Clinical Trial Protocol
Iranian Registry of Clinical Trials

10 Jun 2026

The effect of agility ladder and hop training exercises on dynamic balance and functional tests in semi professional athletes with chronic ankle instability

Protocol summary

Study aim

Evaluation of the effect of 6 weeks of hop exercises and agility ladder exercises on dynamic balance using star balance test and functional tests in people with chronic ankle instability.

Design

Samples are randomly assigned to one of the two groups of agility ladder exercises and hop exercises equally by the restricted randomization and law of random allocation (drawing a card from the number of cards equal to the sample size (30 people) The trial design will be done in parallel.

Settings and conduct

This study includes two types of agility ladder and hop exercises that are given to participants with chronic ankle instability for 6 weeks and 3 times a week, Accurate evaluation is done before and after 6 weeks, functional tests are taken to evaluate the effectiveness of the exercises. Before starting the exercises, the person does warm-up exercises, and then the main treatment exercises and finally cooling down.

Participants/Inclusion and exclusion criteria

Inclusion criteria: In the age range of 18 to 35 years. Regular exercise 3 days a week. At least one ankle sprain that has caused pain, swelling, and dysfunction for more than a year . At least two episodes in the last 6 months. 90% or less score in FAAM questionnaire . Exclusion criteria: Ankle sprains in the last 6 weeks. Ankle surgery Vision problems . Neurological problems that cause imbalance Lower limb fractures.

Intervention groups

Intervention group: Hop exercises are a modified type of plyometric exercises. These exercises also improve dynamic balance. Hop exercises are a type of exercise that is similar to basic and dynamic movements in many sports. Agility ladder is used in various sports to improve performance, improve acceleration, speed, coordination, dynamic balance, static and maintain body posture.

Main outcome variables

Improve dynamic balance and ankle function in people with chronic ankle instability

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20180728040618N4**
Registration date: **2021-06-01, 1400/03/11**
Registration timing: **prospective**

Last update: **2021-06-01, 1400/03/11**
Update count: **0**

Registration date

2021-06-01, 1400/03/11

Registrant information

Name

Holakoo Mohsenifar

Name of organization / entity

Country

Iran (Islamic Republic of)

Phone

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2021-06-22, 1400/04/01

Expected recruitment end date

2022-03-12, 1400/12/21

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

The effect of agility ladder and hop training exercises on dynamic balance and functional tests in semi professional athletes with chronic ankle instability

Public title

The effect of agility ladder and hop training exercises on chronic ankle instability

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

Age range of 18 to 35 years. 3 days a week and have 1 hour of regular exercise each time. At least one ankle sprain that has caused pain, swelling, and dysfunction for more than a year. Have episodes of twisting and frequent giving way and have at least two episodes in the last 6 months. Unilateral ankle sprain . 90% or less score in FAAM questionnaire.

Exclusion criteria:

Ankle sprains in the last 6 weeks. Ankle surgery. Vision problems. Neurological problems that cause imbalance, including: Parkinson's and multiple sclerosis and stroke. Lower limb fractures. Participants do not want to continue participating in the study due to pain or any unforeseen event. Acute musculoskeletal problems in the last 3 months (strains and tears of muscles and tendons, knee ligament injury and knee meniscus injury). Consumption of psychotropic drugs: benzodiazepines, antipsychotics, antidepressants. Alcoholism. genu recurvatum.

Age

From **18 years** old to **35 years** old

Gender

Both

Phase

3

Groups that have been masked

No information

Sample size

Target sample size: **30**

Randomization (investigator's opinion)

Randomized

Randomization description

Samples are randomly assigned to one of the two groups of agility ladder exercises and hop exercises equally by the restricted randomization and law of random allocation (drawing a card from the number of cards equal to the sample size and entering a group of two groups

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

Ethics committee of Iran University of Medical Sciences

Street address

Iran University of Medical Sciences, Shahid Hemmat Highway, Tehran

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Postal code

1449614535

Approval date

2021-05-17, 1400/02/27

Ethics committee reference number

IR.IUMS.REC.1400.168

Health conditions studied

1

Description of health condition studied

Chronic ankle instability

ICD-10 code

M25.37

ICD-10 code description

Other instability, ankle and foot

Primary outcomes

1

Description

Dynamic balance

Timepoint

Determining the reach distance in the star balance test before the intervention and after 6 weeks of hop exercises and agility ladder exercises

Method of measurement

In the star balance test, a person can reach a greater distance with a non-involved foot.

