Clinical Trial Protocol
Iranian Registry of Clinical Trials

16 Sep 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 traband 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 traband 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 Traband، 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, Ardadil, Iran
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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Mohaghegh Ardabili University
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
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
Associate Professor
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Other areas of specialty/work
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Person responsible for scientific inquiries

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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
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