

# 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

+98 21 2610 6933

##### Email address

mohsenifar.h@iums.ac.ir

##### 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 (sprains 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  
**City**  
Tehran  
**Province**  
Tehran  
**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 questionnaires

## **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

#### **Street address**

School of Rehabilitation Sciences of Iran University of Medical Sciences, Madadkaran St, Shah Nazari St, Madar Sq, Mirdamad Blvd, Tehran

#### **City**

Tehran

#### **Province**

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#### **Postal code**

1545913487

#### **Phone**

+98 21 2222 7124

#### **Email**

mohsenifarpt@gmail.com

## **Sponsors / Funding sources**

1

**Sponsor**

**Name of organization / entity**

Iran University of Medical Sciences

**Full name of responsible person**

Seyed Abbas Motevalian

**Street address**

Iran University of Medical Sciences Shahid Hemmat  
Highway Tehran 14496-14535, IRAN

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Tehran

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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

**Street address**

School of Rehabilitation Sciences of Iran University of  
Medical Sciences, Madadkaran St, Shah Nazari St,  
Madar Sq, Mirdamad Blvd, Tehran

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Mohsenifarpt@gmail.com

**Person responsible for scientific 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**

**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

**Street address**

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**Email**

Mohsenifarpt@gmail.com

## 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**