Clinical Trial Protocol
Iranian Registry of Clinical Trials

08 Nov 2026

The effect of adding eccentric exercises to gait retraining exercises on pain, kinetics and kinematics of runners with patellofemoral pain syndrome

Protocol summary

Study aim

Are adding eccentric exercises to gait retraining exercises have any effect on pain, kinetics and kinematics during running in patients with patellofemoral pain?

Design

Clinical trial that including control group, parallel groups, single blinded, randomized, 3 groups on 30 patients, The site /http://randomizer.org is used for randomization.

Settings and conduct

The effect of adding eccentric exercises to gait retraining exercises on runners with patellofemoral pain. The kinetics and kinematics parameters are performed before and after 8 weeks of intervention in the biomechanical laboratory of Kharzami University. Participants and Analyzer are unaware of how the allocation and results are.

Participants/Inclusion and exclusion criteria

inclusions: Male and female runners with 3 years continuous history of recreational sports; 18 to 40 years old age group, 20 and 25 body mass index patients have a patellofemoral pain syndrome with a history of 2 months and intensity of 3 to 7 on the visual analog scale. exclusions: history of lower and torso injury in the past year, lower limb abnormalities, surgery in the lower limbs, especially the knee, before participating.

Intervention groups

The retraining group includes patients that have patellofemoral pain and receive gait retraining with using verbal feedback. the eccentric exercises Group includes patients who receive eccentric exercises in addition to gait retraining. the control group includes patients who do not receive any intervention. both groups participate 3 sessions each week for 8 weeks with the presence of the researcher. each session take 90 minutes includes warm up, exercise and cooling down. eccentric exercises are based on previous studies of patellofemoral pain.

Main outcome variables

Pain, ground reaction force, pelvic drop, hip adduction, knee flexion, knee valgus and dorsiflexion.

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20220812055662N1**
Registration date: **2022-09-29, 1401/07/07**
Registration timing: **prospective**

Last update: **2022-09-29, 1401/07/07**
Update count: **0**

Registration date

2022-09-29, 1401/07/07

Registrant information

Name
Elahe Omidvar
Name of organization / entity
The University of kharazmi
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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2022-10-08, 1401/07/16

Expected recruitment end date

2022-12-03, 1401/09/12

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

The effect of adding eccentric exercises to gait retraining exercises on pain, kinetics and kinematics of runners with patellofemoral pain syndrome

Public title

The effect of eccentric exercises with gait retraining on reducing patellofemoral pain

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

Male and female runners with a continuous history of recreational sports in the last 3 years 18 to 40 years age group Standard Body Mass Index between 20 –25 Patellofemoral pain syndrome with a history of 2 months and a intensity of 3 to 7 on a visual analog scale

Exclusion criteria:

History of lower and upper body damage in the past year Lower body zone abnormalities Surgery history in the lower limbs, especially the knee, before participating in the study

Age

From **18 years** old to **40 years** old

Gender

Both

Phase

N/A

Groups that have been masked

- Participant
- Data analyser

Sample size

Target sample size: **30**

Randomization (investigator's opinion)

Randomized

Randomization description

After initial review, using the http://randomizer.org/ website, patients who have criteria for entering the study randomly participate in retraining، eccentric exercises and control groups. randomization will be simple type. hiding the random allocation using computer-generated randomized block table (number 1 for retraining group, number 2 for eccentric exercises group and number 3 for control group). The random numerical sequence is placed in non-transparent and sealed envelopes and will be opened by a third party and the treatment process will continue in accordance with the group's assignment. the evaluator will evaluate the results before the intervention and after 8 weeks of intervention, independent of the hypothesis and methods of the study.

Blinding (investigator's opinion)

Single blinded

Blinding description

Participants read the consent form and present in a 30-minute session of the study groups then participate in this study with satisfaction, without the authority to select their group. the names of the patients are informed by a person unaware of the identity characteristics and Physically, patients randomly divided into three equal groups by / http://randomizer.org and each group is placed separately in sealed envelopes. Each person receive own training and exercises according to their assigned group. the analyzer also examines and compares changes made before and after 8 weeks without knowing the hypotheses, study methods, and patient specifications.

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics committee of sport sciences Research Institute

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No. 45, Payande 5 Ave., Mosala 18 Blvd.,Rastgar St.

