

Clinical Trial Protocol

Iranian Registry of Clinical Trials

01 Jul 2026

Evaluation of the effects of 4 weeks exercise with flexible-bar on thoracic kyphosis angle and maximum voluntary contraction of thoracic muscles in postural hyperkyphosis people (18 -35 years old) with and without forward head posture

Protocol summary

Study aim

Evaluation of the effect of flexible-bar exercise on kyphosis angle and maximum voluntary contraction of thoracic muscles in postural hyperkyphosis people with and without forward head posture after 4 weeks treatment session

Design

Randomized trial with control and intervention groups, single blinded on 24 postural hyperkyphosis subjects

Settings and conduct

Twenty subjects with hyperkyphosis and with and without forward head posture will divide random in two groups according to the inclusion and exclusion criteria. The subjects in intervention group will exercise 4 weeks and The control group receives no exercise . The kyphosis angle, the craniovertebral angle, quality of life, thoracic pain and the maximum voluntary contraction in :back extensor,neck extensor ,lower and upper trapezius and levator scapulae muscles will measured befor and after 4 weeks as Pre and post test.

Participants/Inclusion and exclusion criteria

Inclusion criteria: Men and women between 18 to 35 years old Having pain less than 3 in thoracic level with numeric pain rating scale(NRS) Having hyperkyphosis angle more than 46 and less than 60 degree Having craniovertebral angle less than 50 degree Exclusion criteria: Having body mass index more than 25 Having kyphosis with bone ,metabolic reason for example tuberculosis and large breast in women Losing any of inclusion criteria Having history of spinal surgery,infection,fracture,rheumatism pregnancy History of professional exercise in upper trunk and shoulder Scoliosis Having respiration and heart problem

Intervention groups

Applying flexible-bar exercise in intervention group and no intervention in control group

Main outcome variables

Kyphosis angle,craniovertebral angle, maximum voluntary contraction,quality of life, thoracic pain

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20090203001637N11**

Registration date: **2021-03-01, 1399/12/11**

Registration timing: **prospective**

Last update: **2021-03-01, 1399/12/11**

Update count: **0**

Registration date

2021-03-01, 1399/12/11

Registrant information

Name

Sedighe Kahrizi

Name of organization / entity

Tarbiat Modares University

Country

Iran (Islamic Republic of)

Phone

+98 21 8288 4511

Email address

kahrizis@modares.ac.ir

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2021-04-19, 1400/01/30

Expected recruitment end date

2021-09-22, 1400/06/31

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Evaluation of the effects of 4 weeks exercise with flexible-bar on thoracic kyphosis angle and maximum voluntary contraction of thoracic muscles in postural hyperkyphosis people (18 -35 years old) with and without forward head posture

Public title

Evaluation of the effects of exercise with flexible-bar on thoracic kyphosis angle in young people (18 -35 years old)

Purpose

Supportive

Inclusion/Exclusion criteria

Inclusion criteria:

Men and women between 18 to 35 years old Having at least high school diploma education Having pain less than 3 in thoracic level with Numeric Pain Rating Scale(NRS) Having hyperkyphosis angle more than 46 and less than 60 degree Having cranio-vertebral angle less than 50 degree

Exclusion criteria:

Having body mass index more than 25 Having history of spinal surgery, infection, fracture, rheumatism Pregnancy History of professional exercise in upper trunk and shoulder Scoliosis Having respiration and heart problem having Kyphosis with other reasons for example structure deformity, metabolic tuberculosis, and having large breast in women

Age

From **18 years** old to **35 years** old

Gender

Both

Phase

N/A

Groups that have been masked

- Participant

Sample size

Target sample size: **24**

Randomization (investigator's opinion)

Randomized

Randomization description

Randomization method is performed by randomize table numbers, with due attention to sample size that is 24 people, are given one two digit code to each subject and researcher start by chance from one point of table to selection of subjects and do this work with closed eyes and put finger or pen nib on the table and select the numbers in the direction of row or column and do this work til the end of sample size and thus subjects stay on two intervention and control group by chance

Blinding (investigator's opinion)

Single blinded

Blinding description

Participant subjects are blinded to the kind of the group that they stay on it (intervention and control). Thus subjects of two groups have no meet and assessments are done separately in even and odd days

Placebo

Not used

Assignment

Parallel

Other design features

Intervention group subjects will exercise with flexible bar and control group subjects will not have any exercise

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics committee of Tarbiat Modares University

