

Clinical Trial Protocol

Iranian Registry of Clinical Trials

11 Sep 2026

Effects of Resistance Training Versus Endurance Training on Hyperlipidemia, Uric Acid and Glucose levels In Patients with Metabolic Syndrome: a randomized clinical trial

Protocol summary

Study aim

The aim of the study is to evaluate the effects of resistance training versus endurance training on hyperlipidemia, uric acid, and glucose levels in patients with metabolic syndrome

Design

Parallel, 64 sample size, Randomized Clinical Trial, single blinded

Settings and conduct

The trial will be conducted in the Physiotherapy department of Punjab Social Security Health Management Company Hospital and Sharif City Polyclinic. The assessor will be completely blind to outcomes

Participants/Inclusion and exclusion criteria

Inclusion Criteria: Age 30-50 years individuals, Male and female both, Having Metabolic syndrome
Exclusion Criteria: Type I diabetes, Heart failure, Renal problems, Malabsorption syndrome, History of bariatric surgery, Participants who were taking weight loss medications, Smoker, alcohol intake, Pregnant or lactating

Intervention groups

The participant will be divided into two groups. Both groups will follow two different supervised exercise training programs. Group A follows Endurance exercises: 30 min per day of endurance exercise training on the treadmill, intensity will be adjusted through HRmax (heart rate maximum). Group B follows Resistance exercises: exercise starts with 30% repetition maximum of resistance exercise training on multiple exercise units, 3 sets of 9 exercises, six times per week with 10 repetitions, 1 min rest between sets. The load will be adjusted every week according to the 70% 1RM rule. 9 resistance exercises that will be followed during 12 weeks on multiple exercise units are listed below:
1. Front raises
2. Shoulder shrug
3. Bicep curl
4. Seated dumbbell press
5. Lateral raises
6. Pull down
7. Leg extension curl

8. Seated row
9. Chest press

Main outcome variables

blood pressure, sugar level (HbA1c), lipid profile (triglyceride, high and low density lipid), uric acid levels, pain

General information

Reason for update

I made some minor mistakes when registering the trial last time. Trial completed

Acronym

RCT

IRCT registration information

IRCT registration number: **IRCT20210704051785N2**

Registration date: **2022-09-26, 1401/07/04**

Registration timing: **registered_while_recruiting**

Last update: **2023-07-23, 1402/05/01**

Update count: **1**

Registration date

2022-09-26, 1401/07/04

Registrant information

Name

Sarwat Anees

Name of organization / entity

Sharif Medical and Dental College

Country

Pakistan

Phone

+92 42 35397101

Email address

sarwatasifmehmood@gmail.com

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2022-09-01, 1401/06/10

Expected recruitment end date

2022-12-30, 1401/10/09

Actual recruitment start date

2022-09-01, 1401/06/10

Actual recruitment end date

2022-12-30, 1401/10/09

Trial completion date

2023-04-01, 1402/01/12

Scientific title

Effects of Resistance Training Versus Endurance Training on Hyperlipidemia, Uric Acid and Glucose levels In Patients with Metabolic Syndrome: a randomized clinical trial

Public title

which exercise can reduce blood pressure, sugar and joint pain

Purpose

Treatment

Inclusion/Exclusion criteria**Inclusion criteria:**

having metabolic syndrome according to ATP III CRITERIA
Both gender age 30 to 50 years

Exclusion criteria:

Type I diabetes Heart failure Renal problems Mal-absorption syndrome History of bariatric surgery
Participants who were taking weight loss medications
Smoker, alcohol intake Pregnant or lactation

Age

From **30 years** old to **50 years** old

Gender

Both

Phase

N/A

Groups that have been masked

- Outcome assessor

Sample size

Target sample size: **64**

Actual sample size reached: **64**

Randomization (investigator's opinion)

Randomized

Randomization description

Sealed envelope method will be used for random allocation. 64 sealed envelopes (32 for Group A and 32 for Group B) will be prepared. 32 envelopes will contain letter A, 32 envelopes will contain letter B on a card. Patient will be asked to choose one envelope. Treatment will be given according to treatment group (Group A: control, Group B: experiment).

Blinding (investigator's opinion)

Single blinded

Blinding description

Senior physiotherapist will assess patient before and after treatment. Senior physiotherapist/assessor will be completely blinded about patient allocation group (control/intervention).

Placebo

Not used

Assignment

Parallel

Other design features

no

Secondary Ids

empty

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

Ethics committee of sharif medical and dental college lahore

Street address

Sharif polyclinic, near doce bakers, railway road raiwind

City

Lahore

Postal code

55150

Approval date

2022-09-01, 1401/06/10

Ethics committee reference number

SMDC/SMRC/ 258-22

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

metabolic syndrome

ICD-10 code

E88.81

ICD-10 code description

Metabolic syndrome

2**Description of health condition studied**

hyperlipidemia

ICD-10 code

E78.4

ICD-10 code description

Other hyperlipidemia

3**Description of health condition studied**

diabetes

ICD-10 code

E08

ICD-10 code description

Diabetes mellitus due to underlying condition

Primary outcomes

1

Description

Hyperlipidemia

Timepoint

hyperlipidemia will be measured before and after 12 weeks of treatment.

