Clinical Trial Protocol
Iranian Registry of Clinical Trials

16 Sep 2026

The effect of breathing pattern correction training based on Buteyko's theory on capnometric indices in hyperkyphotic women- A randomised clinical trial

Protocol summary

Study aim
Determine the effect of breathing pattern correction training based on Buteyko's theory on capnometric indices in hyperkyphotic women

Design
two arm parallel groups, randomised clinical trial with control group, single blinded

Settings and conduct
In the intervention group, in addition to kyphosis correction exercises, breathing pattern correction exercises derived from the Buteyko theory are performed in the form of a home exercise. Before and after the end of interventions in both groups, copnometric indices will be measured in the laboratory of the Ahwaz rehabilitation faculty. This study will be single blinded . So that the evaluator and the individual who teaches the training are different and the evaluator will not be aware of the grouping of the samples.

Participants/Inclusion and exclusion criteria
inclusion : women 18 to 30 years old, thoracic kyphosis angle 40 degrees or more exclusion: scoliosis , structural kyphosis , spine fractures in the past , shoulder fracture in the past six months , diseases that prevent the person from participating in sport activities , chronic breathing diseases

Intervention groups
Intervention group: Perform kyphosis correction exercises including stretching and strengthening exercises and breathing pattern correction exercises based on the Buteyko,s theory at home, three sessions a week for eight weeks. duration of each session: 60 minutes Control group: Perform kyphosis correction exercises at home, including stretching and strengthening exercises, three sessions a week for eight weeks. duration of each session: 45 minutes

Main outcome variables
end tidal co2؛ respiration rate

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20190114042351N1**
Registration date: **2019-05-05, 1398/02/15**
Registration timing: **registered_while_recruiting**

Last update: **2019-05-05, 1398/02/15**
Update count: **0**

Registration date
2019-05-05, 1398/02/15

Registrant information

Name
Majid Ravanbakhsh

Name of organization / entity

Country
Iran (Islamic Republic of)

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Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2019-04-18, 1398/01/29

Expected recruitment end date
2019-06-15, 1398/03/25

Actual recruitment start date
empty

Actual recruitment end date
empty

Trial completion date
empty

Scientific title
The effect of breathing pattern correction training based on Buteyko's theory on capnometric indices in hyperkyphotic women- A randomised clinical trial

Public title
The effect of breathing pattern correction training on capnometric indices in hyperkyphotic women
Purpose
Treatment
Inclusion/Exclusion criteria
Inclusion criteria:
women 18 to 30 years old with 40 degree or more thoracic kyphosis angle(determined by flexible ruler)
Exclusion criteria:
scoliosis deformity structural thoracic kyphosis according to specialist physician diagnosis past history of spinal fracture history of shoulder fracture in the past 6 months having diseases that interfere with sport exercises(such as: uncontrolled blood pressure,diabetes type1, angina, acute cardiac diseases) past history of any chronic respiratory disease according to patients statement
Age
From **18 years** old to **30 years** old
Gender
Female

Phase
N/A
Groups that have been masked

- Care provider

Sample size
Target sample size: **20**
Randomization (investigator's opinion)
Randomized
Randomization description
In this study, individuals are randomly divided into two groups based on the permuted block randomization method with block size of 4 .The block size of 4 have 6 types (probabilities), that we set for each type a number from 1 to 6. In order to form a random sequence, we use random allocation software. individuals who enter the study are assigned to two groups based on the sequence of the letters generated by this method. randomization unit is individual. allocation concealment is done by using random sequence, sealed, opaque envelopes.
Blinding (investigator's opinion)
Single blinded
Blinding description
A person evaluate the participants and another person teaches the exercises
Placebo
Not used
Assignment
Parallel
Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Ethics committee of Ahvaz Jondi shapour University of Medical Sciences
Street address
Ahvaz Jondi Shapour University, Golestan Blvd
City
Ahvaz
Province
Khouzestan
Postal code
4331385617
Approval date
2019-01-13, 1397/10/23
Ethics committee reference number
IR.AJUMS.REC.1397.754

Health conditions studied

1

Description of health condition studied
Thoracic hyperkyphosis
ICD-10 code
ICD-10 code description

Primary outcomes

1

Description
end tidal co2
Timepoint
before starting the intervention and 8 weeks after persistant implementation of the intervention
Method of measurement
by viamed capnograph

2

Description
respiration rate
Timepoint
before starting the intervention and 8 weeks after persistant implementation of the intervention
Method of measurement
by viamed capnograph

Secondary outcomes

empty

Intervention groups

1

Description
In the intervention group, in addition to the control group

exercises, which include common hyperkyphosis correction exercises, the breathing pattern correction exercises derived from the Buteykos theory, including: diaphragmatic breathing, slow and deep breathing and hold breath technique are also performed on a day-to-day basis for 8 weeks. Kyphosis correction exercises include stretching exercises for short muscles in the anterior of the chest and strengthening exercises for the muscles in the posterior of the chest wall. In stretching exercises, stretching is maintained for 30 seconds. In strengthening exercises, the muscle contraction is held for 10 seconds, then returns to its original state and rest for 10 seconds and then resumes the movement. Each of the stretching and strengthening exercises is repeated 10 times in each session. In each session, all respiratory techniques used to increase the depth and reduce the respiratory rate, are done each for 5 minutes.In each session, the duration of the kyphosis correction exercises, which are common in two groups, is 45 minutes and the breathing pattern correction exercises that are specific to the intervention group is 15 minutes.

Category

Rehabilitation

2

Description

Control group: routine thoracic hyperkyphosis correction exercise for eight weeks(3 times per week)

Category

Rehabilitation

Recruitment centers

1

Recruitment center

Name of recruitment center

laboratory of rehabilitation faculty of Ahvaz

Full name of responsible person

Vedad Abdolkhani

Street address

Rehabilitation Sciences faculty, Golestan Blvd

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Ahvaz University of Medical Sciences

Full name of responsible person

Dr. Mohammad Badvi

Street address

Association center of Research and Technology of Jundishapur University of Medical Sciences and Health Services of Ahvaz, ground floor, university town, Ahvaz

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Email

itc@ajums.ac.ir

Web page address

http://vchresearch.ajums.ac.ir/

Grant name

Grant code / Reference number

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

Yes

Title of funding source

Ahvaz University of Medical Sciences

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

Ahvaz University of Medical Sciences

Full name of responsible person

Majid Ravanbakhsh

Position

Professor

Latest degree

Ph.D.

Other areas of specialty/work

Physiotherapy

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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
Undecided - It is not yet known if there will be a plan to make this available

Title and more details about the data/document
All datas will be published

When the data will become available and for how long
from 2019

To whom data/document is available
Datas will be available for researchers

Under which criteria data/document could be used
Researchers who want to continue our research line

From where data/document is obtainable
They can send us emails to this mail address: majidravanbakhsh@yahoo.com

What processes are involved for a request to access data/document
first they must send us an email , explaining the reason they need the research data , after we checked them , we will send them the datas

Comments