

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

18 Jun 2026

### The effects of Sensorimotor Training on hand function of children with spastic hemiplegia 4-12 years

#### Protocol summary

##### Summary

Objectives: In children with spastic hemiplegia, sensorimotor disorder cause inability to do many manual skills, followed by the restriction on doing daily activities and assignments. Because of the important role of manual skills in children's adaptation to the environment and independence in daily life activities, development of these skills is of great importance. The present research aimed to study the effect of sensorimotor training on improving hand function in children with spastic hemiplegia. Experimental design: The present research is a single-blind experimental study. Participants: 40 children with cerebral palsy (spastic hemiplegia) aged 4-12. In the control group, 20 children spastic hemiplegia will receive conventional training on hand function including stretching, strengthening muscles, and fine movements of hands 3 sessions a week for 4 weeks. In the intervention group, 20 other children with spastic hemiplegia, in addition to conventional training on hand function, will perform sensorimotor exercises 3 sessions a week for 4 weeks (each session will last 1 hour). Treatment will be based on the principles of sensory retraining and further use hands. However, unlike the traditional retraining methods in which hands are mainly passive during the intervention, this training requires active and exploratory movements of hands. It should be noted that the sense of sight will be eliminated in order to further stimulate the sensory function of hands. These exercises include detection of objects and their weight, texture, and temperature, manipulation, and subtle movements. Participants of both groups will be evaluated before and after the intervention and a follow-up measurement will be performed in the intervention group one month after the intervention. primary and secondary assessment is Stereognosis, Proprioceptive, Purdue pegboard, MAS, Nine Hole Peg Test.

#### General information

##### Acronym

##### IRCT registration information

IRCT registration number: **IRCT2016030626926N1**

Registration date: **2016-12-09, 1395/09/19**

Registration timing: **registered\_while\_recruiting**

Last update:

Update count: **0**

##### Registration date

2016-12-09, 1395/09/19

##### Registrant information

##### Name

Karim Ayoubi Avaz

##### Name of organization / entity

Semnan University of Medical Sciences

##### Country

Iran (Islamic Republic of)

##### Phone

+98 23 3334 0867

##### Email address

ayoubikarim@semums.ac.ir

##### Recruitment status

**Recruitment complete**

##### Funding source

Neuromuscular rehabilitation research center

##### Expected recruitment start date

2016-06-11, 1395/03/22

##### Expected recruitment end date

2017-02-10, 1395/11/22

##### Actual recruitment start date

empty

##### Actual recruitment end date

empty

##### Trial completion date

empty

**Scientific title**

The effects of Sensorimotor Training on hand function of children with spastic hemiplegia 4-12 years

**Public title**

study of hand function in cerebral palsy

**Purpose**

Other

**Inclusion/Exclusion criteria**

Inclusion criteria: Medical diagnosis of children with spastic hemiplegia; being aged 4-12; the ability to communicate in order to perform tests; mild to moderate spasticity based on the Modified Ashworth Scale, and having a sense of protection in the palm of the hand (the minimum monofilament No. 6.65 and 33 grams).  
Exclusion criteria: Lack of cooperation during the intervention or parent's request for stopping the intervention; orthopedic problems such as fixed deformity in hand; impairment of attention and concentration; and significant hearing and vision problems.

**Age**

From **4 years** old to **12 years** old

**Gender**

Both

**Phase**

2-3

**Groups that have been masked**

*No information*

**Sample size**

Target sample size: **40**

**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**

Semnan University of Medical Sciences Ethics Committee

**Street address**

No.47,Semnan university of medical sciences, Basij Blvd, Semnan, Iran

**City**

Semnan

**Postal code****Approval date**

2016-05-25, 1395/03/05

**Ethics committee reference number**

lr.semums.rec.1395.22

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

Spastic hemiplegic cerebral palsy

**ICD-10 code**

G80.2, G81

**ICD-10 code description**

G80.2 Spastic hemiplegic cerebral palsy G81.1 Spastic hemiplegia

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

hand fine movement

**Timepoint**

Before intervention, The end of each 4 treatment sessions, end of intervention and 1 month after the end of intervention

**Method of measurement**

purdopegboard, Nine Hole Peg Test

**Secondary outcomes****1****Description**

sensory of hand function

**Timepoint**

Before intervention, The end of each 4 treatment sessions, end of intervention and 1 month after the end of intervention

**Method of measurement**

sterognosis and Proprioceptive

**Intervention groups****1****Description**

Intervention group:In the intervention group, in addition to conventional occupational therapy training on hand function, will perform sensorimotor exercises 3 sessions a week for 4 weeks (each session will last 1 hour).

**Category**

Rehabilitation

**2****Description**

control group:In the control group, patients will receive conventional occupational therapy training on hand function including stretching, strengthening muscles, and fine movements of hands 3 sessions a week for 4 weeks

(each session will last 1 hour).

### Category

Rehabilitation

## Recruitment centers

### 1

#### Recruitment center

##### Name of recruitment center

Neruromuscular rehabilitation research center

##### Full name of responsible person

Karim Ayoubi Avaz

##### Street address

No.24, Neuromuscular Rehabilitation Research Center, Ghods Blvd, Mashahir square, Semnan, Iran

##### City

Semnan

## Sponsors / Funding sources

### 1

#### Sponsor

##### Name of organization / entity

Vice chancellor for research, Semnan University of Medical Sciences

##### Full name of responsible person

Dr Ali Rashidipour

##### Street address

No.47, Semnan university of medical sciences, Basij Blvd, Semnan, Iran

##### City

Semnan

##### Grant name

##### Grant code / Reference number

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

Yes

##### Title of funding source

Vice chancellor for research, Semnan 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

Semnan University of Medical Sciences

##### Full name of responsible person

Karim Ayoubi Avaz

##### Position

Master of sciences / Faculty member

##### Other areas of specialty/work

##### Street address

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## Person responsible for updating data

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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*