

Clinical Trial Protocol

Iranian Registry of Clinical Trials

12 Jul 2026

The effect of neuromuscular training with Cal/Mag/Zinc Complex on preventing ankle and knee injuries, balance and electromyography activity of the muscles, reaction time and electromechanical delay of taekwondo athletes.

Protocol summary

Study aim

Determining the effect of neuro-muscular exercise + Colmegy zinc supplement on the prevention of ankle and knee injuries, balance and muscle electromyography performance, time and electromechanical delay at different times.

Design

The clinical trial had a control group, three intervention groups with parallel groups, single-blind, randomized, on 60 athletes. The table of random numbers in Excel software was used for randomization.

Settings and conduct

All participants in the study will have the same Taekwondo training program in terms of time, intensity, and repetitions. Athletes participating in neuro-muscular and neuro-muscular training + cal-mg-zinc supplement for 6 weeks will perform the protocol for about 60 minutes three times a week. Each training session will include 5 exercises. Neuromuscular training will be provided one hour before regular training. Then all the groups will do their usual exercises at the specified time from 18:00 to 20:00. At the same time, the control other groups supplement did their usual taekwondo exercises. The research environment will be Sadra Sports Club of Tabriz.

Participants/Inclusion and exclusion criteria

Inclusion criteria: At least 6 years of Taekwondo training experience, Regular Taekwondo training and competition for 6 months prior to data collection. No injury in the past three months. Exclusion criteria: absence of three or more training sessions during the study. injury during training

Intervention groups

NMT+Cal-Mg-Zinc, NMT, Control, Control+Cal-Mg-Zinc

Main outcome variables

ankle and knee injuries, balance and muscle

electromyography performance, time and electromechanical delay

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20160523028028N3**

Registration date: **2023-11-14, 1402/08/23**

Registration timing: **registered_while_recruiting**

Last update: **2023-11-14, 1402/08/23**

Update count: **0**

Registration date

2023-11-14, 1402/08/23

Registrant information

Name

Azam Zarneshan

Name of organization / entity

Azarbaijan Shahid Madani University

Country

Iran (Islamic Republic of)

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2023-11-06, 1402/08/15

Expected recruitment end date

2024-01-05, 1402/10/15

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

The effect of neuromuscular training with Cal/Mag/Zinc Complex on preventing ankle and knee injuries, balance and electromyography activity of the muscles, reaction time and electromechanical delay of taekwondo athletes.

Public title

Investigating the effect of neuromuscular exercises with the use of clemzinc supplements in taekwondo athletes

Purpose

Other

Inclusion/Exclusion criteria**Inclusion criteria:**

At least 6 years of Taekwondo practice. Regular Taekwondo training and competition for 6 months prior to data collection No injuries in the last three months Non-participation in other neuromuscular exercises or diet outside of this study

Exclusion criteria:

Injury during training Absence of three or more training sessions during the study Absence on a test day

Age

From **16 years** old to **20 years** old

Gender

Male

Phase

3

Groups that have been masked

No information

Sample size

Target sample size: **60**

More than 1 sample in each individual

Number of samples in each individual: **15**

The current study is a randomized clinical trial with a four-arm parallel design, which aims to investigate the effect of 6 weeks of neuromuscular exercises with the use of cal-mg-zinc supplements in reducing ankle and knee injuries, balance and muscle electromyography performance, stimulus reaction time and delay. Electromechanical designed in taekwondo athletes. After obtaining permission from the Ethics Committee and registering the study in the Iranian Clinical Trial Registration Center, the eligible available samples will be randomly divided into four groups with a ratio of 1:1:1: 1. Muscular + Cal-mg-zinc supplement 2- recipient of neuromuscular exercise 3- recipient of routine exercise 4- recipient of routine exercise + Cal-mg=zinc supplement

Randomization (investigator's opinion)

Randomized

Randomization description

Random allocation by a person not involved in the research using RAS (Random Allocation Software) and random block using blocks of four and eight for allocation in four groups. Three intervention groups and one control

group will be produced. Allocation concealment will be done based on the sequence produced using opaque, sealed envelopes, numbered from 1 to the end. The first person who enters the study will be given envelope number 1 and this process will continue until the end. Therefore, the researcher and the research subject will not know about the type of allocation received (Allocation Concealment) until after the envelopes are opened. Both athletes and their coaches will be blinded to the initial results of the changes.

