

Clinical Trial Protocol

Iranian Registry of Clinical Trials

16 Jul 2026

Comparison of delayed-onset muscle soreness between two groups of healthy untrained female students of Semnan University of Medical Sciences, Does oestrogen have a prophylactic effect?

Protocol summary

Summary

The purpose of this study was to investigate the protective effect of Oestrogen on muscle soreness. 24 healthy untrained female students, ranged between 18-24 years old, voluntarily participated in this study. 12 subjects were in mid-luteal phase of menstrual cycle (high oestrogen level) and other 12 subjects were in mid-follicular phase of menstrual cycle (low oestrogen level). All participants were informed of the procedures and signed written consent before participation. To induce delayed-onset muscle soreness, all participants walked on the Enraf treadmill, declined 10 degrees, with 4 km/h speed, for 30 minutes. This type of walking was accompanied with eccentric contraction of quadriceps and gluteus maximus and concentric contraction of gastrocnemius muscle. Maximal voluntary isometric strength of right and left quadriceps, pressure pain threshold, perceived pain, creatine kinase activity of serum, and thigh circumference were measured and compared in both groups, before intervention, and 24 and 48 hours after the intervention.

General information

Acronym

IRCT registration information

IRCT registration number: **IRCT138903284203N1**
Registration date: **2010-04-21, 1389/02/01**
Registration timing: **retrospective**

Last update:

Update count: **0**

Registration date

2010-04-21, 1389/02/01

Registrant information

Name

Atefeh Aminian Far

Name of organization / entity

Semnan University of Medical Sciences

Country

Iran (Islamic Republic of)

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Recruitment status

Recruitment complete

Funding source

Semnan University of Medical Sciences

Expected recruitment start date

2010-04-21, 1389/02/01

Expected recruitment end date

2010-06-22, 1389/04/01

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Comparison of delayed-onset muscle soreness between two groups of healthy untrained female students of Semnan University of Medical Sciences, Does oestrogen have a prophylactic effect?

Public title

Muscle Soreness and Protective Effect of Oestrogen

Purpose

Prevention

Inclusion/Exclusion criteria

Inclusion criteria: 1- aged between 18-25years, 2- giving written consent
Exclusion criteria: 1- Neuro-muscular disease, 2- Cardiovascular disease, 3- Diabetes mellitus,

4- Renal failure, 5- Acute herniation, 6- Discopathy, 7- High blood pressure, 8- Asthma and respiratory problems, 9- Acute infection, 10- Recent fracture in skeletal system, 11- Pin, plaques and other fixations in lower limbs, 12- Total hip arthroplasty, 13- Total knee arthroplasty, 14- Cardiac pacemaker, 15- Pregnancy, 16- Previous history of muscular injection a week before intervention, 17- Previous history of participation in body building program, 18- Previous history of participation in aerobic program, 19- unfinished trial sessions, 20- any reluctances to continue and willing to quit the study

Age

From **18 years** old to **25 years** old

Gender

Female

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **24**

Randomization (investigator's opinion)

Not randomized

Randomization description

Blinding (investigator's opinion)

Not blinded

Blinding description

Placebo

Not used

Assignment

Single

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Chancellor dean of Semnan University of Medical Sciences

Street address

Basij Blvd, Semnan University of Medical Sciences

City

Semnan

Postal code

3519899951

Approval date

2010-06-13, 1389/03/23

Ethics committee reference number

الف-5423

Health conditions studied

1

Description of health condition studied

Muscle soreness

ICD-10 code

M79.6

ICD-10 code description

Pain in limb

Primary outcomes

1

Description

Creatine kinase enzyme of serum

Timepoint

Before intervention, 24 and 48 hours after intervention

Method of measurement

Blood sample

Secondary outcomes

1

Description

Maximal voluntary isometric strength of quadriceps muscle

Timepoint

before intervention, 24 and 48 hours after intervention

Method of measurement

With Loadcell, in 100 degrees flexion of knee

2

Description

Perceived pain

Timepoint

Before intervention, 24 and 48 hours after intervention

Method of measurement

A 10-mm Visual Analogue Scale (VAS)

3

Description

Pressure pain threshold

Timepoint

Before intervention, 24 and 48 hours after intervention

Method of measurement

A 20 ml syringe with a spring inside, rounded tip

4

Description

Thigh circumference

Timepoint

Before intervention, 24 and 48 hours after intervention

Method of measurement

A tape measure, at 5, 10 and 15 cm above patella

Intervention groups

1

Description

Doing eccentric exercises for half an hour on treadmill

until feeling soreness
Category
Treatment - Drugs

Recruitment centers

1

Recruitment center

Name of recruitment center

Rehabilitation Research Center, Semnan University of Medical Sciences

Full name of responsible person

Atefeh Aminian-Far

Street address

Rehabilitation Faculty, Semnan University of Medical Science, Kilometre 5 Damghan road

City

Semnan

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Vice-Chancellor for research, Semnan University of Medical Sciences

Full name of responsible person

Dr. Mohammad Faranoush

Street address

Vice-Chancellor for research, Semnan University of Medical Sciences, Basij Blvd,

City

Semnan

Grant name**Grant code / Reference number****Is the source of funding the same sponsor organization/entity?**

Yes

Title of funding source

Vice-Chancellor for research, Semnan University of Medical Sciences

Proportion provided by this source

100

Public or private sector

empty

Domestic or foreign origin

empty

Category of foreign source of funding

empty

Country of origin**Type of organization providing the funding**

empty

Person responsible for general inquiries

Contact**Name of organization / entity**

Semnan University of Medical Sciences

Full name of responsible person

Atefeh Aminian-Far

Position

MS, instructor, Member of the university

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Sharing plan

Deidentified Individual Participant Data Set (IPD)
empty
Study Protocol
empty

Statistical Analysis Plan
empty
Informed Consent Form
empty
Clinical Study Report
empty
Analytic Code
empty
Data Dictionary
empty