

Clinical Trial Protocol

Iranian Registry of Clinical Trials

22 Jul 2026

The Effect of Ten Weeks of Weightlifting Training with Adding Respiratory Dead Space on Performance and Muscle Hypertrophy Variables in Young Lifters

Protocol summary

Study aim

Determining the effect of 10 weeks of weightlifting training with added respiratory dead space on performance and muscle hypertrophy variables of young weightlifters

Design

Clinical trial with 2 parallel, non-blind, randomized groups of 20 patients

Settings and conduct

The subjects performed their sports activities for 10 weeks in the weightlifting hall under the supervision of experienced performers and trainers, which includes a program of warming up, weightlifting movements and cooling down in the assembly for a maximum of one hour and fifty minutes. Exercises are done three to five days a week. The mask and tube exercise group should use their mask and tube throughout the practice of the main movements, except for warm-up and cooling, to increase the dead breathing space.

Participants/Inclusion and exclusion criteria

Beginner weightlifter with at least six months of experience in weightlifting exercises; Age range 18 to 25 years; Body mass index between 19 and 25; Body fat percentage 12-15%; No history of chronic disease (diabetes, hypertension, chronic lung disease, etc.); No history of smoking for at least the last six months; Without musculoskeletal injury or complication; No use of medications and specific weight loss programs and diets; No use of energizers and anabolic steroids in the last three months

Intervention groups

1- Special weightlifting training (snatch- clean and jerk) with the use of oxygen mask during the training on which the ventilator tube with a diameter of 2.5 cm and a length of 204 cm is closed to provide 1000 ml of dead space. 2- Special weightlifting training (snatch- clean and jerk) without using a mask and tube

Main outcome variables

Hypertrophy; Cross-section of the quadriceps; Performance and fatigue; Fat percentage; Maximum muscle strength

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20220620055232N1**

Registration date: **2022-07-26, 1401/05/04**

Registration timing: **prospective**

Last update: **2022-07-26, 1401/05/04**

Update count: **0**

Registration date

2022-07-26, 1401/05/04

Registrant information

Name

Vahid Rabiei

Name of organization / entity

Shahid beheshti university of tehran

Country

Iran (Islamic Republic of)

Phone

+98 21 2243 2257

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2022-08-23, 1401/06/01

Expected recruitment end date

2023-03-20, 1401/12/29

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

The Effect of Ten Weeks of Weightlifting Training with Adding Respiratory Dead Space on Performance and Muscle Hypertrophy Variables in Young Lifters

Public title

The Effect of Weightlifting Training with Adding Respiratory Dead Space on Performance and Muscle Hypertrophy

Purpose

Other

Inclusion/Exclusion criteria**Inclusion criteria:**

Weightlifter boys 18 to 25 years old; have a body mass index between 19 to 25 with a body fat percentage of 12 to 15% ; have a history of weightlifting training for at least six months; no history of chronic disease (no diabetes, Blood pressure, chronic lung disease, etc.); no history of smoking for at least the last six months; no musculoskeletal injury or complication; no medication and weight loss program; no special diet; in three months Have not used energizers or anabolic steroids even in therapeutic discussions before starting research exercises.

Exclusion criteria:

Musculoskeletal injuries - Infectious and viral diseases of the lungs - Taking any medication without prior notice - Absence of more than one third of training sessions

AgeFrom **18 years** old to **25 years** old**Gender**

Male

Phase

N/A

Groups that have been masked*No information***Sample size**Target sample size: **20****Randomization (investigator's opinion)**

Randomized

Randomization description

First, a list of subjects is prepared according to the inclusion criteria and available sampling, after determining the sample size with G power software, 20 people are selected by simple random method and random digits table. First, each person in the list is given a two-digit code, and then randomly, blindfolded and using a finger, we start from a point in the table of random numbers in the direction of the row or column, and we choose a number that is actually the code of a person from the list. which is chosen as a sample and we place them equally in two groups so that the first code is placed in the first group and the second code is placed in the second group and we continue in the same way until reaching the desired sample size.

