Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 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

Recruitment complete

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
City
tehran
Province
Tehran
Postal code
1439813117
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
Hamed Nazari Rad Gigloo
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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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Person responsible for updating data

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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