Blinding (investigator's opinion)

Not blinded

Blinding description**Placebo**

Not used

Assignment

Factorial

Other design features**Secondary Ids**

empty

Ethics committees**1****Ethics committee****Name of ethics committee**

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Street address

goolgasht

City

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Province

East Azarbaijan

Postal code

5155673964

Approval date

2023-09-05, 1402/06/14

Ethics committee reference number

IR.AZARUNIV.REC.1402.015

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

ankle and foot injuries

ICD-10 code

S90.9

ICD-10 code description

Unspecified superficial injury of ankle, foot and toe

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

Ankle and knee injuries

Timepoint

Before the intervention and six weeks after the

intervention
Method of measurement
self report

2

Description

Balance and muscle Electromyographyactivity

Timepoint

Before and three and six weeks after the intervention

Method of measurement

EMG, Balance test

3

Description

reaction time and electronically delay

Timepoint

Before and three and six weeks after the intervention

Method of measurement

EMG, speed

Secondary outcomes

empty

Intervention groups

1

Description

They will do the protocol three times a week for about 60 minutes for 6 weeks. Each training session will include 5 exercises. Neuromuscular training will be provided one hour before regular training (i.e. mobility and strength training; usually four sessions per week, duration of 120 minutes each session) for the mentioned groups under the supervision of an athletic trainer. Then all the groups will do their usual exercises at the specified time from 18:00 to 20:00. In addition, the perceived intensity of the 15-17 neuromuscular training sessions will be based on the Borg scale (scores from 6 to 20) based on individual monitoring in the groups.

Category

Treatment - Other

2

Description

Intervention group: NMT+Cal-Mg-Zinc: Athletes participating in neuromuscular+colmegezinc supplement will perform the protocol for about 60 minutes three times a week for 6 weeks. Each training session will include 5 exercises (one exercise for each category listed in Table 1). Neuromuscular training will be provided one hour before regular training (i.e. mobility and strength training; usually four sessions per week, duration of 120 minutes each session) for the mentioned groups under the supervision of an athletic trainer. Then all the groups will do their usual exercises at the specified time from 18:00 to 20:00. In addition, the perceived intensity of the 15-17 neuromuscular training sessions will be based on the Borg scale (scores from 6 to 20) based on individual

monitoring in the groups. Taekwondo athletes should take 2 calcium-magnesium-zinc supplements (1 in the morning and 1 in the evening) during the day. Adherence to the study drugs will be confirmed by counting the pills returned every day of training. During the study, participants will be asked to fill out an adverse event diary and contact the team's healthcare provider. The participants will have an initial interview about their lifestyle habits and medical history and they will be asked about their food habits for three days (Saturday, Sunday and Wednesday) and they will also be advised to avoid taking similar supplements or substances. Avoid food with minerals similar to the study food supplement.

Category

Treatment - Other

3

Description

Control group: At the same time, the control group (CG) will perform their usual Taekwondo training (ie, mobility and strength training; usually four sessions per week, each training session lasts 120 minutes) at the specified time of 18:00 to 20:00.

Category

Placebo

4

Description

Control+Cal-Mg-Zinc:At the same time, the control group + clemgyzinc supplementation will perform their usual Taekwondo training (ie, mobility and strength training; usually four sessions per week, each training session lasts 120 minutes) at the specified time of 18:00 to 20:00. Taekwondo athletes should take 2 calcium-magnesium-zinc supplements (1 in the morning and 1 in the evening) during the day. Adherence to the study drugs will be confirmed by counting the pills returned every day of training. During the study, participants will be asked to fill out an adverse event diary and contact the team's healthcare provider. The participants will have an initial interview about their lifestyle habits and medical history and they will be asked about their food habits for three days (Saturday, Sunday and Wednesday) and they will also be advised to avoid taking similar supplements or substances. Avoid food with minerals similar to the study food supplement.

Category

Placebo

Recruitment centers

1

Recruitment center

Name of recruitment center

SADRA sport center

Full name of responsible person

Azam Zarneshan

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity
Tabriz University of Medical Sciences
Full name of responsible person
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Grant name

Grant code / Reference number

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

No

Title of funding source

TBZMED

Proportion provided by this source

20

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

Other

Person responsible for general inquiries

Contact

Name of organization / entity
Shahid madani university, Azaruniv
Full name of responsible person
Azam zarneshan
Position
Associated professor
Latest degree
Ph.D.

Other areas of specialty/work

Others

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Person responsible for scientific inquiries

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Person responsible for updating data

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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

Yes - There is a plan to make this available

Title and more details about the data/document

Data collection will be done by the researchers and information about the main outcomes of the study will be published.

When the data will become available and for how long

Access to the data will be possible immediately after the results are printed.

To whom data/document is available

The general public, athletes and researchers

Under which criteria data/document could be used

Reviewers of magazines and Azerbaijan University of Medical Sciences and Shahid Madani are allowed to send requests to receive non-identifiable personal data or other documents. Until the publication of the results in the form of an article, it is not allowed to perform statistical analysis on the delivered data.

From where data/document is obtainable

Dr. Azam Zarneshan email: baraziliya@gmail.com

What processes are involved for a request to access data/document

via email to corresponding author: Dr. Azam Zarnashan
baraziliya@gmail.com

Comments