Clinical Trial Protocol
Iranian Registry of Clinical Trials

17 Sep 2026

Comparison between the acute effects of intermittent hypoxia and aerobic exercise on the nitric oxide value, blood pressure and the respiratory function in Apnea

Protocol summary

Study aim

The aim of this study is comparing the acute effects of activity and periodic hypoxia on the nitric oxide, blood pressure and the pulmonary function in patient of obstructive sleep apnea.

Design

This research is semi-experimental with pretest and posttest interference.The time for each intervention will be randomly and at least three days will be between two interventions

Settings and conduct

11 males will select with least four options of inventory STOP-BAKG questionnaires.They will perform Aerobic exercise on treadmill with 0/070 hart rate reserve in 40 min and inhaled intermittently 5 min normoxic and hypoxic 0/011 air for an hour. Nitric oxide, blood pressure and lung function will measured before and after interventions. SPSS22 ,Kolmogorov Smirnov, ANOVA and Pearson was used.The significance level was considered 0.05 in all tests.

Participants/Inclusion and exclusion criteria

Without respiratory infection, without uncontrolled diabetes or hypertension, without bedridden for Apnea since three months ago, lock of smoking, daily mobility without absolute rest. Absenteeism in any sessions, voluntary exit.

Intervention groups

They will perform aerobic exercise on treadmill with intensity of 70 percent hart rate reserve, along 40 minutes. In intermittent hypoxia, subjects will inhaled intermittently 5 minutes normoxic air and hypoxic 11 percent air at sitting position for an hour. Nitric oxide, blood pressure and lung function will measure before and after interventions.

Main outcome variables

We expect that aerobic exercise protocol of the hypoxia periodic activity, nitric oxide and blood pressure systolic in apnea will improve. This method has less limitations in comparison with regular exercise at the same time. Expect to fulfill the aim of regular practice for sick, disabled and older applicant.

General information

Reason for update

Acronym

PEFR,TV,NO, FVC, FEV1, FEV1/FVC

IRCT registration information

IRCT registration number: **IRCT20190718044267N1**
Registration date: **2019-08-18, 1398/05/27**
Registration timing: **prospective**

Last update: **2019-08-18, 1398/05/27**
Update count: **0**

Registration date

2019-08-18, 1398/05/27

Registrant information

Name

iran Acbari

Name of organization / entity

Country

Iran (Islamic Republic of)

Phone

+98 83 3427 9265 ext. 222

Email address

ronak.latifnezhad@yahoo.com

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2019-10-07, 1398/07/15

Expected recruitment end date

2019-11-21, 1398/08/30

Actual recruitment start date
empty
Actual recruitment end date
empty
Trial completion date
empty

Scientific title
Comparison between the acute effects of intermittent hypoxia and aerobic exercise on the nitric oxide value, blood pressure and the respiratory function in Apnea

Public title
Comparison between the acute effects of intermittent hypoxia and aerobic exercise on the nitric oxide value, blood pressure and the respiratory function in Apnea
Purpose
Health service research
Inclusion/Exclusion criteria
Inclusion criteria:
without respiratory infection, without uncontrolled diabetes or hypertension, without bedridden for Apnea since three months ago, lock of smoking, daily mobility without absolute rest.
Exclusion criteria:
Acute illness, have absenteeism in sessions, voluntary departure
Age
From **19 years** old to **31 years** old
Gender
Male

Phase
3
Groups that have been masked
No information
Sample size
Target sample size: **15**
More than 1 sample in each individual
Number of samples in each individual: **2**
Each of samples randomly will perform two interventions
Randomization (investigator's opinion)
N/A
Randomization description
Blinding (investigator's opinion)
Not blinded
Blinding description
Placebo
Not used
Assignment
Crossover
Other design features
the research is semi-experimental with pretest and posttest interference.