Street address

Tarbiat Modares University, Nasr bridge, Jalal e al e ahmad street, Tehran

City

Tehran

Province

Tehran

Postal code

1411713116

Approval date

2020-12-15, 1399/09/25

Ethics committee reference number

IR.MODARES.REC.1399.140

Health conditions studied

1

Description of health condition studied

Subjects with Postural hyper kyphosis

ICD-10 code

M40.0

ICD-10 code description

Postural kyphosis

Primary outcomes

1

Description

Kyphosis angle

Timepoint

Before first exercise session and 24 hours post of last exercise session

Method of measurement

Flexicurve ruler

2

Description

Craniovertebral(CVA) angle

Timepoint

Before first exercise session and 24 hours post of last exercise session

Method of measurement

Goniometer

3

Description

Maximum Voluntary Contraction(MVC) of back extensor, lower trapezius, upper trapezius, neck extensor, levator scapulae muscles

Timepoint

Before first exercise session and 24 hours post of last exercise session

Method of measurement

Recording with Electromyography system

Secondary outcomes

1

Description

score of the Quality of life questionnaire

Timepoint

Before first exercise session and 24 hours post of last exercise session

Method of measurement

Persian version of the Sf36 Questionnaire

2

Description

Pain of the back region

Timepoint

Before first exercise session and 24 hours post of last exercise session

Method of measurement

Numeric Pain Rating Scale

Intervention groups

1

Description

Intervention group: exercise with flexible-bar 6 days in 4 weeks (24 session) and 3 sets in each session. number (adding one set) and time (adding 5 seconds) of doing sets increase progressively each weak. to prevent from fatigue, allocated 30 seconds rest between each set

Category

Rehabilitation

2

Description

Control group: No intervention

Category

Rehabilitation

Recruitment centers

1

Recruitment center

Name of recruitment center

Tarbiat Modares University

Full name of responsible person

Sedighe Kahrizi

Street address

Tarbiat Modares University, Jalal e ale ahmad Avenue, Kouye Nasr

City

Tehran

Province

Tehran

Postal code

1411713116

Phone

+98 21 8828 4511

Fax

+98 21 8288 4555

Email

Kahrizis@modares.ac.ir

Web page address

<https://www.modares.ac.ir/~kahrizis>

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Research Deputy of Tarbiat Modares University

Full name of responsible person

Dr.Yaghoub Fathollahi

Street address

Tarbiat Modares University, Jalal e ale ahmad Avenue, Kouye Nasr

City

Tehran

Province

Tehran

Postal code

1411713116

Phone

+98 21 8828 9002

Email

Res@modares.ac.ir

Grant name

Grant code / Reference number

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

Yes

Title of funding source

Research Deputy of Tarbiat Modares 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**Contact****Name of organization / entity**

Tarbiat Modares University

Full name of responsible person

Zohreh Vaseghi Fard

Position

Student of M.sc in physical therapy

Latest degree

Bachelor

Other areas of specialty/work

Physiotherapy

Street address

Tarbiat Modares University, Jalale al e ahmad Ave,
Kouye Nasr

City

Tehran

Province

Tehran

Postal code

1411713116

Phone

+9888284511

Email

v.zohreh@modares.ac.ir

Person responsible for scientific inquiries**Contact****Name of organization / entity**

Tarbiat Modares University

Full name of responsible person

Sedighe Kahrizi

Position

Associate Professor

Latest degree

Ph.D.

Other areas of specialty/work

Physiotherapy

Street address

Tarbiat Modares University, Jalale al e ahmad Ave,
Kouye Nasr

City

Tehran

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1411713116

Phone

+98 21 8828 4511

Email

Kahrizis@modares.ac.ir

Web page address

<https://www.modares.ac.ir/~kahrizis>

Person responsible for updating data**Contact****Name of organization / entity**

Tarbiat Modares University

Full name of responsible person

Sedighe Kahrizi

Position

Associate Professor

Latest degree

Ph.D.

Other areas of specialty/work

Physiotherapy

Street address

Tarbiat Modares University, Jalale al e ahmad Ave,
Kouye Nasr

City

Tehran

Province

Tehran

Postal code

1411713116

Phone

+98 21 8828 4511

Email

kahrizis@modares.ac.ir

Web page address

<https://www.modares.ac.ir/~kahrizis>

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

Not applicable

Informed Consent Form

Undecided - It is not yet known if there will be 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

File of intervention program protocol and statistical analysis plan through publication of thesis and writing an article

When the data will become available and for how long

Starting 6 months after publication of results

To whom data/document is available

The research team of this study and other clinical academic researchers who are studying in favor of these patients

Under which criteria data/document could be used

Researchers who intend to write a meta-analysis or systematic review articles are allowed to access document

From where data/document is obtainable

Dr.sedighe kahrizi , Zohreh vaseghi fard
What processes are involved for a request to access data/document

The request will be responded after getting the approval of university or the academic institution
Comments