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**

Research Ethics committees of Shahid Behesh Universityti

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Faculty of Sport Sciences and health, Shahid Beheshti University, Daneshjou Blvd.

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Postal code

11 94 96 83 19

Approval date

2021-11-13, 1400/08/22

Ethics committee reference number

IR.SBU.REC.1400.208

Health conditions studied**1****Description of health condition studied**

Performance and hypertrophy in male weightlifters

ICD-10 code**ICD-10 code description****Primary outcomes****1****Description**

Muscle performance

Timepoint

Before the intervention and ten weeks after the intervention (48 hours after the last session)

Method of measurement

Using the Biodex isokinetic device, peak torque variables are measured in units of newtons per meter - total work consumed in units of Joules-peak and average power in units of watts.

2**Description**

Muscle performance

Timepoint

Before the intervention and ten weeks after the intervention (48 hours after the last session)

Method of measurement

It is used to calculate anaerobic power using the Monark ergometer and its unit is watts per kilogram.

3

Description

Muscle Hypertrophy

Timepoint

Before the intervention and ten weeks after the intervention (48 hours after the last session)

Method of measurement

MRI will be taken by imaging the cross-section of the muscle from the vastus lateralis muscle of the quadriceps.

Secondary outcomes

1

Description

Maximum muscle strength

Timepoint

before the start of the first session and 48 hours after the last training session

Method of measurement

It is calculated by measuring a maximum repetition using the formula: $1RM(Kg) = \text{weight} / 1.0278 - (0.0278 \times \text{reps})$

2

Description

maximum rate of oxygen consumption (VO₂max)

Timepoint

before the start of the first session and 48 hours after the last training

Method of measurement

It will be measured using the Bruce test on a treadmill (H campus) and a respiratory gas analysis device. Its unit is milliliter per kilogram of weight per minute.

3

Description

Serum testosterone concentration

Timepoint

Before and immediately after the first session - before and immediately after the last session - 48 hours after the last session

Method of measurement

It is done by taking blood and measuring with diagnostic kits. Its unit is ng/ml .

4

Description

Serum cortisol concentration

Timepoint

Before and immediately after the first session - before and immediately after the last session - 48 hours after the last session

Method of measurement

It is done by taking blood and measuring with diagnostic kits. Its unit is mg/dl .

5

Description

Serum lactate concentration

Timepoint

Before and immediately after the first session - before and immediately after the last session - 48 hours after the last session

Method of measurement

It is done by taking blood and measuring with diagnostic kits. Its unit is mg/dl .

Intervention groups

1

Description

Intervention group: exercise group with mask and tube. Using an oxygen mask with a ventilator tube 2.5 cm in diameter and 204 cm long to provide 1000 ml of dead space is used by this group during weightlifting exercises.

Category

Other

2

Description

Control group: exercise group without mask and tube. This group will do their weightlifting exercises without using masks and tubes.

Category

Other

Recruitment centers

1

Recruitment center

Name of recruitment center

Shahid Beheshti University

Full name of responsible person

Mohammad Fashi

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Faculty of Sport Sciences and Health, Shahid Beheshti University, Daneshjou Blvd.

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

The university of Shahid Beheshti

Full name of responsible person

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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

The university of Shahid Beheshti

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**

The University of Shahid Beheshti

Full name of responsible person

Vahid Rabiei

Position

Ph.D. Candidate

Latest degree

Master

Other areas of specialty/work

Exercise physiology

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Person responsible for updating data

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Sharing plan

Deidentified Individual Participant Data Set (IPD)

No - There is not a plan to make this available

Justification/reason for indecision/not sharing IPD

Each person's data alone is useless.

Study Protocol

Undecided - It is not yet known if there will be 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

Results for the main outcomes will be shared.

When the data will become available and for how long

6 months after printing the results

To whom data/document is available

Academic researchers

Under which criteria data/document could be used

After access, people only have the right to use the study protocol.

From where data/document is obtainable

Vahid Rabiei will respond via email. v_rabiei@sbu.ac.ir

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

The request will be answered after receiving the request and stating the reasons for needing the data within a maximum period of one month

Comments