Method of measurement

hyperlipidemia will be measured through laboratory blood test.

2

Description

sugar levels

Timepoint

sugar levels will be measured before and after 12 weeks of treatment.

Method of measurement

sugar levels will be measured through laboratory blood test.

3

Description

uric acid

Timepoint

uric acid will be measured before and after 12 weeks of treatment.

Method of measurement

uric acid will be measured through laboratory blood test.

4

Description

waist circumference

Timepoint

waist circumference will be measured before and after 12 weeks of treatment.

Method of measurement

waist circumference will be measured with measuring tape.

5

Description

blood pressure

Timepoint

blood pressure will be measured before and after 12 weeks of treatment.

Method of measurement

blood pressure will be measured through mercury blood pressure apparatus.

Secondary outcomes

1

Description

pain

Timepoint

pain will be measured before and after 12 weeks of treatment.

Method of measurement

pain will be measured through visual analogue scale.

2

Description

body mass index

Timepoint

body mass index will be measured before and after 12 weeks of treatment.

Method of measurement

body mass index will be measured by measuring height and weight of individual.

3

Description

VO2MAX

Timepoint

vo2max will be measured before and after 12 weeks of treatment.

Method of measurement

vo2max will be measured by rockport walking fitness test.

Intervention groups

1

Description

Intervention group: follows Resistance exercises(6 days a week): exercise starts with 30% repetition maximum of resistance exercise training on multiple exercise units, 3 sets of 9 exercises, six times per week with 10 repetitions, 1 min rest between sets. The load will be adjusted every month according to the 70% 1RM rule.9 resistance exercises that will be followed during 12 weeks on multiple exercise units are listed below1. Front raises2. Shoulder shrug3. Bicep curl4. Seated dumbbell press5. Lateral raises6. Pull down7. Leg extension curl8. Seated row9. Chest press23

Category

Treatment - Other

2

Description

control group: Endurance exercises: 30 min per day(6 days a week) of endurance exercise training on the treadmill, intensity will be adjusted through HRmax.

Category

Treatment - Other

Recruitment centers

1

Recruitment center

Name of recruitment center

Punjab Social Security Health Management Company
Hospital, Raiwind, Lahore

Full name of responsible person

Sarwat Anees

Street address

Sharif polyclinic, near doce bakers, railway road,
raiwind

City

Raiwind

Postal code

55150

Phone

+92 303 4846498

Email

sarwataneesphysio@gmail.com

Web page address

No

Title of funding source

sarwat anees

Proportion provided by this source

100

Public or private sector

Private

Domestic or foreign origin

Domestic

Category of foreign source of funding

empty

Country of origin

Type of organization providing the funding

Other

2

Recruitment center

Name of recruitment center

sharif medical city polyclinic, raiwind.

Full name of responsible person

Sarwat Anees

Street address

Sharif polyclinic, near doce bakers, railway road,
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+92 42 37860122

Email

sarwataneesphysio@gmail.com

Web page address

Person responsible for general inquiries

Contact

Name of organization / entity

Sharif Medical and Dental College

Full name of responsible person

Fozia Butt

Position

Assistant Professor

Latest degree

Medical doctor

Other areas of specialty/work

Medical Education

Street address

Sharif polyclinic, near doce bakers, railway road
raiwind, Sharif polyclinic

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Province

Punjab

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Email

sarwatasifmehmood@gmail.com

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

sharif medical and dental college

Full name of responsible person

Sarwat Anees

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+92 42 37860122

Email

sarwatasifmehmood@gmail.com

Grant name

Grant code / Reference number

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

Person responsible for scientific inquiries

Contact

Name of organization / entity

Punjab Social Security Health Management Company
Hospital

Full name of responsible person

Sarwat Anees

Position

Physiotherapist

Latest degree

Master

Other areas of specialty/work

Physiotherapy

Street address

Sharif Polyclinic, near Doce Bakers, Railway Road,
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Person responsible for updating data

Contact

Name of organization / entity
Punjab Social Security Health Management Company
Hospital
Full name of responsible person
Sarwat Anees
Position
Physiotherapist
Latest degree
Master
Other areas of specialty/work
Physiotherapy
Street address
Sharif Polyclinic, near Doce Bakers, Railway Road,
Raiwind

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

No - There is not a plan to make this available

Statistical Analysis Plan

No - There is not a plan to make this available

Informed Consent Form

No - There is not a plan to make this available

Clinical Study Report

No - There is not a plan to make this available

Analytic Code

No - There is not a plan to make this available

Data Dictionary

No - There is not a plan to make this available