Clinical Trial Protocol
Iranian Registry of Clinical Trials

09 Nov 2026

Comparison of the Effects of Jump Rope and Trampoline Training with a Control Group on Selected Biomechanical and Psychological Variables in Overweight Boys Aged 9–12 Years

Protocol summary

Study aim

Comparison of the Effects of Jump Rope and Trampoline Training with a Control Group on Selected Biomechanical and Psychological Variables in Overweight Boys Aged 9–12 Years

Design

This study is a randomized controlled clinical trial with a parallel, three-group design involving 45 overweight boys aged 9–12 years. After meeting the inclusion criteria, participants are randomly allocated in equal proportions to the jump rope, trampoline, and control groups, considering age and body mass index. Randomization is performed by an independent statistician, and researchers are blinded to group allocation. The trial phase is not applicable

Settings and conduct

This study is conducted in Birjand among overweight boys aged 9–12 years. Following screening, participants are randomly allocated to three groups: jump rope, trampoline, and control. The intervention groups then receive the respective training programs, while the control group remains without intervention. After completion of the intervention period, the assessments are repeated. Assessors and the data analyst are blinded to group allocation.

Participants/Inclusion and exclusion criteria

Participants are overweight boys aged 9–12 years. Inclusion criteria: general health, no disease, relevant medication use, musculoskeletal injury or pain, joint hypermobility (Beighton <4), ability to safely perform the tests, and parental consent. Exclusion criteria: disease or relevant medication use, history of regular sports participation, injury or surgery, relevant sensory disorders, Beighton ≥4, inability to safely perform the tests, and lack of parental consent.

Intervention groups

Jump Rope, Trampoline, Control

Main outcome variables

Static and dynamic plantar pressure; static and dynamic balance; center-of-pressure oscillations; time to stabilization; body image anxiety; loneliness; depression; life satisfaction; aggression

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20260812070631N1**
Registration date: **2026-08-19, 1405/05/28**
Registration timing: **prospective**

Last update: **2026-08-19, 1405/05/28**
Update count: **0**

Registration date

2026-08-19, 1405/05/28

Registrant information

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2026-08-21, 1405/05/30

Expected recruitment end date

2026-10-22, 1405/07/30

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Comparison of the Effects of Jump Rope and Trampoline Training with a Control Group on Selected Biomechanical and Psychological Variables in Overweight Boys Aged 9–12 Years

Public title

Effects of Jump Rope and Trampoline Exercises on Static and Dynamic Plantar Pressure, Static and Dynamic Balance, Center of Pressure Sway, Time to Stabilization, Somatic Anxiety, Loneliness, Depression, Life Satisfaction, and Aggression

Purpose

Supportive

Inclusion/Exclusion criteria

Inclusion criteria:

Being male and aged 9–12 years Being classified as overweight based on the body composition analyzer results Residing in Birjand Being physically inactive and having no history of professional or regular sports participation Not taking any medications, including pharmaceutical drugs or herbal products Having no acute or chronic disease that could affect the study outcomes Having no history of burns, surgery, injury, or pain involving the spine, wrist, knee, or ankle Having no generalized joint hypermobility, as determined by a Beighton score of less than 4 Obtaining written informed consent from the parent or legal guardian and the child's willingness to participate in the study

Exclusion criteria:

Having an acute or chronic disease that may affect balance, motor performance, or the psychological variables under investigation. Taking medications that may affect balance, motor performance, or the psychological variables under investigation Having a history of regular or professional sports participation Having a history of surgery, injury, or pain involving the spine, wrist, knee, or ankle Having visual or hearing impairments that may interfere with the performance of the study assessments Having generalized joint hypermobility, as indicated by a Beighton score of 4 or higher Being unable to safely perform the study assessments or exercise program Failure to obtain written informed consent from the parent or legal guardian

Age

From **9 years** old to **12 years** old

Gender

Male

Phase

N/A

Groups that have been masked

- Investigator
- Outcome assessor
- Data analyser

Sample size

Target sample size: **45**

Randomization (investigator's opinion)

Randomized

Randomization description

Participants are randomly allocated to the study groups in an equal allocation ratio. The individual participant serves as the unit of randomization, and after eligibility is confirmed and informed consent is obtained, participants are randomly assigned to one of three groups: jump rope exercise, trampoline exercise, or control. During the random allocation process, baseline characteristics, including age and body mass index (BMI), are taken into consideration to ensure that these characteristics are as balanced as possible across the three groups. The randomization sequence is generated and participant allocation is performed by an independent statistician. The researchers have no involvement in generating the randomization sequence, allocating participants to groups, or accessing the allocation sequence, and they remain unaware of each participant’s group assignment before the allocation process is completed. Thus, allocation is fully concealed from the researchers.

