Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

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

Public title
The combined effect of Proprioceptive Neuromuscular Facilitation Exercises and mirror therapy on Balance and Pain intensity in incompelete 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
Kohgilouyeh-va-Boyrahmad

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; Kohkiluyeh and Boyer Ahmad Province
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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Yasouj 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
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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
Yasouj 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
Yasouj University of Medical Sciences
Full name of responsible person
Sima Mohammadhoseini
Position
assistant professor
Latest degree
Ph.D.
Other areas of specialty/work
Nursery
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Person responsible for scientific inquiries

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Sima Mohammadhoseini

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Ph.D.

Other areas of specialty/work
Nursery

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Person responsible for updating data

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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