

Clinical Trial Protocol

Iranian Registry of Clinical Trials

21 Jul 2026

Effect of 12 weeks systematic and functional corrective exercises on the balance, strength, postural control, ankle proprioception and posture of students with pronation distortion syndrome

Protocol summary

Study aim

Investigate effect of 12 weeks systematic and functional corrective exercises on the balance, strength, postural control, ankle proprioception and posture of students with pronation distortion syndrome

Design

The controlled clinical trials, With crossover groups, A blind strain, Randomized

Settings and conduct

Experimental group, performed systematic and functional corrective exercises for 12 weeks and control group performed the routine exercise.

Participants/Inclusion and exclusion criteria

Entry requirements: diagnosis of pronation distortion syndrome in both feet, based on the corrective exercise specialist's opinion; detection of flexible flat feet without pain, evaluated by heel rise test, navicular drop more than 10 mm, and grade 2 flat feet; age range of 10-16 years; having normal vision or corrected vision using spectacles or contact lenses; absence of other acute or chronic diseases preventing exercise; physician's agreement with corrective exercises; no history of injury or surgery on the knee; no history of severe injury or surgery on the ankle, knee, thighs, hip, or back completing the informed consent form and individual health questionnaire. Exclusion criteria: inner ear disorders; problems affecting balance in the nervous system; atrial fibrillation or uncorrectable refractive error; history of lower limb injury, fracture, or surgery; abnormal range of lower limb movements; serious orthopedic disorders, such as having rigid flat feet (structural); presence of pain or emergence of pain during the study; not completing the pretest or posttest; inconsistent participation in exercise sessions.

Intervention groups

Experimental group, performed systematic and functional corrective exercises for 12 weeks (3 sessions

per week for one hour), and control group performed the routine exercise.

Main outcome variables

Balance; Strength; Postural control; Ankle proprioception; and Posture

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20190824044597N1**

Registration date: **2019-09-11, 1398/06/20**

Registration timing: **retrospective**

Last update: **2019-09-11, 1398/06/20**

Update count: **0**

Registration date

2019-09-11, 1398/06/20

Registrant information

Name

Ali Golchini

Name of organization / entity

University of Isfahan

Country

Iran (Islamic Republic of)

Phone

+98 31 3793 2195

Email address

ali.golchini@gmail.com

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2018-10-04, 1397/07/12

Expected recruitment end date

2018-12-08, 1397/09/17
Actual recruitment start date
 2018-10-06, 1397/07/14
Actual recruitment end date
 2018-12-13, 1397/09/22
Trial completion date
 2019-04-18, 1398/01/29

Scientific title
 Effect of 12 weeks systematic and functional corrective exercises on the balance, strength, postural control, ankle proprioception and posture of students with pronation distortion syndrome

Public title
 The effect of corrective exercises on pronation distortion syndrome

Purpose
 Supportive

Inclusion/Exclusion criteria
Inclusion criteria:
 Diagnosis of pronation distortion syndrome in both feet, Based on the corrective exercise specialist's opinion; detection of flexible flat feet without pain, evaluated by heel rise test, navicular drop more than 10 mm, and grade 2 flat feet, Age range of 10-16 years, Having normal vision or corrected vision using spectacles or contact lenses, Absence of other acute or chronic diseases preventing exercise, Physician's agreement with corrective exercises; no history of injury or surgery on the knee; No history of severe injury or surgery on the ankle, knee, thighs, hip, or back Completing the informed consent form and individual health questionnaire.
Exclusion criteria:
 Inner ear disorders; Problems affecting balance in the nervous system; Atrial fibrillation or uncorrectable refractive error; History of lower limb injury, fracture, or surgery; Abnormal range of lower limb movements; Serious orthopedic disorders, such as having rigid flat feet (structural); Presence of pain or emergence of pain during the study; Not completing the pretest or posttest; Inconsistent participation in exercise sessions (absence from two consecutive sessions or three sessions during the course).

Age
 From **10 years** old to **16 years** old

Gender
 Male

Phase
 N/A

Groups that have been masked

- Participant

Sample size
 Target sample size: **30**
 Actual sample size reached: **30**

Randomization (investigator's opinion)
 Randomized

Randomization description
 The statistical population of this study included all male students aged 10-16 years with pronation distortion syndrome who referred to schools and screening about

1836 people and the coherent evaluation of the subjects by correction specialist instructors in 3 areas of Kermanshah was formed. The sample consisted of 30 people who were selected by random cluster sampling based on inclusion and exclusion criteria from male students (1836) aged 10-16 years . But they were randomly divided into two groups of 15 control (routine activity) and experimental (systematic and functional corrective exercises).

Blinding (investigator's opinion)

Single blinded

Blinding description

The control and experimental groups did not know which independent variables they were running.

Placebo

Not used

Assignment

Crossover

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics Committee of the University of Isfahan

Street address

Shiraz Gate

City

Isfahan

Province

Isfahan

Postal code

8174673441

Approval date

2018-01-20, 1396/10/30

Ethics committee reference number

IR.UI.REC.1396.037

Health conditions studied

1

Description of health condition studied

Lower body pronation deviation syndrome

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description

Balance

Timepoint

Before and after 12 weeks of corrective exercises

Method of measurement

2

Description

Strength

Timepoint

Before and after 12 weeks of corrective exercises

Method of measurement

Dynamometer digital

3

Description

Postural control

Timepoint

Before and after 12 weeks of corrective exercises

Method of measurement

Force plate

4

Description

Ankel proprioception

Timepoint

Before and after 12 weeks of corrective exercises

Method of measurement

Electrogoniometer

5

Description

Posture

Timepoint

Before and after 12 weeks of corrective exercises

Method of measurement

Navikular drop and Staheli Index, Goniometer, Coliseum and Landing Error Scoring System, and Flexible Ruler

Secondary outcomes

empty

Intervention groups

1

Description

Intervention group: Performed systematic and functional corrective exercises for 12 weeks (3 sessions per week for one hour).

Category

Rehabilitation

2

Description

Control group: Performed the routine exercise.

Category

Other

Recruitment centers

1

Recruitment center

Name of recruitment center

Imam Mahdi Sports Hall

Full name of responsible person

Ali Golchini

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Monaze Street

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Email

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

The University of Isfahan

Full name of responsible person

Dr. Rasool Raknizadeh

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Grant name

Grant code / Reference number

Is the source of funding the same sponsor organization/entity?

No

Title of funding source

University of Isfahan

Proportion provided by this source

20

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

Person responsible for general inquiries

Contact

Name of organization / entity

University of Isfahan

Full name of responsible person

Ali Golchini

Position

PhD student

Latest degree

Master

Other areas of specialty/work

Physical education and sports science (trend: sport injuries, corrective exercises)

Street address

Shiraz Gate, Isfahan University, Department of Physical Education, Department of Pathology & Corrective Exercises

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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

Information on the main consequences

When the data will become available and for how long

5 months after printing the results

To whom data/document is available

For researchers working in academic and scientific institutions

Under which criteria data/document could be used

Statistical analysis of data

From where data/document is obtainable

Ali Golchini Email: Ali.golchini@gmail.com Phone: 09183589577

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

Information will be sent by email or phone call within 2

weeks.

Comments