Clinical Trial Protocol
Iranian Registry of Clinical Trials

09 Jun 2026

Effects of a single strength weight and plyometric training session on some of DOMS indices in male Taekwondo athletes

Protocol summary

Summary

Introduction: Based on conflicting results and concerns related to plyometric exercise- induced muscle soreness, the present study will conducted to compare the effect of a single-session plyometric and strength weight training on some biochemical, inflammatory and performance indices of delay onset muscle soreness (DOMS) in male Taekwondo athletes. Methods: In a quasi-experimental design, twenty Taekwondo athletes (aged 25-28 years, BMI 18-22 Kg/m2 and at least 3 years sport history) in two random homogeneous groups will participate in an exhaustive single-session strength weight training (6 sets leg press and Knee extension with 70% one repetition maximum) or plyometric training (6 sets deep and side jump with 70% Maximum high jump). Biochemical (Serum creatine kinase: CK), inflammatory (Peripheral blood leukocyte count; Serum C-reactive protein: CRP; interleukin-6: IL-6; Thigh circumference and perceived soreness) and performance indicators (Flexibility, maximal isometric strength and explosive power lower limb) will determine in both groups during the four stages (10 days, 30 min before and immediately and 24 hours after the exercise session). Serum CK, CRP and IL-6 will measure by photometric, immunoturbidometric and ELISA assays (with commercial Pars-Azmoon and Bendermed kits), respectively. The peripheral blood leukocytes counts will determine by automatic analyzer. Muscle circumstance and perceived soreness will determine by flexible tap and Talag Scale, respectively. Flexibility, maximal isometric strength and explosive power of lower limb will determine by wells, dynamometric and sargent vertical jump tests, respectively. Data will be expressed as mean (±SD) and analyzed by repeated measure ANOVA, Bonferroni and independent samples t tests at P≤0.05.

General information

Acronym

PlyoDOMS2011

IRCT registration information

IRCT registration number: **IRCT201011304663N5**
Registration date: **2012-08-01, 1391/05/11**
Registration timing: **retrospective**

Last update:
Update count: **0**

Registration date

2012-08-01, 1391/05/11

Registrant information

Name
Afshar Jafari
Name of organization / entity
University of Tabriz
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Iran (Islamic Republic of)
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Recruitment status

Recruitment complete

Funding source

University of Tabriz

Expected recruitment start date

2010-08-25, 1389/06/03

Expected recruitment end date

2010-09-28, 1389/07/06

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Effects of a single strength weight and plyometric

training session on some of DOMS indices in male Taekwondo athletes

Public title
Plyometric and resistance training effects on DOMS indices
Purpose
Basic scienece
Inclusion/Exclusion criteria
Inclusion criteria: Healthy males; taekwondo athletes; aged 25-28 years; BMI 18-22 Kg/m2; fat percent less than 15%; High jump more than 45 cm; and at least 3 years sport history; without any anti-inflammatory and medical drugs intake (during 6 months prior to the study). Exclusion criteria: chronic diseases; injuries; and uncontrolled intake of stimulants (such as caffeine>100 mg/day); uncontrolled intake of oxidative supplements; uncontrolled intake of anti-inflammatory drugs (during the period).
Age
From **25 years** old to **28 years** old
Gender
Male

Phase
N/A
Groups that have been masked
No information
Sample size
Target sample size: **20**
Randomization (investigator's opinion)
Randomized
Randomization description
Blinding (investigator's opinion)
Not blinded
Blinding description
Placebo
Not used
Assignment
Parallel
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
City
Tabriz
Postal code
Approval date
2010-08-23, 1389/06/01
Ethics committee reference number
8931

Health conditions studied

1

Description of health condition studied
Exercise-induced muscle damage
ICD-10 code
M79.1
ICD-10 code description
Myalgia

Primary outcomes

1

Description
Peripheral blood leukocyte count
Timepoint
10 days, 30 min before and immediately and 24 hours after the exercise session
Method of measurement
It will determine by automatic analyzer.

2

Description
Total Serum Cereatine kinase (CK)
Timepoint
Baseline, 30 min pre and immediaetly and 24 h post plyometric and strength exercise
Method of measurement
Photometric methods with commercial kits (Pars-Azmoon)

3

Description
IL-6
Timepoint
10 days, 30 min before and immediately and 24 hours after the exercise session
Method of measurement
ELISA methods with commercial kits

4

Description
C-reacive protein
Timepoint
10 days, 30 min before and immediately and 24 hours after the exercise session
Method of measurement
immunoturbidometric assay

5

Description
Perceived soreness
Timepoint
10 days, 30 min before and immediately and 24 hours after the exercise session
Method of measurement
Talag Scale

6

Description
Muscle circumstance
Timepoint
10 days, 30 min before and immediately and 24 hours after the exercise session
Method of measurement
It will determine by flexible tap

7

Description
Lower limb flexibility
Timepoint
10 days, 30 min before and immediately and 24 hours after the exercise session
Method of measurement
Sit and reach test (wells)

8

Description
Lower limb maximal isometric strength
Timepoint
10 days, 30 min before and immediately and 24 hours after the exercise session
Method of measurement
Dynamometric measurment

9

Description
Lower limb
Timepoint
10 days, 30 min before and immediately and 24 hours after the exercise session
Method of measurement
Sargent vertical jump test

Secondary outcomes

1

Description
Peripheral blood lactate
Timepoint
Blood lactate will determine at 30 min before and immediaetly after the exercise session.
Method of measurement
It will determine by portable lactate analyzer

2

Description
Maximal Oxygen Consumption
Timepoint
It will determined at 10 days before the exercise session.
Method of measurement
It will determine by Bruce test.

3

Description
Rating perceived exertion
Timepoint
It will determined at immediately before and after each bout of the exercises.
Method of measurement
It will determine by Borg Scale .

Intervention groups

1

Description
Strength training group will perform six sets of exhaustive leg extensions and leg press (with 70% 1RM).
Category
Other

2

Description
Plyometric group will perform six sets of exhaustive drop and side jumps (with 70% Maximum High Jump).
Category
Other

Recruitment centers

1

Recruitment center
Name of recruitment center
The Taekwondo Board of East Azerbaijan
Full name of responsible person
Dr Afshar Jafari
Street address
Iran, Islamic Republic Of
City
Tabriz

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
University of Tabriz
Full name of responsible person
Dr Afshar Jafari
Street address
Faculty of physical education & sports sciences, University of Tabriz, Tabriz, Iran
City
Tabriz
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source

University of Tabriz

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

Person responsible for scientific inquiries

Contact

Name of organization / entity
University of Tabriz

Full name of responsible person
Dr Afshar Jafari

Position
PhD in Molecular Exercise Physiology

Other areas of specialty/work

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Person responsible for updating data

Contact

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