

Clinical Trial Protocol

Iranian Registry of Clinical Trials

12 Sep 2026

Effects of Yoga and Aerobic Exercise on Lipid profile and Inflammatory Markers in Obese Women with Type 2 Diabetes: A Randomized Controlled Trial

Protocol summary

Study aim

To compare the effects of 12 weeks of yoga and moderate-intensity aerobic exercise with a control group on lipid profile and inflammatory markers in obese women with type 2 diabetes.

Design

Prospective, open-label, randomized controlled clinical trial with three parallel groups. Thirty participants will be allocated equally to yoga, aerobic exercise, and control groups using computer-generated simple randomization. No placebo will be used, and the study will have no pharmaceutical phase.

Settings and conduct

Eligible women will be recruited from diabetes clinics. After written consent and baseline assessments, participants will be randomized into three groups. Exercise sessions will be supervised by qualified instructors. Blood sampling and assessments will be performed before and after the 12-week intervention under standardized conditions.

Participants/Inclusion and exclusion criteria

Thirty women aged 46–60 years with obesity, confirmed type 2 diabetes, stable glycemic control, ability to exercise, and written informed consent will be included. Cardiovascular disease, renal dysfunction, neuropathy, limiting musculoskeletal disorders, hormonal disorders, and chronic inflammatory or metabolic disorders will be exclusion criteria.

Intervention groups

Yoga group: structured postures, breathing, and mindfulness exercises, three 60-minute sessions weekly for 12 weeks. Aerobic group: moderate-intensity aerobic exercise, three 60-minute sessions weekly for 12 weeks. Control group: no structured exercise program and continuation of usual care.

Main outcome variables

Changes in total cholesterol, triglycerides, LDL

cholesterol, HDL cholesterol, LDL/HDL ratio, cholesterol/HDL ratio, high-sensitivity C-reactive protein, and neutrophil-to-lymphocyte ratio from baseline to the end of the 12-week intervention.

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20260324069010N1**

Registration date: **2026-07-17, 1405/04/26**

Registration timing: **prospective**

Last update: **2026-07-17, 1405/04/26**

Update count: **0**

Registration date

2026-07-17, 1405/04/26

Registrant information

Name

Hamed zamanpoor

Name of organization / entity

Tehran university

Country

Iran (Islamic Republic of)

Phone

+98 45 3275 4013

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Recruitment status

recruiting

Funding source

Expected recruitment start date

2026-07-23, 1405/05/01

Expected recruitment end date

2026-10-23, 1405/08/01

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Effects of Yoga and Aerobic Exercise on Lipid profile and Inflammatory Markers in Obese Women with Type 2 Diabetes: A Randomized Controlled Trial

Public title

Effects of Yoga and Aerobic Exercise on Blood Lipids and Inflammation in Obese Women with Type 2 Diabetes

Purpose

Prevention

Inclusion/Exclusion criteria**Inclusion criteria:**

Female sex Age more than 45 Confirmed diagnosis of type 2 diabetes mellitus Obesity defined as a body mass index of 30 kg/m² or higher Stable glycemic control Ability to participate safely in the exercise program Provision of written informed consent

Exclusion criteria:**Age**

From **45 years** old

Gender

Female

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **30**
More than 1 sample in each individual
Number of samples in each individual: **2**
Two blood samples will be collected from each participant: one at baseline before the intervention and one after completion of the 12-week intervention.

Randomization (investigator's opinion)

Randomized

Randomization description

Participants will be randomly allocated in a 1:1:1 ratio to the yoga, aerobic exercise, or control group using a computer-generated simple randomization sequence.

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 Committee of the Faculty of Sport Sciences and Health, University of Tehran

Street address

Faculty of Sport Sciences and Health, University of Tehran, Between 15th and 16th Streets, North Kargar Street, Above Jalal Al-e Ahmad Intersection, Opposite University of Tehran Dormitory, Tehran, Iran

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Approval date

2024-11-25, 1403/09/05

Ethics committee reference number

IR.UT.SPORT.REC.1403.101

Health conditions studied

1

Description of health condition studied

Type 2 diabetes mellitus in obese women

ICD-10 code

E08

ICD-10 code description

Diabetes mellitus due to underlying condition

Primary outcomes

1

Description

Serum total cholesterol; serum triglycerides; LDL cholesterol; HDL cholesterol; LDL/HDL ratio; total cholesterol/HDL ratio; high-sensitivity C-reactive protein (hs-CRP); neutrophil-to-lymphocyte ratio (NLR).

Timepoint

At baseline before the intervention and after completion of the 12-week intervention.

Method of measurement

Venous blood samples will be analyzed using standardized laboratory methods for total cholesterol, triglycerides, LDL cholesterol, HDL cholesterol, and hs-CRP. The LDL/HDL and total cholesterol/HDL ratios will be calculated from the measured values. Neutrophil and lymphocyte counts will be measured using an automated hematology analyzer (Sysmex KX-21N, Japan), and NLR will be calculated by dividing the absolute neutrophil count by the absolute lymphocyte count.

Secondary outcomes

empty

Intervention groups

1

Description

Intervention group: yoga

Category

Other

2

Description

Intervention group: aerobic

Category

Other

3

Description

Control group:

Category

N/A

Recruitment centers

1

Recruitment center

Name of recruitment center

Faculty of Sport Sciences and Health, University of Tehran

Full name of responsible person

Hamed Nazari Rad Gigloo

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Faculty of Sport Sciences and Health, University of Tehran, North Kargar Street, Between 15th and 16th Streets, Tehran, Iran

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Self-funded by the Principal Investigator

Full name of responsible person

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No. 221, Seyed Razi 35 Street, Mashhad, Iran

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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

Personal funds of the Principal Investigator

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

Persons

Person responsible for general inquiries

Contact

Name of organization / entity

Tehran University of Medical Sciences

Full name of responsible person

rahman soori

Position

full professor

Latest degree

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Other areas of specialty/work

Others

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Sharing plan

Deidentified Individual Participant Data Set (IPD)

No - There is not a plan to make this available

Justification/reason for indecision/not sharing IPD

Deidentified individual participant data will not be shared because specific consent for sharing individual-level data with external researchers has not been obtained, and the data will be retained confidentially by the research team in accordance with ethical and institutional requirements.

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