Clinical Trial Protocol
Iranian Registry of Clinical Trials

08 Nov 2026

Effect of High-intensity circuit training on serum Myogenin and Myostatin adolescents soccer players

Protocol summary

Study aim

Determination of the effect of high-intensity circuit training on serum myogenin and myostatin in adolescent soccer players

Design

The clinical trial, with a sample size of 21, consisted of a training (n = 11) and a control (n = 10) group. The groups were randomized by the lottery. The present study is a single blinded .

Settings and conduct

In this study, 21 male adolescents soccer players aged 14-16 years were selected and randomly divided into two training and control groups. Pre-test and post-test the blood samples were taken from all subjects in rest time and one hour after maximal aerobic activity. All exercises were performed at the Khaje Nasir Tusi University Aerospace College Sports Complex. Maximum aerobic tests and blood sampling were performed at the physical education laboratory of Tehran university.

Participants/Inclusion and exclusion criteria

Inclusion criteria: 1. Adolescents soccer player 14-16 years. 2. Provide physician-approved cardiopulmonary health certification. 3. Being skilled in soccer (at least 2 years experience in the league) 4. Not using drugs or sports supplements 3 months prior to intervention. 5. The gender of the subjects is male. 6. Use the same standardized diet 2 days before pre-test and post-test. 7. Full consent of parents and subjects to perform tests, tests, and interventions. Exclusion criteria: 1. Physical injuries such as muscle tear and knee ligament rupture 2. taking any medication or exercise supplement.

Intervention groups

1.Exercise group who trained for 8 weeks, 3 days a week, with 80% of maximal cardiac output in the first 4 weeks and 85 to 90% of maximal cardiac output in the second four weeks. 2. The control group continued the usual routine of soccer training (training volume in both groups was equalized)

Main outcome variables

Serum levels of Myogenin and Myostatin of the male adolescents' soccer player.

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20200228046632N1**
Registration date: **2020-03-09, 1398/12/19**
Registration timing: **retrospective**

Last update: **2020-03-09, 1398/12/19**
Update count: **0**

Registration date

2020-03-09, 1398/12/19

Registrant information

Name

Amirhosein Ziyaiyan

Name of organization / entity

The university of Tehran

Country

Iran (Islamic Republic of)

Phone

+98 56 3244 4499

Email address

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2018-12-23, 1397/10/02

Expected recruitment end date

2020-01-01, 1398/10/11

Actual recruitment start date

2018-12-24, 1397/10/03

Actual recruitment end date

2019-01-01, 1397/10/11

Trial completion date

2019-03-18, 1397/12/27

Scientific title

Effect of High-intensity circuit training on serum Myogenin and Myostatin adolescents soccer players

Public title

The effect of high intensity circuit training on two muscle growth factors

Purpose

Other

Inclusion/Exclusion criteria

Inclusion criteria:

Male gender Presentation of a cardio-respiratory health certificate by a physician All subjects are in the same range of puberty (by prediction of the age of peak Height Velocity in the age range of 14 to 14.5 years).

Exclusion criteria:

Parents 'or subjects' dissatisfaction with the test Sports injuries: Muscle rupture, knee ligament rupture Consumption of any type medication or sport supplement

Age

From **14 years** old to **16 years** old

Gender

Male

Phase

N/A

Groups that have been masked

- Participant

Sample size

Target sample size: **21**

Actual sample size reached: **18**

Randomization (investigator's opinion)

Randomized

Randomization description

Randomization was performed in this study by a simple method, individually and by lottery method. In this study, subjects were randomly divided into experimental and control groups. Before the intervention, 22 adolescent boys aged 14 to 16 years were selected after completing a physical activity questionnaire and demographic data. The subjects' names were recorded on separate sheets and placed in a draw. After each time the cards were shuffled, one card was randomly assigned to the experimental group and the control group according to the number of each subject, with the individual numbers in the control group. Then, so that the odd numbers in the control group and the even numbers were put in the experimental group. To hide the subject grouping process, we informed each subject by a letter of their group status.

