

Clinical Trial Protocol

Iranian Registry of Clinical Trials

09 Jul 2026

The effect of exercises in water and traband on the ground reaction force and electromyography activity of Lower extremity muscles in people with peronite foot during walking

Protocol summary

Study aim

Background: Various factors can affect the correct form of gait, one of which is foot pronation. Methods: The present study was a quasi-experimental and laboratory study. The volunteer participants in current study consisted of 45 subjects that, were randomly divided into three equal groups: water exercise, Thera-Band exercise and control groups. Bertak force plate was used to record the reaction force of the ground while walking. The two-way analysis of variance and repeated measures test was used to compare between groups. The significance level was set at $p < 0.05$ for all analyses. Results: There was significant increase observed during on the contact phase of the heel with the ground in the direction of vertical force ($p = 0.02$). Also, there was significant increase observed during the contact phase of the heel with the ground in the direction of internal-external force ($p = 0.001$). Conclusion: The effect of water and Thera-Band exercises on the ground reaction force during long-term walking has a significant effect on the rehabilitation of people with foot pronation compared to the immediate effect of the training protocol. So in general, the effect of water and Thera-Band exercises on the ground reaction force during long-term walking can be beneficial. Key Words: Ground Reaction Force, Pronate Foot, Walking

Design

Clinical trial with control group, with parallel groups on 45 subjects.

Settings and conduct

Mohaghegh Ardabili University Health Center

Participants/Inclusion and exclusion criteria

The rate of navicular bone and posture index loss greater than 10 mm.

Intervention groups

The intervention group consisted of exercises in water and traffic and the control group had no activity

Main outcome variables

The effect of exercises in water and traffic on the ground reaction force

General information

Reason for update

Acronym

PF

IRCT registration information

IRCT registration number: **IRCT20190302042881N3**

Registration date: **2022-02-12, 1400/11/23**

Registration timing: **registered_while_recruiting**

Last update: **2022-02-12, 1400/11/23**

Update count: **0**

Registration date

2022-02-12, 1400/11/23

Registrant information

Name

Mohsen Barghamadi

Name of organization / entity

Country

Iran (Islamic Republic of)

Phone

+98 45 3150 5652

Email address

barghamadi@uma.ac.ir

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2021-12-31, 1400/10/10

Expected recruitment end date

2022-04-30, 1401/02/10

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

The effect of exercises in water and traland on the ground reaction force and electromyography activity of Lower extremity muscles in people with peronite foot during walking

Public title

The effect of exercises in water and traland on the ground reaction force and electromyography activity of Lower extremity muscles in people with peronite foot during walking

Purpose

Supportive

Inclusion/Exclusion criteria**Inclusion criteria:**

The rate of navicular bone loss exceeding 10 mm Foot posture index should be 10 mm higher. All subjects had foot pronation

Exclusion criteria:

History of surgery Injury to the lower limbs Abnormalities in the trunk Reluctance to cooperate

Age

From **20 years** old to **25 years** old

Gender

Male

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **45**

Randomization (investigator's opinion)

Randomized

Randomization description

We purposefully pour the names of all the subjects with foot pronation into the bag and select them one by one and place them in three groups of Traland, water training and control.

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

Ardabil University of Medical Sciences

Street address

ایران، اردبیل، خ دانشگاه، دانشگاه علوم پزشکی اردبیل

City

Ardabil

Province

Ardabil

Postal code

5619911367

Approval date

2019-07-20, 1398/04/29

Ethics committee reference number

IR.ARUMS.REC.1398.198

Health conditions studied

1

Description of health condition studied

Foot pronation

ICD-10 code**ICD-10 code description****Primary outcomes**

1

Description

ground reaction force components

Timepoint

pretest before training and post test immediately and eight weeks after training.

Method of measurement

ground reaction force variables were measured using a force plate device.

Secondary outcomes

empty

Intervention groups

1

Description

Intervention group: Exercises in water and Thera band including: Exercise program was performed immediately for 8 weeks and three sessions per week and each session for 50 minutes including warm-up for 10 minutes.

Category

Diagnosis

Recruitment centers

1

Recruitment center**Name of recruitment center**

University of Mohaghegh Ardabili Health Center

Full name of responsible person

Mohsen Barghamadi

Street address

University of Mohaghegh Ardabili, daneshgah St,
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Phone

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Email

barghamadi@uma.ac.ir

Associate Professor

Latest degree

Ph.D.

Other areas of specialty/work

Medical Engineering

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Sponsors / Funding sources**1****Sponsor****Name of organization / entity**

Mohaghegh Ardabili University

Full name of responsible person

Mohsen Barghamadi

Street address

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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

Mohaghegh Ardabili University

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**

Mohaghegh Ardabili University

Full name of responsible person

Mohsen Barghamadi

Position**Person responsible for scientific inquiries****Contact****Name of organization / entity**

Mohaghegh Ardabili University

Full name of responsible person

Mohsen Barghamadi

Position

Associate professor

Latest degree

Ph.D.

Other areas of specialty/work

Medical Engineering

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Person responsible for updating data**Contact****Name of organization / entity**

Mohaghegh Ardabili University

Full name of responsible person

Mohsen Barghamadi

Position

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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

mean of ground reaction forces

When the data will become available and for how long

When publishing an article

To whom data/document is available

All people

Under which criteria data/document could be used

it is free.

From where data/document is obtainable

The journal in which the article will publish.

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

Journal Process and Rules

Comments

Null