Blinding (investigator's opinion)

Double blinded

Blinding description

This study will be conducted using a double-blind design. The principal investigator and researchers involved in the conduct of the study will be unaware of the randomization sequence and the participants’ group assignments. In addition, the data collectors and outcome assessors will be blinded to the participants’ group assignments. Participants’ data will be recorded and maintained using unique identification codes throughout all stages of the study. Data analysis will also be performed by an independent data analyst who will be blinded to the identities of the study groups. Therefore, the outcome assessors, data collectors, principal investigator, researchers, and data analyst will be blinded to the participants’ group assignments. A Data Safety and Monitoring Committee (DSMC) will not be established in this study.

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics Committee of the University of Birjand

Street address

Birjand, Shahid Avini Blvd., University Blvd.,

Shokatabad Campus, University of Birjand, Behavioral Sciences Campus.

City
Birjand

Province
South Khorasan

Postal code
9717434765

Approval date
2025-01-27, 1403/11/08

Ethics committee reference number
IR.BIRJAND.REC.1403.028

Health conditions studied

1

Description of health condition studied
Overweight

ICD-10 code
E66

ICD-10 code description
Overweight and obesity

Primary outcomes

1

Description
Changes in the magnitude and distribution of static plantar pressure during standing, measured using a plantar pressure measurement device

Timepoint
Static plantar pressure will be measured at baseline, before the intervention, and immediately after completion of the 8-week training program

Method of measurement
Foot Medisense (Foot pressure)

2

Description
Changes in the magnitude and distribution of dynamic plantar pressure during walking, measured using a plantar pressure measurement device

Timepoint
Dynamic plantar pressure will be measured during walking at baseline, before the intervention, and immediately after completion of the 8-week training program

Method of measurement
Foot Medisense (Foot pressure)

3

Description
Changes in static balance performance during double-leg and single-leg standing under eyes-open and eyes-closed conditionsپ

Timepoint
At baseline, before the intervention, and immediately after completion of the 8-week training program

Method of measurement
Measured using a force plate by assessing center-of-pressure sway parameters during standing

4

Description
Changes in dynamic balance performance during a dynamic balance test

Timepoint
At baseline, before the intervention, and immediately after completion of the 8-week training program

Method of measurement
force plate

5

Description
Changes in center-of-pressure oscillations during standing

Timepoint
At baseline, before the intervention, and immediately after completion of the 8-week training program

Method of measurement
force plate

6

Description
Changes in the time required to achieve post-landing stabilization

Timepoint
At baseline, before the intervention, and immediately after completion of the 8-week training program

Method of measurement
Measured using a force plate by assessing the time required to achieve post-landing stabilization

7

Description
Changes in students’ life satisfaction are measured using the Brief Multidimensional Students’ Life Satisfaction Scale

Timepoint
At baseline, before the intervention, and immediately after completion of the 8-week training program

Method of measurement
Measured using Huebner’s BMSLSS, consisting of 6 items rated on a 7-point Likert scale

8

Description
Changes in loneliness and social dissatisfaction are measured using the Social and Emotional Loneliness Scale (SLFS)

Timepoint
At baseline, before the intervention, and immediately after completion of the 8-week training program

Method of measurement
Measured using the Social and Emotional Loneliness Scale (SLFS) developed by Asher et al., consisting of 24

items rated on a 5-point Likert scale.

9

Description
Changes in the severity of depressive symptoms are measured using the Depression Self-Rating Scale (DSRS).
Timepoint
At baseline, before the intervention, and immediately after completion of the 8-week training program
Method of measurement
Measured using Birleson's Depression Self-Rating Scale (DSRS), consisting of 18 items rated on a 5-point Likert scale.

10

Description
Changes in social physique anxiety related to body appearance are measured using the Social Physique Anxiety Scale.
Timepoint
At baseline, before the intervention, and immediately after completion of the 8-week training program
Method of measurement
Measured using the Social Physique Anxiety Scale developed by Motl and Conroy, consisting of 7 items rated on a 5-point Likert scale.

11

Description
Changes in aggression levels are measured using the Aggression Scale.
Timepoint
At baseline, before the intervention, and immediately after completion of the 8-week training program
Method of measurement
At baseline, before the intervention, and immediately after completion of the 8-week training program.

Secondary outcomes

empty

Intervention groups

1

Description
first Intervention group: Jump Rope Exercise Group. Students will participate in jump rope training for 8 weeks, with 3 sessions per week. The exercises will be performed in an indoor sports hall with a 6-mm-thick polyurethane sports flooring. Each session will begin with 5 minutes of organization, attendance, and positioning of the students, followed by 10 minutes of warm-up exercises, including dynamic stretching, walking, running, and marching in place. Subsequently, the students will perform 30 minutes of the main jump rope exercises using the TanZib Magic fitness jump rope, also known as a beaded rope. The exercise program will include two-foot hops, jogging, heel taps, twists, cross legs, lateral jogging, jumping jacks, zigzag hops, crisscross jumps, backward jumps, half jacks, high-knee jump rope, and double single-foot jumps. At least two types of these exercises will be performed during each session. Each session will conclude with 5 minutes of cool-down exercises, including slow movements, low-intensity static stretching, and deep breathing. Students will be required to wear appropriate sports shoes and sportswear during the sessions and will be allowed to drink water during the activity. A minimum distance of 2 meters between students on all sides will be maintained, and the researcher will be present throughout all training sessions to supervise the correct execution of the exercises and adherence to the study protocol.
Category
Behavior

