

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

08 Jul 2026

### The effect of resistance exercise with different rest intervals between sets on the apoptosis biomarkers in athletes

#### Protocol summary

##### Summary

Aim: This study will conduct to determine the effect of resistance exercise with different rest intervals between sets on the apoptosis biomarkers in athletes. Methods: Fifteen trained male (aged 18-29 years) will perform two experimental sessions that consisted of resistance exercise in six sessions resistance exercise performed for four sets with 85% 1RM load. On experimental day 1, the subjects performed all exercises with the 1-minute rest between sets, then they did all the exercises with the 3-minute rest on test day 2 (at least 72 hours later). Blood samples will obtain pre-exercise, immediately post-exercise, 3 and 24 hours post-exercise for the measurement of the serum protein-p53, Caspase-3, Caspase-9, Insulin-like growth factor 1(IGF-1), Creatine kinase and plasma Lactate concentrations.

#### General information

##### Acronym

ApopTra2013

##### IRCT registration information

IRCT registration number: **IRCT2013020612386N1**

Registration date: **2013-03-17, 1391/12/27**

Registration timing: **prospective**

Last update:

Update count: **0**

##### Registration date

2013-03-17, 1391/12/27

##### Registrant information

###### Name

Hassan Faraji

###### Name of organization / entity

Islamic Azad University, Mariwan Branch

###### Country

Iran (Islamic Republic of)

##### Phone

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##### Email address

farajienator@gmail.com

##### Recruitment status

**Recruitment complete**

##### Funding source

The research will funded by Islamic Azad University, Mariwan Branch.

##### Expected recruitment start date

2013-04-08, 1392/01/19

##### Expected recruitment end date

2014-02-07, 1392/11/18

##### Actual recruitment start date

empty

##### Actual recruitment end date

empty

##### Trial completion date

empty

##### Scientific title

The effect of resistance exercise with different rest intervals between sets on the apoptosis biomarkers in athletes

##### Public title

Effect of exercise on apoptosis biomarkers

##### Purpose

Basic science

##### Inclusion/Exclusion criteria

Inclusion criteria: males; athletes; aged 18-29 years; healthy; without consume any anti-inflammatory or oxidative supplementation (during 6 months prior to the study). Exclusion criteria: smoking; chronic diseases such as diabetes, cardiovascular disease, atherosclerosis and hypertension; muscle injures; uncontrolled intake of oxidative and anti-inflammatory drugs supplements and stimulants (during the period).

##### Age

From **18 years** old to **29 years** old

**Gender**

Male

**Phase**

N/A

**Groups that have been masked**

No information

**Sample size**

Target sample size: **15**

**Randomization (investigator's opinion)**

N/A

**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**

Tabriz University of Medical Sciences

**Street address**

Golgasht St. Daneshgah St. Tabriz, East Azarbaijan,  
Iran. Islamic republic of Iran

**City**

Tabriz

**Postal code****Approval date**

2013-01-07, 1391/10/18

**Ethics committee reference number**

91171

**Health conditions studied****1****Description of health condition studied**

Encounter exercise for healthy administratin

**ICD-10 code**

Z02

**ICD-10 code description**

Examination and encounter for administrative purposes

**Primary outcomes****1****Description**

Serum protein-p53

**Timepoint**

Pre-exercise, immediately post-exercise, 3 and 24 hours

post-exercise

**Method of measurement**

ELISA

**2****Description**

Caspase-3

**Timepoint**

Pre-exercise, immediately post-exercise, 3 and 24 hours  
post-exercise

**Method of measurement**

ELISA

**3****Description**

Caspase-9

**Timepoint**

Pre-exercise, immediately post-exercise, 3 and 24 hours  
post-exercise

**Method of measurement**

ELISA

**4****Description**

Insulin-like growth factor 1(IGF-1)

**Timepoint**

Pre-exercise, immediately post-exercise, 3 and 24 hours  
post-exercise

**Method of measurement**

ELISA

**Secondary outcomes****1****Description**

Creatine Kinase

**Timepoint**

Pre-exercise, immediately post-exercise, 3 and 24 hours  
post-exercise

**Method of measurement**

Enzymatic

**2****Description**

Plasma Lactate

**Timepoint**

Pre-exercise, immediately post-exercise, 3 and 24 hours  
post-exercise

**Method of measurement**

Enzymatic

**Intervention groups****1****Description**

In the 1th exercise session, rest between sets will

perform 1 minute and in the 2th exercise session rest between sets well perform 3 minutes.

**Category**

Other

**Recruitment centers**

**1**

**Recruitment center**

**Name of recruitment center**

Islamic Azad University, Mariwan Branch

**Full name of responsible person**

Hassan Faraji

**Street address**

Department of physical education and sport sciences,  
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Mariwan

**Sponsors / Funding sources**

**1**

**Sponsor**

**Name of organization / entity**

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**Full name of responsible person**

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**Grant name**

32291

**Grant code / Reference number**

7892

**Is the source of funding the same sponsor organization/entity?**

Yes

**Title of funding source**

Islamic Azad University, Mariwan Branch

**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**

Kurdestan University

**Full name of responsible person**

Dr. Rahman Rahimi

**Position**

PhD/assistance professor of exercise physiology

**Other areas of specialty/work**

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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*