

Clinical Trial Protocol

Iranian Registry of Clinical Trials

17 Sep 2026

The effect of three methods of kinesthetic imagery, active and combined exercises on the electromyographic pattern of hip hyperextension and the muscle strength of gluteus maximus and abdominal in women with lumbar hyperlordosis

Protocol summary

Study aim

The purpose of this study was the effect of three methods of kinesthetic imagery, active and combined exercises on the electromyographic pattern of hip hyperextension and the muscle strength of gluteus maximus and abdominal in women with lumbar hyperlordosis

Design

Clinical trial with three training groups, one-way blind, targeted placement of samples in three exercise groups

Settings and conduct

Faculty of Physical Education of University of Tehran, where the samples were pre-tested in the laboratory before starting the exercises. Then they do the exercises for six weeks. After the intervention, a post-test is performed.

Participants/Inclusion and exclusion criteria

Entry criteria: having lumbar lordosis abnormality above a standard deviation from the target population (non-athlete women); age range 30-40 years and also written consent of subjects for voluntary participation Exclusion criteria: Observation of pathological symptoms, history of fracture, surgery or joint diseases in the spine, shoulder girdle, pelvis and lower limbs; having kyphosis above a standard deviation and having rotation in Adams test and regular weekly activity; absence of more than three sessions in training

Intervention groups

Exercise group 1: Corrective exercise group - The main program includes the corrective exercises of Sahrman. Exercise group 2: Mental imagery group - The main program includes corrective exercises that the person is asked to imagery the exercise in mind and then keep the contraction mentally for fifteen seconds and do each exercise like the corrective exercises group that are done between 6-8 repetitions. Exercise group 3:

Combined group - The main program include corrective exercises and mental imagery that are blocked until the end.

Main outcome variables

Dependent variable: lumbar lordosis and electromyography activity of selected muscles of the lumbo-pelvic during hip hyper extension

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20130109012078N4**

Registration date: **2020-08-17, 1399/05/27**

Registration timing: **retrospective**

Last update: **2020-08-17, 1399/05/27**

Update count: **0**

Registration date

2020-08-17, 1399/05/27

Registrant information

Name

Maryam Ghorbani

Name of organization / entity

Azad

Country

Iran (Islamic Republic of)

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2019-04-03, 1398/01/14

Expected recruitment end date

2019-07-10, 1398/04/19

Actual recruitment start date

2019-04-04, 1398/01/15

Actual recruitment end date

2019-07-20, 1398/04/29

Trial completion date

2019-08-22, 1398/05/31

Scientific title

The effect of three methods of kinesthetic imagery, active and combined exercises on the electromyographic pattern of hip hyperextension and the muscle strength of gluteus maximus and abdominal in women with lumbar hyperlordosis

Public title

The effect of three exercise methods on the pattern of hip hyper extension

Purpose

Other

Inclusion/Exclusion criteria**Inclusion criteria:**

All individuals should be selected from a common group (non-athletic women) no history of injury in lumbar region age range between 30-40 years

Exclusion criteria:

History of specific disease History of injury History of pregnancy

AgeFrom **30 years** old to **40 years** old**Gender**

Female

Phase

N/A

Groups that have been masked

- Participant

Sample sizeTarget sample size: **36**Actual sample size reached: **32****Randomization (investigator's opinion)**

N/A

Randomization description**Blinding (investigator's opinion)**

Single blinded

Blinding description

All participants participated in the sessions separately at the time of testing and with a training interval, and did not know how the other group practiced. Although people were aware of the existence of three training groups, they were not aware of how to exercise.

Placebo

Not used

Assignment

Parallel

Other design features**Secondary Ids**

empty

Ethics committees**1****Ethics committee****Name of ethics committee**

Ethics Committee in Research of Sports Science Research Institute

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No. Mir Emad St. 5th Alley . Ostad Motahhari St. Tehran

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Approval date

2019-06-30, 1398/04/09

Ethics committee reference number

IR.SSRC.REC.1398.073

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

lumbar hyper lordosis

ICD-10 code

M40.46

ICD-10 code description

Postural lordosis, lumbar region

Primary outcomes**1****Description**

Muscle electromyography activity

Timepoint

Before the intervention,42 days after the intervention.

Method of measurement

Electromyogram for measure muscle activity rate.

2**Description**

lumbar lordosis

Timepoint

Before the intervention,42 days after the intervention.

Method of measurement

Flexible ruler for measuring lumbar lordosis.

Secondary outcomes

empty

Intervention groups

1

Description

Intervention group 1: mental imagery group, Exercise Period: Six Weeks, Number of Exercises per Week: Three Sessions, Duration of Each Exercise Session: 60-75 Minutes • Warming Exercises Including Abdominal and Chest Breaths for Five Minutes • Main Exercise Program for 45 to 60 Minutes It will be done. It includes corrective exercises that ask the person to imagine the exercise in mind and then hold the contraction mentally for fifteen seconds and perform each exercise mentally between 6-8 repetitions like usual corrective exercises. • Cooling program for five minutes.

Category

Rehabilitation

2

Description

Intervention group 2: combination group, Exercise period: six weeks, number of training sessions per week: three sessions, duration of each training session: 60-75 minutes • Warm-up exercises including walking and stretching for five minutes • Main exercise program for 45 to 60 minutes will be done. Combination group exercises include active and visual imaging exercises that are blocked and include active and motor imaging until the end of the exercise, respectively • Five-minute cooling program.

Category

Rehabilitation

3

Description

Intervention group 3: active group, Exercise period: six weeks, number of training sessions per week: three sessions, duration of each training session: 60-75 minutes • Warm-up exercises including walking and stretching movements for five minutes • Main exercise program for 45 to 60 minutes Will be • Cooling program for five minutes.

Category

Rehabilitation

Recruitment centers

1

Recruitment center

Name of recruitment center

Gholhak Cultural and Sports Campus

Full name of responsible person

Dr. Mohammad Hossein Alizadeh

Street address

Gholhak Cultural and Sports Complex, next to the Water Museum, Yakhchal St., Shariati St., Tehran

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Faculty of Physical Education of University of Tehran

Full name of responsible person

Dr. Foad Seidi

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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

Faculty of Physical Education of University of Tehran

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

Alborz Campus, University of Tehran

Full name of responsible person

Maryam Ghorbani

Position

PhD student

Latest degree

Ph.D.

Other areas of specialty/work

Corrective exercise and sports injury

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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

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

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

It is published as a doctoral dissertation

When the data will become available and for how long

1399/06/30

To whom data/document is available

Students and professors

Under which criteria data/document could be used

There is nothing wrong with mentioning the research source

From where data/document is obtainable

Tehran University Library Site

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

Once a person enters the library site, they can search the dissertation section.

Comments