

# 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**

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#### **Province**

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#### **Postal code**

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#### **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

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assistant professor

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**Person responsible for updating data**

**Contact**

**Name of organization / entity**

Yasouj University of Medical Sciences

**Full name of responsible person**

Sima Mohammadhoseini

**Position**

assistant professor

**Latest degree**

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+98 74 3323 4115

**Email**

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