

Clinical Trial Protocol

Iranian Registry of Clinical Trials

10 Jun 2026

The combined effect of Proprioceptive Neuromuscular Facilitation Exercises and mirror therapy on Balance and Pain intensity in incomplete traumatic spinal cord injury patients

Protocol summary

Study aim

Determine the effect of Proprioceptive Neuromuscular Facilitation Exercises and mirror therapy on Balance and Pain intensity in incomplete traumatic spinal cord injury patients

Design

A clinical trial with a control group, with parallel, randomized groups, will be performed on 60 patients.

Settings and conduct

The mentioned exercises will be performed in a suitable hall with the facilities and conditions required for the intervention. The exercises are for six weeks and two sessions per week; Each workout lasts about 30 to 45 minutes between 10 and 11 in the morning. Immediately after the sessions, the balance and pain intensity of patients will be assessed using relevant questionnaires. The place of intervention will be in Shahid Muftah Clinic.

Participants/Inclusion and exclusion criteria

Inclusion criteria: Diagnosis of spinal cord injury By a neurologist 6 months have passed From spinal cord injuries Patient balance with a cut-off point score of less than 33 based on the Berg balance questionnaire Having the physical ability to participate in sports exercises Based on the opinion of a doctor No concomitant diseases (heart, lung and neurological disorders) Consent to participate in the study

Intervention groups

Control group: No training will be provided. The first intervention group for neuromuscular facilitation exercises (PNF), The second intervention group for mirror therapy exercises and The third intervention group to practice both techniques simultaneously

Main outcome variables

Pain intensity / Balance

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20220607055092N1**

Registration date: **2022-07-09, 1401/04/18**

Registration timing: **registered_while_recruiting**

Last update: **2022-07-09, 1401/04/18**

Update count: **0**

Registration date

2022-07-09, 1401/04/18

Registrant information

Name

daniel bahrami

Name of organization / entity

Country

Iran (Islamic Republic of)

Phone

+98 44 4628 3738

Email address

daniel.bahrami@yums.ac.ir

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2022-07-09, 1401/04/18

Expected recruitment end date

2022-08-19, 1401/05/28

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

The combined effect of Proprioceptive Neuromuscular Facilitation Exercises and mirror therapy on Balance and Pain intensity in incomplete traumatic spinal cord injury patients

Public title

The combined effect of Proprioceptive Neuromuscular Facilitation Exercises and mirror therapy on Balance and Pain intensity in incomplete traumatic spinal cord injury patients

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

Diagnosis of spinal cord injury By a neurologist 6 months have passed From spinal cord injuries Patient balance with a cut-off point score of less than 33 based on the Berg balance questionnaire Having the physical ability to participate in sports exercises Based on the opinion of a doctor No concomitant diseases (heart, lung and neurological disorders) Consent to participate in the study

Exclusion criteria:

disinclination to continue attending the study Leave the exercises for more than two sessions Cervical disc, lumbar disc and orthopedic problems

Age

From **20 years** old to **65 years** old

Gender

Both

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **60**

Randomization (investigator's opinion)

Randomized

Randomization description

Simple randomization

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

Ethics Committee of Yasouj University of Medical Sciences

Street address

First Floor Hazrat Zeinab School of Nursing; Yasuj University of Medical Sciences; Next to Imam Sajjad Hospital; Yasuj

City

Yasouj

Province

Kohgiluyeh-va-Boyerahmad

Postal code

7591994799

Approval date

2022-05-18, 1401/02/28

Ethics committee reference number

IR.YUMS.REC.1401.007

Health conditions studied

1

Description of health condition studied

Spinal cord injuries

ICD-10 code

S34

ICD-10 code description

Injury of lumbar and sacral spinal cord and nerves at abdomen, lower back and pelvis level

Primary outcomes

1

Description

Balance score on the Berg balance questionnaire

Timepoint

Before the intervention and after each training session (12 sessions)

Method of measurement

Berg balance questionnaire

2

Description

Pain intensity based on visual analogue scale

Timepoint

Before the intervention and after each training session (12 sessions)

Method of measurement

visual analogue scale

Secondary outcomes

empty

Intervention groups

1

Description

Control group: No content will be provided to the Control group

Category

Rehabilitation

2

Description

Intervention group: Neuromuscular facilitation (PNF) exercises will be performed for 12 sessions.

Category

Rehabilitation

3

Description

Intervention group: Mirror therapy exercises will be performed for 12 sessions.

Category

Rehabilitation

4

Description

Intervention group: Neuromuscular facilitation exercises (PNF) and mirror therapy exercises will be performed in combination for 12 sessions.

Category

Rehabilitation

Recruitment centers

1

Recruitment center

Name of recruitment center

Shahid Mofteh Clinic

Full name of responsible person

Daniel Bahrami

Street address

next to Shahid Beheshti Hospital; Yasuj County;
Kohgiluyeh and Boyer Ahmad Province

City

Yasuj

Province

Kohgilouyeh-va-Boyerahmad

Postal code

7591994799

Phone

+98 74 3322 8213

Email

daniel.bahrami@yums.ac.ir

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Yasuj University of Medical Sciences

Full name of responsible person

Sied Amin Hosseini Motlagh

Street address

First Floor Hazrat Zeinab School of Nursing; Next to
Imam Sajjad Hospital; Yasuj University of Medical
Sciences; Yasuj

City

Yasuj

Province

Kohgilouyeh-va-Boyerahmad

Postal code

7591994799

Phone

+98 74 3323 5140

Email

daniel.bahrami@yums.ac.ir

Grant name

Grant code / Reference number

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

Yes

Title of funding source

Yasuj University of Medical Sciences

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

Yasuj University of Medical Sciences

Full name of responsible person

Sima Mohammadhoseini

Position

assistant professor

Latest degree

Ph.D.

Other areas of specialty/work

Nursery

Street address

First Floor Hazrat Zeinab School of Nursing; Next to
Imam Sajjad Hospital; Yasuj University of Medical
Sciences; Yasuj

City

Yasuj

Province

Kohgilouyeh-va-Boyerahmad

Postal code

7591994799

Phone

+98 74 3323 4115

Email

hossini3270@yahoo.com

Person responsible for scientific inquiries

Contact

Name of organization / entity

Yasuj University of Medical Sciences

Full name of responsible person

Sima Mohammadhoseini

Position

assistant professor

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Person responsible for updating data

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hossini3270@yahoo.com

Sharing plan

Deidentified Individual Participant Data Set (IPD)

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

Study Protocol

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

Statistical Analysis Plan

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

Informed Consent Form

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

Clinical Study Report

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

Analytic Code

Not applicable

Data Dictionary

Not applicable