Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 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 evaluates 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 raiwind. 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 22 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 lactation22

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 bariarrtic 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

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Raiwind

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55150

Phone
+92 303 4846498

Email
sarwataneesphysio@gmail.com

Web page address

2

Recruitment center

Name of recruitment center
sharif medical city polyclinic, raiwind.

Full name of responsible person
Sarwat Anees

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Web page address

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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Grant name

Grant code / Reference number

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

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

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Contact

Name of organization / entity
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Sarwat Anees

Position
Physiotherapist

Latest degree
Master

Other areas of specialty/work
Physiotherapy

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Person responsible for updating data

Contact
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Full name of responsible person
Sarwat Anees
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Physiotherapist
Latest degree
Master
Other areas of specialty/work
Physiotherapy
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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
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