Secondary outcomes

1

Description

Determining the number of hop to the side in 30 seconds at a distance of 40 cm

Timepoint
Determining the number of hop to the side in 30 seconds at a distance of 40 cm, before the intervention and after the 6-week intervention hop exercises and agility ladder exercises.
Method of measurement
Chronometer for time of side hop test

2

Description
Determining the time of multiple hop
Timepoint
Before the intervention and after the 6-week intervention hop and agility ladder exercises
Method of measurement
Chronometer for time of multiple hop test

3

Description
Foot and ankle ability measurement
Timepoint
Before the intervention and after the intervention 6 weeks of hop training and agility ladder training
Method of measurement
Foot and ankle ability measurement questionaries

Intervention groups

1

Description
Hop exercises are a modified version of plyometric exercises and have recently been used to reduce ankle instability. These exercises are relatively inexpensive, so it is easy to use in exercises. These exercises also improve dynamic balance .Hop exercises are a type of exercise that is similar to basic and dynamic movements in many sports. It also improves functional and postural control in people with chronic ankle instability. In hop exercises, the athlete exercises 3 days a week for 6 weeks. The athlete runs 5 minutes in each session to warm up at the beginning of the training session, 5 minutes of dynamic stretching, and 5 minutes of cooling at the end .The exercises get harder every week, the level of reliance changes and the number of repetitions and sets increases, the person first has his hands free and then puts his hands on his chest and finally behind his head. There is a 30 second break between sets and a 1 minute break between workouts .The exercises are done in front of a mirror and the person has both visual and auditory feedback (the person is told about his mistakes and is motivated).Hop exercises include the following exercises (the exercises are randomly in the text below) . Forward hopping Hopping in 4-square shape Hopping side to side Hopping forward and back ward Hopping in zigzag shape Hopping in figure-8 shape
Category
Treatment - Other

2

Description
Intervention group: Agility Ladder: An agility ladder is an inexpensive and accessible device that is placed on the ground like a ladder and the person moves one or two feet in and out of it. Depending on the purpose, it can be made of different lengths and widths. It can also be made using a tape or rope. The person also maintains his or her balance while moving rapidly, which is used in various sports to improve performance, improve acceleration, speed, coordination, dynamic balance, static, and body posture. Two of its most important goals are to improve coordination and speed, and the agility ladder is the best way to teach movement patterns. For best results, the exercises should progress from easy to difficult. Also, in the type of exercises, the type of sports activity of the person should be considered. The second group receives agility ladder exercises that they do 3 times a week for 6 weeks. Before training, they run for 5 minutes and do 5 minutes of dynamic stretching and warm up. The training lasts for 10 minutes and at the end, they cool down for 5 minutes. The exercises become more difficult as the progress progresses and the number of sets and repetitions varies, with 30 seconds between repetitions and 1 minute rest between sets. The exercises are as follows: Lateral two in two out Two in the hole Two in lateral One lateral Lateral ickey shuffle ickey shuffle backward ickey shuffle frontal two in two out forward zigzag cross over shuffle zigzag cross over shuffle backward frontal two in two out backward
Category
Treatment - Other

Recruitment centers

1

Recruitment center
Name of recruitment center
School of Rehabilitation Sciences of Iran University of Medical Sciences
Full name of responsible person
Holakoo Mohsenifar
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Sponsors / Funding sources

1

Sponsor

Name of organization / entity
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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?
Yes

Title of funding source
Iran University of Medical Sciences

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
Iran University of Medical Sciences

Full name of responsible person
Holako Mohsenifar

Position
Assistant Professor

Latest degree
Ph.D.

Other areas of specialty/work
Physiotherapy

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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
Deidentified individual participant data collected for the primary and secondary outcome measures will be shared if necessary
When the data will become available and for how long
Starting 6 months after publication
To whom data/document is available
The data will be available for physical therapists working in academic institutions and also clinicians working in the field of musculoskeletal disorders
Under which criteria data/document could be used
The raw data and results of this study can be used in future relevant systematic reviews. Thus, the raw data and results of this study will be available for researchers working in the field of ankle sprain and chronic ankle instability.
From where data/document is obtainable
Applicants can contact the researcher of this study Elham Yazdani by email. Email address: elhamyazdani992@gmail.com
What processes are involved for a request to access data/document
Applicants should explain in detail about their project and how the data/documents of this study will be used in their project. Then, the data/documents files will be sent by email to applicants on request. This process may takes 10-12 working days.
Comments