Clinical Trial Protocol
Iranian Registry of Clinical Trials

16 Sep 2026

Growth hormone, insulin-like growth factor 1, testosterone and cortisol responses to single bout of agility ladder exercise in water polo athletes

Protocol summary

Study aim
Investigating the acute response of growth hormone, testosterone, insulin-like growth factor-1, cortisol and testosterone/cortisol ratio following an agility ladder exercise session in male water polo athletes.

Design
Single-blind, parallel-group, randomized controlled trial

Settings and conduct
The participants received their intervention based on the group name. The training place was Azadi Complex in Tehran. Blood samples were taken from all participants before and after the exercise, as well as 24 and 48 hours after the exercise. At the beginning of the research, a code was assigned to each subject and in all subsequent steps, the code was used instead of their name.

Participants/Inclusion and exclusion criteria
Inclusion criteria included water polo male athletes in Tehran Azadi Sport Complex, 19-22 year old. The exclusion criteria including having blood disease, infection, allergic conditions, and use of drug, supplements or tobacco.

Intervention groups
Control group: The participants in this group warmed up at the beginning of the agility ladder exercise session, did not exercise during the session, and did cool down at the end of the session. Experimental group: This group participant will perform an agility ladder exercise session after warm up (about 40 minutes) and then performed cooling down.

Main outcome variables
Growth hormone, insulin-like growth factor 1, testosterone and cortisol

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20200409047006N1**
Registration date: **2020-04-18, 1399/01/30**
Registration timing: **retrospective**

Last update: **2020-04-18, 1399/01/30**
Update count: **0**

Registration date
2020-04-18, 1399/01/30

Registrant information

Name
Saleh Rahmati-Ahmadabad

Name of organization / entity

Country
Iran (Islamic Republic of)

Phone
+98 21 7628 1010

Email address
salehrahmati@pardisiau.ac.ir

Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2018-11-26, 1397/09/05

Expected recruitment end date
2018-12-03, 1397/09/12

Actual recruitment start date
2018-11-28, 1397/09/07

Actual recruitment end date
2018-12-06, 1397/09/15

Trial completion date
2019-03-09, 1397/12/18

Scientific title
Growth hormone, insulin-like growth factor 1, testosterone and cortisol responses to single bout of agility ladder exercise in water polo athletes

Public title
Hormonal responses to single bout of agility ladder

exercise

Purpose

Basic scienece

Inclusion/Exclusion criteria

Inclusion criteria:

Water polo athletes of Tehran Azadi Sport Complex Age limitation (19- 22 years old) Male

Exclusion criteria:

Having blood disease Having infection Having allergic conditions Use of drug Use of supplements Use of tobacco

Age

From **19 years** old to **22 years** old

Gender

Male

Phase

N/A

Groups that have been masked

- Care provider
- Investigator
- Outcome assessor
- Data analyser
- Data and Safety Monitoring Board

Sample size

Target sample size: **30**

Actual sample size reached: **30**

Randomization (investigator's opinion)

Randomized

Randomization description

Computerization was performed using a computer and a simple randomization method. The method used by the computer was that the computer selects random numbers between 0.5 and 1. Numbers less than 0.5 were in the control group and numbers greater than 0.5 were in the intervention group. Therefore, 30 subjects were randomly divided into two groups.

Blinding (investigator's opinion)

Single blinded

Blinding description

The participants were identified using the codes instead of their actual names. A third party was asked to classify the participants randomly, using the (labelled) codes. Study groups had codes instead of names. The laboratory was uninformed from name of groups and only used the codes. Groups codes were used for statistical analysis.

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics committee of Islamic Azad Universiity, Gachsaran Branch

Street address

Gachsaran Branch, Islamic Azad University, Kohgiluyeh and Boyer-Ahmad Province, Iran.

City

Gachsaran

Province

Fars

Postal code

7581863876

Approval date

2020-04-12, 1399/01/24

Ethics committee reference number

IR.IAU.IAUG.REC.1399.007

Health conditions studied

1

Description of health condition studied

Agility ladder exercise

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description

Blood growth hormone concentration

Timepoint

Before and after exercise, and 24 and 48 hours after exercise session.

Method of measurement

ELISA kit

2

Description

Blood testosterone hormone concentration

Timepoint

Before and after exercise, and 24 and 48 hours after exercise session.

Method of measurement

ELISA kit

3

Description

Blood cortisol hormone concentration

Timepoint

Before and after exercise, and 24 and 48 hours after exercise session.

Method of measurement

ELISA kit

4

Description
Blood insulin-like growth factor-1 hormone concentration
Timepoint
Before and after exercise, and 24 and 48 hours after exercise session.
Method of measurement
ELISA kit

Secondary outcomes

empty

Intervention groups

1

Description
Control group: There are 15 participants in this group. The participants in this group warmed up at the beginning of the agility ladder exercise session, did not exercise during the session, and performed cool down at the end of the session.
Category
N/A

2

Description
Experimental group: There are 15 participants in this group. This group participants performed an agility ladder exercise session after warm up (about 40 minutes) and then performed cool down.
Category
Other

Recruitment centers

1

Recruitment center
Name of recruitment center
Azadi Sport Complex
Full name of responsible person
Ghodratollah Seif
Street address
Karaj highway, Tehran, IR Iran
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1484813111
Phone
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Email
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http://www.azadisportcomplex.com/contact_info/

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Islamic Azad University
Full name of responsible person
Ali Niazi PhD
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Sohanak, Cental Tehran Branch, Islamic Azad University
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Fax
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Email
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Web page address
http://iauctb.ac.ir/fa
Grant name
Islamic Azad University, Central Tehran Branch
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Islamic Azad University
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
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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
Yes - There is a plan to make this available
Informed Consent Form
Yes - There is a plan to make this available
Clinical Study Report
Yes - There is a plan to make this available
Analytic Code
Yes - There is a plan to make this available
Data Dictionary
Not applicable
Title and more details about the data/document
The data of the dependent research variables can be published as code and without name of the participants.
When the data will become available and for how long
They will be available after article submission.
To whom data/document is available
Researchers
Under which criteria data/document could be used
Data is available for re-analysis by researchers
From where data/document is obtainable
Corresponding author. Dr. Saleh Rahmati-Ahmadabad. Department of Physical Education, Pardis Branch, Islamic Azad University, Pardis, Iran
What processes are involved for a request to access data/document
Send the request by email to the corresponding author.
Comments