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Province

Mazandaran

Postal code

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Approval date

2022-07-05, 1401/04/14

Ethics committee reference number

IR.SSRC.REC.1401.040

Health conditions studied

1

Description of health condition studied

patellofemoral pain syndrome

ICD-10 code

M22.2

ICD-10 code description

Patellofemoral disorders

Primary outcomes

1

Description

Pain

Timepoint

Before the intervention and after 8 weeks of intervention

Method of measurement

Pain questionnaire of Visual Analogue scale (VAS)

Secondary outcomes

1

Description
Kinetic: Ground reaction force
Timepoint
Before the intervention and after 8 weeks of intervention
Method of measurement
Force plate

2

Description
Kinematic: pelvic drop
Timepoint
Before the intervention and after 8 weeks of intervention
Method of measurement
Three-dimensional (3D) motion analysis system

3

Description
Kinematic: hip adduction
Timepoint
Before the intervention and after 8 weeks of intervention
Method of measurement
Three-dimensional (3D) motion analysis system

4

Description
Kinematic: knee flexion
Timepoint
Before the intervention and after 8 weeks of intervention
Method of measurement
Three-dimensional (3D) motion analysis system

5

Description
Kinematic: knee valgus
Timepoint
Before the intervention and after 8 weeks of intervention
Method of measurement
Three-dimensional (3D) motion analysis system

6

Description
Kinematic: dorsiflexion
Timepoint
Before the intervention and after 8 weeks of intervention
Method of measurement
Three-dimensional (3D) motion analysis system

Intervention groups

1

Description
Intervention group: This group performs gait retraining with verbal feedback. gait retraining done on a treadmill. People run on a treadmill at all times at a convenient speed. Verbal feedback in the form of a recipe such as "Knee retention in the direction of the toes, reduced pelvic sagging and maintaining pelvic symmetry، Decreasing vertical acceleration (is provided by the tester: a quiet and calm walking style).In general, the practice time starts in 15 minutes for the first session and 3 to 9 minutes per week is added to the time. While the time of gait retaining is reduced from 100% in the first 4 weeks to 25% in the last weeks and then removed. Exercises are followed 3 days a week for 8 weeks.
Category
Treatment - Other

2

Description
Intervention group: this group, After performing the retraining group's practices, performs the protocol of the eccentric exercises. the participants will do the exercises correctly، The intensity of the exercises will increase progressively each week, and at the beginning of each stage, the exercises will be performed in a simpler and smaller volume، Step by step, more difficult exercises and less large exercises will be more difficult in the next steps, respectively, with the progress and improvement of the performance of the training athlete. In general, the practice time is 90 minutes, which is done after warm up and gait retraining. exercises are followed 3 days a week for 8 weeks.
Category
Treatment - Other

3

Description
Control group: This group continues their special routine exercises.
Category
N/A

Recruitment centers

1

Recruitment center
Name of recruitment center
Kharzami University
Full name of responsible person
Elahe Omidvar
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Sponsors / Funding sources

1

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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
The University of Kharazmi
Proportion provided by this source
100
Public or private sector
Private
Domestic or foreign origin
Domestic
Category of foreign source of funding
empty
Country of origin
Type of organization providing the funding
Persons

Person responsible for general inquiries

Contact
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Amir Letafatkar
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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

Undecided - It is not yet known if there will be a plan to make this available

Data Dictionary

Undecided - It is not yet known if there will be a plan to make this available

Title and more details about the data/document

Only data related to demographic information and consequences are shared.

When the data will become available and for how long

After printing the article / articles are arrogant from the study

To whom data/document is available

The data can be displayed and shared at the logical request of the Iranian Clinical Trials Registration Center, journals and academic researchers / researchers who are researching and conducting scientific activities in this field.

Under which criteria data/document could be used

Data analysis and the use of documentation can only be done on the condition that their results be included in the systematic review articles conducted by researchers and academic authors. Terms of registration for sending data and documents including: 1. Send an email (preferably with valid academic addresses) to one of the study researchers. 2. Brief and logical explanation of how to use data or documentation. 3. Ensure the registration of a systematic review study protocol that has given access to data or documentation.

From where data/document is obtainable

By requesting study researchers Elahe Omidvar Elahe.omidvar@khu.ac.ir Malihe Hadadnezhad Malihehadadnezhad@khu.ac.ir Amir Letafatkar Amir.letafatkar@khu.ac.ir

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

The applicant can request details from the researchers within 7 to 10 days using the email sent by email.

Comments