

Clinical Trial Protocol

Iranian Registry of Clinical Trials

08 Jul 2026

Effect of non-extensible lumbosacral orthosis on non-linear dynamical structure of postural sway in patients with non-specific chronic low back pain

Protocol summary

Summary

Objective: To evaluate the effect of non-extensible lumbosacral orthosis on non-linear dynamical structure of postural sway in patients with non-specific chronic low back pain, Study design: A single-blinded randomized controlled trial, Population and sample size: Thirty four participants (20-55 years old) with chronic non-specific low back pain, for at least for 12 months, serious enough to require medical attention or absence from work. Intervention: participants will be randomized in to experimental or control group, both groups will receive 8 treatment sessions for a period of 4 weeks (twice a week). Common physiotherapy modalities will comprise of moist heat, ultrasound, TENS, posture and activity education, and flexibility exercises. Patients in the experimental group will be prescribed a non-extensible lumbosacral orthosis over the whole duration of the trial, and during the whole day, with the exception of bedroom and bathroom activities. Outcome measures: The primary outcomes include dynamic structure of postural sway from the complexity, dimensionality, regularity and determinism aspects. Secondary outcomes are pain intensity, Oswestry Disability Index.

General information

Acronym

IRCT registration information

IRCT registration number: **IRCT2015101523836N2**
Registration date: **2015-11-12, 1394/08/21**
Registration timing: **registered_while_recruiting**

Last update:

Update count: **0**

Registration date

2015-11-12, 1394/08/21

Registrant information

Name

Fatemeh Azadina

Name of organization / entity

School of Rehabilitation, iran University of Medical Sciences

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Recruitment status

Recruitment complete

Funding source

Iran university of medical sciences

Expected recruitment start date

2015-11-06, 1394/08/15

Expected recruitment end date

2016-05-16, 1395/02/27

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Effect of non-extensible lumbosacral orthosis on non-linear dynamical structure of postural sway in patients with non-specific chronic low back pain

Public title

Effect of orthosis on low back pain

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria: age between 20 and 55 years;

experience of back pain for at least for 12 months serious enough to require medical attention or absence from work; at least 1 episode of LBP in the last 6 month or pain with semicontinuous nature; no history of red flags; $2 \leq \text{VAS} \leq 7$; $\text{ODI} > 6$. Exclusion criteria: history of vestibular disorder; neurological or sensory disorders; cardiac and respiratory disease; previous spinal surgery; serious neck problems; spinal structural deformity; uncorrected vision impairment; vestibular disorder; pregnancy; diabetes; unequal length > 1 cm; osteoarthritis of hip and knee; alcohol or drug use affecting balance or influencing central nervous system (within 24 h before testing).

Age

From **20 years** old to **55 years** old

Gender

Both

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **34**

Randomization (investigator's opinion)

Randomized

Randomization description**Blinding (investigator's opinion)**

Single blinded

Blinding description**Placebo**

Not used

Assignment

Parallel

Other design features**Secondary Ids**

empty

Ethics committees**1****Ethics committee****Name of ethics committee**

Iran University of Medical Sciences

Street address

Hemmat Heighway, Iran University of Medical Sciences

City

Tehran

Postal code**Approval date**

2015-06-15, 1394/03/25

Ethics committee reference number

IR.IUMS.REC.1394.9211503211

Health conditions studied**1****Description of health condition studied**

low back pain

ICD-10 code

M54.5

ICD-10 code description

Loin pain Low back strain Lumbago NOS

Primary outcomes**1****Description**

Correlation dimension

Timepoint

before & after 4 weeks intervention

Method of measurement

Force plate data

2**Description**

Lyapunov exponent

Timepoint

Before & after 4 weeks intervention

Method of measurement

Force plate data

3**Description**

Sample entropy

Timepoint

Before & after 4 weeks intervention

Method of measurement

Forceplate data

4**Description**

% determinism & Shannon entropy

Timepoint

before & after 4 weeks intervention

Method of measurement

Force plate data

5**Description**

phase plane portriate

Timepoint

before & after 4 weeks intervention

Method of measurement

force plate data

6**Description**

mean total velocity and standard deviation of velocity

Timepoint

before & after 4 weeks intervention

Method of measurement

Force plate data

Secondary outcomes

1

Description

Pain

Timepoint

Before and after 4 weeks intervention

Method of measurement

Visual analogue scale

2

Description

Disability

Timepoint

Before and after 4 weeks intervention

Method of measurement

Oswestry disability index

3

Description

Fear of avoidance

Timepoint

Before and after 4 weeks intervention

Method of measurement

Tampa scale

Intervention groups

1

Description

Patients in the experimental group will be prescribed a non-extensible lumbosacral orthosis for 4 weeks, and during the whole day, with the exception of bedroom and bathroom activities. Moreover they will receive 8 physical treatment sessions for a period of 4 weeks (twice a week). Common physiotherapy modalities will comprise of moist heat, ultrasound, TENS, posture and activity education, and flexibility exercises.

Category

Treatment - Other

2

Description

Patients in the control group will receive 8 physical treatment sessions for a period of 4 weeks (twice a week). Common physiotherapy modalities will comprise of moist heat, ultrasound, TENS, posture and activity education, and flexibility exercises.

Category

Treatment - Other

Recruitment centers

1

Recruitment center

Name of recruitment center

School of rehabilitation, Iran University of Medicine

Full name of responsible person

Fatemeh Azadinia

Street address

School of Rehabilitation Sciences, Nezam Alley,
Shahnazari St. Madar Sq. Mirdamad Blv.

City

Tehran

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Iran University of Medical Sciences

Full name of responsible person

Seyed Ali Javad Moosavi

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Hemmat Highway, Iran University of Medical Sciences

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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

Iran University of Medical Sciences

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

Contact

Name of organization / entity

School of Rehabilitation Sciences, Iran University of
Medical Sciences

Full name of responsible person

Fatemeh Azadinia

Position

Ph.D candidate

Other areas of specialty/work

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Full name of responsible person

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Position

Ph.D in physical therapy

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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