

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

09 Jun 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 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  
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**

## 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,  
raiwind  
**City**  
Raiwind  
**Postal code**  
55150  
**Phone**  
+92 303 4846498  
**Fax**  
+92 42 37860122  
**Email**  
sarwataneesphysio@gmail.com  
**Web page address**

## Sponsors / Funding sources

### 1

#### Sponsor

**Name of organization / entity**  
sharif medical and dental college  
**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  
**Fax**  
+92 42 37860122  
**Email**  
sarwatasifmehmood@gmail.com  
**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  
**Street address**  
Sharif polyclinic, near doce bakers, railway road  
raiwind, Sharif polyclinic  
**City**  
Lahore  
**Province**  
Punjab  
**Postal code**  
55150  
**Phone**  
+92 42 86586523  
**Fax**  
+92 42 37860122  
**Email**  
sarwatasifmehmood@gmail.com

## 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,  
Raiwind

**City**

Lahore

**Province**

Punjab

**Postal code**

55150

**Phone**

+92 303 4846498

**Email**

sarwatasifmehmood@gmail.com

**City**

Lahore

**Province**

Punjab

**Postal code**

55150

**Phone**

+92 303 4846498

**Email**

sarwatasifmehmood@gmail.com

**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