Clinical Trial Protocol
Iranian Registry of Clinical Trials

08 Nov 2026

The effects of 12 weeks of resistance training, 24 weeks of detraining, and 24 weeks of retraining on the serum levels of FGF6 and Myod in middle-aged men and women

Protocol summary

Study aim

The effect of resistance training, non-training, and retraining on the serum levels of FGF6 and Myod in middle-aged men and women.

Design

40 eligible middle-aged men and women will be randomly selected and based on the anthropometric and training indicators, they will be placed in two intervention groups (30 people) and control (10 people), the present study is single-blinded.

Settings and conduct

This study will be conducted in the Takhti sports complex located in Arak city. The training group performs 12 weeks of resistance training, 24 weeks of non-training, and again 12 weeks of resistance training in 3 sessions per week with an intensity of 65 to 80% of maximum strength. 48 hours before and after the intervention, blood samples and plasma levels of FGF-6 and MyoD will be checked. This study is single-blinded due to the lack of knowledge of the evaluators and data analysts about the investigated groups

Participants/Inclusion and exclusion criteria

Inclusion criteria: having good health, willingness to participate in research, and no sports activity in the 12 months before the present study Exclusion criteria: the presence of any chronic disease, Having musculoskeletal and joint injuries, Not having age requirements

Intervention groups

The training group will consecutively complete a period of training (12 weeks), no training (24 weeks), and a retraining period (12 weeks) at 65-80% of their maximal strength. The control group will only do their normal physical activity during all three periods.

Main outcome variables

Changes in the serum concentrations of Myod and FGF6 following a period of resistance training, no training, and retraining

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20231208060297N1**
Registration date: **2024-01-28, 1402/11/08**
Registration timing: **registered_while_recruiting**

Last update: **2024-01-28, 1402/11/08**
Update count: **0**

Registration date

2024-01-28, 1402/11/08

Registrant information

Name

Mohsen Yaghoubi

Name of organization / entity

The University of Lorestan

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2023-11-21, 1402/08/30

Expected recruitment end date

2024-03-18, 1402/12/28

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title
The effects of 12 weeks of resistance training, 24 weeks of detraining, and 24 weeks of retraining on the serum levels of FGF6 and Myod in middle-aged men and women

Public title
The effects of resistance training, detraining, and retraining on the serum levels of FGF6 and Myod in middle-aged men and women

Purpose
Supportive

Inclusion/Exclusion criteria

Inclusion criteria:
having physical health Willingness to participate in research Failure to perform any type of endurance or strength training in the 12 months prior to the study

Exclusion criteria:
Having any type of chronic disease Musculoskeletal injury and joint disorders Use of any type of medicine or supplement

Age
From **30 years** old to **59 years** old

Gender
Both

Phase
N/A

Groups that have been masked

- Outcome assessor
- Data analyser

Sample size
Target sample size: **40**

Randomization (investigator's opinion)
Not randomized

Randomization description

Blinding (investigator's opinion)
Single blinded

Blinding description
In the current study, only the group that takes blood samples from the subjects and extracts the desired factors in the laboratory, as well as the group that analyzes the extracted data, are kept blind to the study.

Placebo
Not used

Assignment
Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee
The Ethics Committee of Sports Sciences Research Institute (SSRI)

Street address
Unit 3, Vista Building, Gulshan Alley, Mirzai Shirazi Boulevard, Sobhani

City
Arak

Province
Markazi

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3815963747

Approval date
2023-11-20, 1402/08/29

Ethics committee reference number
IR.SSRC.REC.1402.232

Health conditions studied

1

Description of health condition studied
Examining changes in serum levels of FGF6 and Myod after 12 weeks of resistance training, 24 weeks of non-training and 12 weeks of retraining in middle-aged people

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description
Increase in serum concentration of FGF6 after 12 weeks of resistance training in middle-aged women and men

Timepoint
At the beginning of the study, 12 weeks after the first intervention, 24 weeks after the second intervention, and 12 weeks after the third intervention

Method of measurement
ELISA kit

2

Description
Increase in serum concentration of Myod after 12 weeks of resistance training in middle-aged women and men

Timepoint
At the beginning of the study, 12 weeks after the first intervention, 24 weeks after the second intervention, and 12 weeks after the third intervention

Method of measurement
ELISA kit

Secondary outcomes

empty

Intervention groups

1

Description
Intervention group: Subjects under the supervision of an

experienced trainer participated in a strength training program of three sessions per week for 12 weeks. Each training session consisted of a dynamic warm-up, cool-down phase, and a strength program that lasted approximately 60 minutes. This protocol includes upper body exercises (shoulder press, wide-grip lat pulldown, crunches, chest press, barbell Croul) and lower body (leg press on a 45-degree table, leg press on a 45-degree table, front leg of the machine) with sets and repetitions with progress It was from 2 to 3 and respectively and from 15 to 8 repetitions. The training load intensity was gradually increased from 65% of 1RM to 80% of 1RM. Every four weeks, the 1RM test was repeated for the chest and leg press movements to determine the maximum weight that could be correctly performed in one repetition to evaluate strength changes. After the training period, the subjects are asked to resume their normal physical activities as before the start of the study and not participate in strength training for 24 weeks. A 24-week no-training period is followed by a 12-week retraining phase, using the same resistance training program with starting loads of each exercise appropriate to the physical condition. 48 hours before and after the intervention, blood will be taken from all the subjects and the plasma levels of FGF-6 and MyoD will be checked using the desired kits and by ELISA method.

Category
Other

Recruitment centers

1

Recruitment center

Name of recruitment center
Places and organizations
Full name of responsible person
Mohsen Yaghoubi
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Sponsors / Funding sources

1

Sponsor

Name of organization / entity
The university of Lorestan
Full name of responsible person
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Grant name

Grant code / Reference number

Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
The university of Lorestan
Proportion provided by this source
100
Public or private sector
Public
Domestic or foreign origin
Domestic
Category of foreign source of funding
empty
Country of origin

Type of organization providing the funding
Academic

Person responsible for general inquiries

Contact

Name of organization / entity
The university of Lorestan
Full name of responsible person
MohsenYaghoubi
Position
PHD student
Latest degree
Ph.D.
Other areas of specialty/work
Sport Medicine
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Sharing plan

Deidentified Individual Participant Data Set (IPD)
Yes - There is a plan to make this available

Study Protocol
Yes - There is 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
Yes - There is 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

Title and more details about the data/document
After the publication of scientific work, all information can be shared after identifying people

When the data will become available and for how long
Looking forward to printing the results

To whom data/document is available
People working in academic institutions and other community members will have access

Under which criteria data/document could be used
Having a research background in the field of the current study and practical use in the field of health for middle-aged and elderly people in society

From where data/document is obtainable
To receive data, write to the email address: mohsen.yaqoubi@gmail.com

What processes are involved for a request to access data/document
Request information only in the form of e-mail and information will be sent as soon as possible

Comments