Blinding (investigator's opinion)

Single blinded

Blinding description

In this study, subjects and evaluators of field and laboratory tests were kept blind to study groups. About the subjects, we informed each subject in the form of a confidential letter about all the tasks and their grouping requirements. We reported the status of the subject grouping through the code selected for each group (exercise group (1) and control group (2)) and no group names were recorded in the subjects' letters. Also the field and laboratory receiver tests did not know about the status of the subjects.

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics Committee in Research of Faculty of Physical Education and Sport Sciences - University of Teh

Street address

Faculty of physical education and sport science- between 15th and 16th streets- north kargar

City

Tehran

Province

Tehran

Postal code

1439813117

Approval date

2019-03-12, 1397/12/21

Ethics committee reference number

IR.UT.SPORT.REC.1398.015

Health conditions studied

1

Description of health condition studied

Impact of exercise protocol

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description

Serum levels of myogenin.

Timepoint

During four stages including: rest before intervention, 1 hour after maximal aerobic activity, eight weeks after intervention, and one hour after aerobic activity after 8 weeks of intervention

Method of measurement

Through ELISA KIT of the subjects' serum samples

2

Description
Serum values of myostatin.
Timepoint
During four stages including: rest before intervention, 1 hour after maximal aerobic activity, eight weeks after intervention, and one hour after aerobic activity after 8 weeks of intervention
Method of measurement
Through ELISA KIT of the subjects' serum samples

Secondary outcomes

empty

Intervention groups

1

Description
Exercise group: High-intensity circular exercises. This training protocol consists of 8 stations including 20m sweep, Swedish swim, Scott Jump, Planck Jack, Nordic, Climbers, high Knee, and Burpee. Between each station, the subjects rested for 1 minute in the first 2 weeks and 30 seconds in the following weeks. Subjects performed these exercises 3 times a week for 8 weeks. These exercises were performed in the first four weeks at 80% of the subjects' maximum heart rate. During the second four weeks, subjects were administered 85 to 90% of their maximum heart rate.
Category
N/A

2

Description
Control group: Control group subjects performed their normal football training routine. Subjects in this group, like the training group, performed their soccer training for 8 weeks, 3 sessions a week.
Category
N/A

Recruitment centers

1

Recruitment center
Name of recruitment center
Setaregan Sorkh Pooyai Iranian Soccer Club
Full name of responsible person
Meysam Keshani
Street address
School of Aerospace Engineering -Khaje Nasir Aldin Tusi University of Technology - University Boulevard - Last Turn West - Ehsan Exit - Shahid Zeinuddin Shargh Highway - Tehran.
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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
University of Tehran
Full name of responsible person
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Faculty of Physical Education And Sport Science University of Tehran - Between 15th And 16th Streets - North Karegar Street.
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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
University of Tehran
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
University of Tehran
Full name of responsible person
Mohammadreza Kordi
Position
Assistant professor
Latest degree
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Other areas of specialty/work
Sport physiology

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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
Not applicable
Informed Consent Form
Yes - There is a plan to make this available
Clinical Study Report
Not applicable
Analytic Code
Yes - There is a plan to make this available
Data Dictionary
Not applicable
Title and more details about the data/document
All information obtained from biochemical tests of each subject on the basis of individual numbers can be made available to valid researchers.
When the data will become available and for how long
12 months after publication of research results
To whom data/document is available
Authentic academic researchers
Under which criteria data/document could be used
For the purpose of follow-up, review and meta-analysis studies
From where data/document is obtainable
University of Tehran - Dr. Mohammad Reza Kurdi
What processes are involved for a request to access data/document
First, the required documentation for teaching employment at one of the universities approved by the Ministry of Science and Technology of the Islamic Republic of Iran is sent to the following e-mail address: A.ziyaiyan74@ut.ac.ir. The candidate is sent to submit a brief report on how to conduct his / her research. Then, if the researcher in charge of this study, Dr. Mohammad Reza Kurdi agrees, all the information required in a file will be kept confidential, including the names, contact numbers, addresses, and personal information of the selected researcher. This process also takes a week.
Comments