variables
Physical fitness factors, lower limb kinematics during the execution of an aerobic chain.

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20130109012078N9**
Registration date: **2025-05-31, 1404/03/10**
Registration timing: **prospective**

Last update: **2025-05-31, 1404/03/10**
Update count: **0**

Registration date
2025-05-31, 1404/03/10

Registrant information

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Name of organization / entity
Azad

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Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2025-09-22, 1404/06/31

Expected recruitment end date
2025-12-20, 1404/09/29

Actual recruitment start date
empty

Actual recruitment end date
empty

Trial completion date
empty

Scientific title
The Effect of Traditional and Embodied Cognition Training Methods on Aerobics Exercise Learning and Improvement of Fitness Factors in Female Students

Public title

The Effect Two Training Methods on Aerobics Exercise Learning

Purpose

Other

Inclusion/Exclusion criteria

Inclusion criteria:

Healthy musculoskeletal and nervous systems. Completely healthy cardiovascular and respiratory systems, with no underlying diseases that could affect performance. No history of specific trauma or pain in either foot, lower extremities, or lumbar region within the 12 months prior to the study. This study will be conducted on healthy students aged 18 to 24 years.

Exclusion criteria:

Professional athletes or individuals engaged in regular athletic activity. Students with obvious lower limb and foot deformities, such as genu varum or genu valgum, coxa vara or coxa valga (structural). Individuals with a history of neurological, rheumatic, metabolic diseases, psychiatric disorders, vestibular system disorders, or recurrent positional vertigo/falls.

Age

From **18 years** old to **24 years** old

Gender

Female

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **60**

Randomization (investigator's opinion)

Randomized

Randomization description

To randomly assign participants from four Physical Fitness 2 course codes to the two intervention groups (traditional training and embodied cognition training), a lottery method will be employed. Specifically, the codes for the four course groups will be written on separate slips of paper, and each slip will be placed inside a distinct sphere (ball). The spheres will then be thoroughly mixed, and two spheres will be drawn sequentially from the container. The first drawn sphere will be assigned to the traditional training group, and the second to the embodied cognition training group. This process will be repeated for the remaining two spheres, ensuring that each training method is ultimately assigned to two course groups.

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

Kharazmi University

Street address

Faculty of Physical Education & Sports Sciences of Kharazmi University, Mirdamad Ave, Tehran, Iran.

City

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Province

Tehran

Postal code

157191491

Approval date

2025-04-19, 1404/01/30

Ethics committee reference number

IR.KHU.REC.1404.006

Health conditions studied

1

Description of health condition studied

Muscle strength

ICD-10 code

Y93.B9

ICD-10 code description

Activity, other involving muscle strengthening exercises

2

Description of health condition studied

Muscle endurance

ICD-10 code

ICD-10 code description

3

Description of health condition studied

Balance

ICD-10 code

Q95.8

ICD-10 code description

Other balanced rearrangements and structural markers

4

Description of health condition studied

Agility

ICD-10 code

ICD-10 code description

5

Description of health condition studied

Movement pattern

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description
Kinematic assessment (joint angles) during the execution of an aerobic chain.
Timepoint
Before and after the intervention.
Method of measurement
Using a GoPro 7 camera, the movement chain will be recorded before and after the intervention. Joint angles of the lower limbs will be calculated during the movement chain using Kinovea software.

2

Description
Measurement of abdominal and spinal extensor muscle endurance.
Timepoint
Before and after the intervention.
Method of measurement
To measure the endurance of the abdominal and spinal extensor muscles, the partial curl-up test and plank hold will be used.

3

Description
Measurement of upper limb strength.
Timepoint
Before and after the intervention.
Method of measurement
To measure shoulder girdle strength, the push-up test will be used.

4

Description
Measurement of agility and coordination.
Timepoint
Before and after the intervention.
Method of measurement
To measure agility, the T-test and Illinois Agility Test will be used.

Secondary outcomes

empty

Intervention groups

1

Description
Intervention group: Participants in the traditional group will receive one session of exercises related to physical fitness factors and one session of rhythmic movements. They will learn and practice these rhythmic movements as part of an aerobic chain. During exercise execution, they will receive necessary feedback from the instructor for movement pattern correction if needed.
Category
N/A

2

Description
Intervention group: Participants in the embodied cognition training group, similar to the traditional group, will receive one session of exercises related to physical fitness factors and one session of rhythmic movements. During the execution of physical fitness exercises, participants will be required to discover how to perform the exercises themselves. The instructor will guide students towards the correct solution during this discovery process. At the end of each session, the instructor will review with the students which physical fitness factors were addressed and which muscles and joints were primarily engaged. Similarly, during the execution of rhythmic movements within the aerobic chain, students will be asked to find solutions for improving movement fluency, and the instructor will assist them in this exploration.
Category
N/A

Recruitment centers

1

Recruitment center
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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
kharazmi University
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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
kharazmi 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

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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

Data related to physical fitness factors and kinematic assessment before and after the intervention will be made available to researchers.

When the data will become available and for how long

January/February 2026.

To whom data/document is available

Students and university professors.

Under which criteria data/document could be used

This trial will be published in the form of an academic project.

From where data/document is obtainable

One should refer to the library of Kharazmi University.

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

Students will go to the library and receive the file from the librarian.

Comments