Clinical Trial Protocol
Iranian Registry of Clinical Trials

16 Sep 2026

The investigation of the effect of the heel height on the activation and co-contraction pattern of Quadriceps & Hamstrings muscle in patients with Chondromalacia of the patellae and healthy population during stair walking

Protocol summary

Summary

Goal of this study is to investigate effects of the heel height on the activation and co-contraction pattern of Quadriceps & Hamstrings muscle in patients with Chondromalacia of the patellae and healthy population during stair walking. Inclusion criteria:range of age must be between 12 - 38 in both group;be able to walking for 6 meter and stepping without aid device;mcconel and clark test be positive in patient with chondromalacia. Exclusion criteria:heart diseases and diabet and neuromuscular diseases;injection in arthicular or surgery in 3 month ago;truma in knee and hip in 3 month ago;regular professional sport more two times a week;inability in walking and stepping due to severe weakness;deformity in lower limb such as genu valgum,genu varum,ankle supination&...;shortness in hamstring and iliotibial band. 30 healthy people and 30 patient with chondromalacia participate in this study.first of beganing record,participants 3 times step up and step down from step with 16 Centimeter height by wearing shoes with 4 & 10 Centimeter heel height to familiarization.then all participants stepping down and stepping up three times with 3 condition:bare foot and wearing shoe with 4 Centimeter heel and 10 Centimeter heel height.during this activity EMG activity is record from medial and lateral hamstrings and VMO and vastus lateralis.For records of steps phases,use force plate system. After this activity record maximum voluntary contraction from this muscle by using isokinetic dinamometer system.Maximum voluntary contraction is use for noramalizing electromyography data.maximum voluntary contraction of quadriceps is record in 30 degree of knee flexion in isokinetik dinamometer system and ask to patient extend knee and maintain for 5 second and repeat this for 3 times. for normalaizing of hamstring ask to patient in previous positon flexed knee and mainatin it for 5 second and repeat for 3 times.

General information

Acronym

IRCT registration information

IRCT registration number: **IRCT2015041321738N1**
Registration date: **2015-06-02, 1394/03/12**
Registration timing: **registered_while_recruiting**

Last update:
Update count: **0**

Registration date

2015-06-02, 1394/03/12

Registrant information

Name
Sahar Masoumi
Name of organization / entity
Semnan University of Medical Sciences
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Iran (Islamic Republic of)
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Recruitment status

Recruitment complete

Funding source

Semnan University of Medical Sciences

Expected recruitment start date

2015-05-22, 1394/03/01

Expected recruitment end date

2015-09-21, 1394/06/30

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

The investigation of the effect of the heel height on the activation and co-contraction pattern of Quadriceps & Hamstrings muscle in patients with Chondromalacia of the patellae and healthy population during stair walking

Public title

The investigation of the effect of the heel height on the Chondromalacia

Purpose

Prevention

Inclusion/Exclusion criteria

Inclusion criteria:range of age must be between 12 - 38 in both group;be able to walking for 6 meter and stepping without aid device;mcconel and clark test be positive in patient with chondromalacia. Exclusion criteria:heart diseases and diabet and neuromuscular diseases;injection in arthicular or surgery in 3 month ago;truma in knee and hip in 3 month ago;regular professional sport more two time a week;inability in walking and stepping due to severe weakness;deformity in lower limb such as genu valgum,genu varum,ankle supination&...;shortness in hamstring and iliotibial band.

Age

From **12 years** old to **38 years** old

Gender

Female

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **60**

Randomization (investigator's opinion)

N/A

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

Semnan University Of Medical Science

Street address

5th kilometer of damqan road، Šemnan

City

Semnan

Postal code

3519899951

Approval date

2015-03-17, 1393/12/26

Ethics committee reference number

A-10-84-7

Health conditions studied

1

Description of health condition studied

Chondromalacia

ICD-10 code

XIII

ICD-10 code description

Diseases of the musculoskeletal system and connective tissue

Primary outcomes

1

Description

Coactivation pattern

Timepoint

First session

Method of measurement

electromyography system

Secondary outcomes

1

Description

Force

Timepoint

First session

Method of measurement

Force plate

Intervention groups

1

Description

healthy people and patient stepping up and stepping down by shoe with 4 Centimeter heel height.

Category

Diagnosis

2

Description

healthy people and patient stepping up and stepping down bare foot.

Category

Diagnosis

3

Description
healthy people and patient stepping up and stepping down by shoe with 10 Centimeter heel height.
Category
Diagnosis

Recruitment centers

1

Recruitment center
Name of recruitment center
Center of Muscoloskeletal Research of Semnan University of Medical Science
Full name of responsible person
Sahar Masoumi
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Qods blvd،Semnan
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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Semnan University of Medical Science
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Sahar Masoumi
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Semnan
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Semnan University of Medical Science
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

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Web page address

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