Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

Comparison of rotational and elevatory resistive exercises on acromiohumeral distance in people with shoulder impingement syndrome: A randomized clinical trial

Protocol summary

Study aim
Comparison of the effect of rotational and elevatory resistance exercises on acromiohumeral distance in patients with shoulder impingement syndrome

Design
54 patients with shoulder impingement syndrome are randomly divided into 3 groups. The study is a randomized clinical trial. The Stratified Permuted Block Randomization method is used for randomization. The two intervention groups receive exercise therapy and the third group is considered as the control group. Acromiohumeral distance measurement is done once before the intervention and once after the intervention.

Settings and conduct
This study is performed at the neuromuscular Rehabilitation Research Center. Patients are invited to participate in the study based on their physician's diagnosis

Participants/Inclusion and exclusion criteria
Inclusion criteria: 1.Aged 17 to 35 years 2.History of pain in anterior and lateral of the upper shoulder that has lasted more than a week in the last six months 3. Having at least three of the following: Positive Neer test - Positive Hawkins kennedy test - Positive Job test - Painful arch during flexion and abduction movements - Pain during resisted lateral rotation and / or resisted abduction Exclusion criteria:Body mass index (BMI) above 25 kg/m2. Complete rupture of the rotator cuff. Moderate to severe glenohumeral or acromioclavicular joint osteoarthritis. Glenohumeral joint instability including previous dislocation or subluxation. Previous shoulder fracture

Intervention groups
The intervention of the first group is rotational resistance exercises and the intervention of the second group is elevatory resistance exercises. The control group does not receive any intervention and is only evaluated.

Main outcome variables
Measurement of acromiohumeral distance

General information

Reason for update
Acronym
IRCT registration information
IRCT registration number: **IRCT20211229053567N1**
Registration date: **2022-01-17, 1400/10/27**
Registration timing: **prospective**

Last update: **2022-01-17, 1400/10/27**
Update count: **0**

Registration date
2022-01-17, 1400/10/27

Registrant information
Name
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Name of organization / entity
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Iran (Islamic Republic of)
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Recruitment status
Recruitment complete
Funding source

Expected recruitment start date
2022-02-20, 1400/12/01
Expected recruitment end date
2022-05-22, 1401/03/01
Actual recruitment start date
empty
Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Comparison of rotational and elevatory resistive exercises on acromiohumeral distance in people with shoulder impingement syndrome: A randomized clinical trial

Public title

The effect of rotational and elevatory resistive exercises on acromiohumeral distance in patients with shoulder impingement syndrome

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

Aged 17 to 35 years History of pain in anterior and lateral of the upper shoulder that has lasted more than a week in the last six months Having at least three of the following: Positive Neer test ;Positive Hawkins-kennedy test ;Positive Job test ;Painful arch during flexion and abduction movements ;Pain during resisted lateral rotation and / or resisted abduction

Exclusion criteria:

Body mass index (BMI) above 25 kg/m2. Complete rupture of the rotator cuff Moderate to severe glenohumeral or acromioclavicular joint osteoarthritis Glenohumeral joint instability including previous dislocation or subluxation Previous shoulder fracture Neurological defect of the upper limb Systemic diseases such as rheumatoid arthritis Neck pain with somatic or radicular pain pattern Previous history of shoulder surgery Corticosteroid injection in the shoulder during the last month Loss of range of motion of the shoulder joint (for example due to adhesions) Malignancy and hemophilia Deformity in the shoulder Osteoporosis Any history of damage to the brachial plexus Any subcutaneous inflammation

Age

From **17 years** old to **35 years** old

Gender

Both

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **54**

Randomization (investigator's opinion)

Randomized

Randomization description

Samples are randomly assigned using the Stratified Permuted Block Randomization method with 6 9 blocks assigned to three groups. In this method, A will represent group one (rotational resistance exercises), B will represent group two (elevatory resistance exercises) and C will represent the control group. In this way, the order of interventions A, B and C in the form of blocks from 1 to 6 is determined by the methodological consultant of the project, and is provided to the executive supervisor of the project, and the researcher obtains an assignment from the executive supervisor to assign each qualified person. Slowly The supervisor first selects the block using a random number generator (or dice) and then the eligible individuals are assigned to one of three groups A, B or C in a predetermined order. It should be noted that if a block is selected based on random numbers that have already filled all 9 sequences, another random number will be selected again for that person.

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

Ethics Committees of Semnan University Of Medical Sciences and Health Services

Street address

Semnan university of medical sciences , Basij Blvd , Semnan city

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Semnan

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Semnan

Postal code

35147-99442

Approval date

2021-12-28, 1400/10/07

Ethics committee reference number

IR.SEMUMS.REC.1400.236

Health conditions studied

1

Description of health condition studied

shoulder impingement syndrome

ICD-10 code

M75.4

ICD-10 code description

Impingement syndrome of shoulder

Primary outcomes

1

Description

Acromiohumeral distance

Timepoint

Before the intervention and after the intervention

Method of measurement

Ultrasonography device

Secondary outcomes

empty

Intervention groups

1

Description

Intervention group 1: Rotational shoulder resistance exercises are performed three times a week for 6 consecutive weeks, including 1) The patient is placed in a sitting position on a chair and the therapist stands on the affected side and the patient's elbow is placed at 90 degrees flexion. The patient moves the internal rotation of the arm from the end of the external rotation range to the end of the internal rotation range against the therapist's resistance. In order to prevent compensatory movements in the shoulder, the therapist holds the patient's elbow steady with one hand and applies resistance with the other hand on the end of the patient's forearm. The patient stands and elbows are placed at 90 degrees of flexion. The patient moves the external rotation of the arm from the end of the internal rotation range to the end of the external rotation range against the therapist's resistance. In order to prevent compensatory movements in the shoulder, the therapist holds the patient's elbow with one hand and applies resistance with the other hand on the end of the patient's forearm. 3) The patient is placed in a sitting position and the therapist is on the affected side Stand and elbow at 90 degrees flexion. The patient is asked to place the shoulder at angles of 30, 90, and 150 degrees around the scapula, and then the therapist applies force to the end of the patient's forearm to create internal rotation and external rotation of the arm, and the patient is asked to contract. Keep the shoulder isometric in the same position. In order to prevent compensatory movements in the shoulder, the therapist holds the patient's elbow with his hand.

Category

Treatment - Other

2

Description

Intervention group 2: elevatory shoulder resistance exercises are performed three sessions per week for 6 consecutive weeks, including 1) the patient is sitting on a chair and the therapist is standing on the affected side. The elbow is slightly bent at the flexion and thumb to create an external rotation in the arm facing the ceiling. The patient is then asked to move his or her process on the scapula to an angle of 150 degrees against resistance by the therapist. In order to apply the resistance force, the therapist's hand is placed on the end of the patient's forearm. 2) The patient is placed in a sitting position and the therapist stands on the affected side. The elbow is slightly bent at the flexion and thumb to create an external rotation in the arm facing the ceiling. The patient is asked to place the shoulder at 30, 90, and 150 degrees of rotation at the scapula, and then the therapist randomly applies force to the patient's forearm to raise and lower the patient's shoulder, and the patient is asked to contract. Maintain the isometric shoulder in the same position.

Category

Treatment - Other

Recruitment centers

1

Recruitment center

Name of recruitment center

Neuromuscular Rehabilitation Research Center of Semnan University of Medical Sciences

Full name of responsible person

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

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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

Semnan 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

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Name of organization / entity
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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