2

Description
second Intervention group: Trampoline Exercise Group. Students will participate in trampoline training for 8 weeks, with 3 sessions per week. The exercises will be performed on a park trampoline located in Azadegan Park in Birjand. Each session will consist of 5 minutes of organization, attendance, positioning of the students, and safety instructions; 10 minutes of warm-up including jogging, light jogging in place, dynamic stretching, and low-impact aerobic activities; 30 minutes of main trampoline exercises; and 5 minutes of cool-down.The main exercises will include two-foot jumps, jumping jacks, front-and-back single-leg jumps, two-foot lateral jumps, scissors, butterfly jumps, tuck jumps, butt landings, and jumps combined with various arm movements. At least two types of these exercises will be performed during each session. As the students' skills improve, the height and speed of the jumps will gradually increase. During the first four weeks, a 30-second rest period will be provided after every 2 minutes and 30 seconds of exercise, while during the second four weeks, a 1-minute rest period will be provided after every 3 minutes of exercise. The exercises will be performed barefoot, and students will be required to wear appropriate and comfortable sportswear. Drinking water will be permitted during the activity. Dangerous and complex movements, double-person jumps, and movements that may increase the risk of injury will be prohibited. The researcher will supervise the correct execution of the exercises, the students' physical condition, and compliance with safety instructions throughout all training sessions. Each session will conclude with 5 minutes of cool-down, including walking, light dynamic and stretching exercises, and deep breathing.
Category
Behavior

3

Description
Control group: Overweight boys in the control group will participate in the study for 8 weeks; however, they will not receive any specific exercise training or structured

physical activity during this period and will continue their usual daily activities. The boys will be asked not to participate in regular or organized sports activities outside the study during the intervention period. The researcher will maintain regular contact with the boys and their parents throughout the study period and monitor compliance with the study conditions and any potential changes in their physical activity levels. After the 8-week intervention period, the post-test assessments will be conducted for all overweight boys in the control group under the same conditions and procedures as the pre-test assessments.

Category
Behavior

Recruitment centers

1

Recruitment center

Name of recruitment center
General Department of Education of South Khorasan Province

Full name of responsible person
Saeed Ilbeigi

Street address
Behavioral Sciences Campus, University of Birjand, End of University Boulevard, Shokatabad, Birjand, South Khorasan Province, Iran

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity
Research Vice-Chancellery of the University of Birjand

Full name of responsible person
Dr. Abolfazl Akbarpour

Street address
End of Daneshgah Boulevard, Shokat Abad Campus, Central Administration Building, University of Birjand

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akbarpour@birjand.ac.ir

Grant name

Grant code / Reference number

Is the source of funding the same sponsor organization/entity?
Yes

Title of funding source
Research Vice-Chancellery of the University of Birjand

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
University of Birjand

Full name of responsible person
Saeed Ilbeigi

Position
Associate Professor, Faculty of Sport Sciences, University of Birjand

Latest degree
Ph.D.

Other areas of specialty/work
Sports Biomechanics

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Person responsible for updating data

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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
No - There is not 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
Not applicable
Title and more details about the data/document
The study protocol includes information on the study design, participant inclusion and exclusion criteria, participant selection and group allocation procedures, characteristics and implementation of the jump rope and trampoline exercise protocols, pre-test and post-test procedures, and methods used to assess the study variables. Individual and identifiable participant data will not be shared as part of this document.
When the data will become available and for how long
Access to the study protocol will begin 6 months after publication of the main study results and will remain available for as long as the protocol is considered scientifically and academically relevant.
To whom data/document is available
Researchers, faculty members, and postgraduate students affiliated with academic and research institutions may submit a request to access the study protocol.
Under which criteria data/document could be used
The study protocol may be used solely for scientific, research, and educational purposes. Permitted uses include conducting scientific research, designing similar studies, comparing exercise protocols, and developing research protocols. Commercial use of the document and any use that could violate the rights of the researchers or participants will not be permitted. The requester must specify the intended purpose of use and their academic or institutional affiliation.
From where data/document is obtainable
Requests for access to the study protocol may be submitted by contacting the principal investigator at the University of Birjand. The request should include the applicant’s full name, institutional or academic affiliation, email address, and intended purpose of access.
What processes are involved for a request to access data/document
The request will be reviewed by the principal investigator. Following assessment of the purpose of the request, the applicant’s academic or research affiliation, and the proposed conditions of use, the study protocol will be provided by email if the request is approved. Requests will be reviewed and a decision will be communicated to the applicant within a maximum of 30 business days.
Comments
Sharing of the study protocol will not include any identifying information or individual participant data. Access to the document will be subject to confidentiality requirements, intellectual property rights, and use solely for scientific and research purposes.