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Sport sciences Research Institute
Street address
No. 3, Fifth Alley, Miremad Street, Motahari St.,
City
Tehran
Province
Tehran
Postal code
1587958711
Approval date
2019-01-23, 1397/11/03
Ethics committee reference number
IR.SSRC.REC.1397.016

Health conditions studied

1

Description of health condition studied
Obstructive Sleep Apnea
ICD-10 code
X00
ICD-10 code description
Exposure to uncontrolled fire in building or structure

Primary outcomes

1

Description
Increased levels of nitric oxide in both aerobic and periodic hypoxia
Timepoint
Before and after each interventions
Method of measurement
Measurement of serum nitric oxide level using ELISA method

Secondary outcomes

1

Description
Systol blood pressure, diastolic blood pressure and lung function
Timepoint
Before and after each intervention
Method of measurement
Digital pressure mussear and spirometers

Intervention groups

1

Description
Intervention group: They will perform aerobic exercise on treadmill with intensity of 0/070 hart rate reserve, along 40 minutes. In intermittent hypoxia, subjects will inhale

intermittently 5 minutes normoxic air and hypoxic (0/011) air at sitting position for an hour.

Category
Other

Recruitment centers

1

Recruitment center

Name of recruitment center
Razi Univercity

Full name of responsible person
Ronak Latifnezhad

Street address
Razi University., Tafg e bostan ., Kermanshah

City
Kermanshah

Province
Kermanshah

Postal code
6714414971

Phone
+98 83 3427 9265 ext. 222

Email
vahidtadibi@razi.ac.ir

2

Recruitment center

Name of recruitment center
Razi Univercity

Full name of responsible person
Ronak Latifnezhad

Street address
Razi University., Tafg e bostan ., Kermanshah

City
Kermanshah

Province
Kermanshah

Postal code
6714414971

Phone
+98 83 3427 9265 ext. 222

Email
vahidtadibi@razi.ac.ir

Sponsors / Funding sources

1

Sponsor

Name of organization / entity
Razi university

Full name of responsible person
Vahid Tadibi

Street address
Kermanshah Province, Kermanshah, Zakariya Razi Blvd

City
Kermanshah

Province
Kermanshah

Postal code
6714414971

Phone
+98 83 3427 7605

Email
info@razi.ac.ir

Grant name
Personal Grant is not used

Grant code / Reference number
0000

Is the source of funding the same sponsor organization/entity?
No

Title of funding source
Physical Education Laboratory, Faculty of Physical Education and Sport University of Razi University

Proportion provided by this source
60

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

2

Sponsor

Name of organization / entity
The University of Razii

Full name of responsible person
Vahid Tadibi

Street address
Kermanshah Province, Kermanshah, Zakariya Razi Blvd

City
Kermanshah

Province
Kermanshah

Postal code
6714414971

Phone
+98 83 3427 7605

Email
info@razi.ac.ir

Grant name
Personal Grant is not used

Grant code / Reference number
0000

Is the source of funding the same sponsor organization/entity?
No

Title of funding source
Physical Education Laboratory, Faculty of Physical Education and Sport University of Razi University

Proportion provided by this source
60

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 Shahrood
Full name of responsible person
Ronak Latifnezhad
Position
Unemployed
Latest degree
Master
Other areas of specialty/work
Physiology ofexercise
Street address
Shohada e daneshanmuz Street., Ostad Shirazi ST., Saqqez.
City
Saqqez
Province
Kurdistan
Postal code
6681876341
Phone
+98 78 3627 9858
Email
Ronak.latifnezhad@yahoo.com

Person responsible for scientific inquiries

Contact
Name of organization / entity
The University of Shahrood
Full name of responsible person
Ronak Latifnezhad
Position
Unemployed
Latest degree
Master
Other areas of specialty/work
Physiology of exercise
Street address
Shohad e daneshamuz street., Ostad shirazi ST., Saqqez
City
Saqqez
Province
Kurdistan
Postal code
6681876341
Phone
+98 87 3627 0858
Email
Ronak.latifnezhad@yahoo.com

Person responsible for updating data

Contact
Name of organization / entity
The University of Shahrood
Full name of responsible person
Ronak Latifnezhad
Position
Unemployed
Latest degree
Master
Other areas of specialty/work
Physiology
Street address
Shohada e daneshanmuz Street., Ostad Shirazi ST., Saqqez.
City
Saqqez
Province
Kurdistan
Postal code
6681876341
Phone
+98 78 3627 9858
Email
Ronak.latifnezhad@yahoo.com

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