Clinical Trial Protocol
Iranian Registry of Clinical Trials

16 Sep 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 + Colmegyzinc 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

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Name of organization / entity
Azarbaijan Shahid Madani University
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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
دانشگاه علوم پزشکی تبریز
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goolgasht
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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
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Ph.D.
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Person responsible for scientific inquiries

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Other areas of specialty/work
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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