# Clinical Trial Protocol
# Iranian Registry of Clinical Trials

10 Jun 2026

## The effect of motor imagery with sensory feedback exercises on upper extremity sensory-motor function in stroke patients

## Protocol summary

**Study aim**

Impact of motor imagery exercises with sensory feedback on the sensory-motor function of the upper extremity of stroke individuals

**Design**

In this study, 30 eligible patients referring to therapeutic center dependent to IUMS are chosen purposefully and a code is allocated to each of one of them. Then patients are randomly divided into two intervention (motor imagery) and control (conventional rehabilitation) groups.

**Settings and conduct**

This is a randomized clinical trial study. First the ethical code, from Iran University of Medical Sciences, is obtained. Then sampling from neurology outpatient clinics (school of rehabilitation clinic, Firoozgar and Shafa-Yahyaeian hospitals) is conducted. Then the eligible participant fill out form of willingness, they will randomly be assigned to one of two groups (intervention, control). This is a single blind and only testers are blind to the study. But the patients know which group of protocol they are and the therapists are also aware of the type of protocols.

**Participants/Inclusion and exclusion criteria**

Inclusion criteria: Diagnosis of stroke, Brunnstrom upper extremity function level 2 and more , cognitive level at least 21 according to MMSE, not having of musculu-skeletal problems leading to contracture and joint deformity, not having unilateral neglect, demantia or depression, not having Broca-Vernike aphasia (according to neurologist diagnosis), ability to reading and writing. Exclusion criteria: Recurrence of stroke during study process.

**Intervention groups**

Intervention group protocol: It Includes motor-imagery exercise for upper extremity. For this purpose, we have designed a simple method to give patients more precise and more accurate training. The functions of the upper extremity (anti-spastic tone), which is important in activity of daily living are performed. These include: abduction and external rotation of shoulder, elbow extension, forearm supination, wrist extension, and flexion of the metacarpal-phalanges (MP) joints of hand. These exercises are mentally and with closed eyes. In the intervention group. They also use the treatment of the control group. Control group protocol: They receive conventional rehabilitation exercises . These include: programs for motor function, exercises affecting muscle tone, upper limb training, exercises for decreasing of pain and edema in upper limb.

**Main outcome variables**

Sensory-motor function of the upper extremity

## General information

**Reason for update**

**Acronym**

**IRCT registration information**

IRCT registration number: **IRCT20140416017301N5**
Registration date: **2018-01-29, 1396/11/09**
Registration timing: **retrospective**

Last update: **2018-01-29, 1396/11/09**
Update count: **0**

**Registration date**

2018-01-29, 1396/11/09

**Registrant information**

**Name**

Akram Azad

**Name of organization / entity**

**Country**

Iran (Islamic Republic of)

**Phone**

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**Email address**

azad.a@iums.ac.ir

**Recruitment status**

**Recruitment complete**

**Funding source**

**Expected recruitment start date**
2016-09-22, 1395/07/01
**Expected recruitment end date**
2017-04-19, 1396/01/30
**Actual recruitment start date**
2016-09-22, 1395/07/01
**Actual recruitment end date**
2017-04-19, 1396/01/30
**Trial completion date**
empty

**Scientific title**
The effect of motor imagery with sensory feedback exercises on upper extremity sensory-motor function in stroke patients

**Public title**
" The effect of motor imagery exercises on upper extremity function in stroke patients"
**Purpose**
Treatment
**Inclusion/Exclusion criteria**
**Inclusion criteria:**
The level of upper extremity function according to Brunstrum ≥2 Ability to reading and writing Ability of cognitive level according to MMSE ≥21 Not having muscle-skeletal problem leading to contracture or joint deformity Not having unilateral neglect Not having demansia and depression Not having Broca--Vernike aphasia
**Exclusion criteria:**
Recurrence of stroke during study process
**Age**
From **30 years** old to **80 years** old
**Gender**
Both

**Phase**
N/A
**Groups that have been masked**

- Participant

**Sample size**
Target sample size: **30**
Actual sample size reached: **30**
**Randomization (investigator's opinion)**
Randomized
**Randomization description**
Simple randomization: Participants are assigned to intervention and control groups based on even/odd coding. According to the entry of individuals with the inclusion criteria for the plan, the individuals with the odd code in the control group and the enen code in the intervention group will be placed.
**Blinding (investigator's opinion)**
Single blinded
**Blinding description**
This study is single blind and only the examiner dose not know which patients belong to which group.
**Placebo**
Not used
**Assignment**
Parallel
**Other design features**

## Secondary Ids

empty

## Ethics committees

**1**

**Ethics committee**
**Name of ethics committee**
Ethics committee of Iran University of Medical Sciences
**Street address**
School of Rehabilition, Mirdamad Ave, Shahnazari Ave
**City**
Tehran
**Province**
Tehran
**Postal code**
158754391
**Approval date**
2016-09-10, 1395/06/20
**Ethics committee reference number**
IR.IUMS.REC.1395.9411355007

## Health conditions studied

**1**

**Description of health condition studied**
Stroke
**ICD-10 code**
I64
**ICD-10 code description**
Stroke, not specified as haemorrhage or infarction

## Primary outcomes

**1**

**Description**
"Sensory-motor function of upper extremity"
**Timepoint**
Before and affter intervention
**Method of measurement**
Box-Block Test, Purde-Peg Board Test, Rang of Motion, Modified Ash- worth Scale, Two-Point Discrimination Test, Nottingham Sensory Assessment, Stroke Impact Scale

## Secondary outcomes

empty

## Intervention groups

**1**

**Description**

Intervention group: It Includes motor-imagery exercise for upper extremity. For this purpose, we have designed a simple method to give patients more precise and more accurate training. The functions of the upper extremity (anti-spastic tone), which is important in activity of daily living are performed. These include: abduction and external rotation of shoulder, elbow extension, forearm supination, wrist extension, and flexion of the metacarpal-phalanges (MP) joints of hand. These exercises are mentally and with closed eyes. Intervention group also receive the treatment of the control group.

**Category**

Rehabilitation

**2**

**Description**

Control group: They receive conventional rehabilitation exercises. These include programs for motor function, exercises affecting muscle tone, upper limb training, exercises for decreasing of pain and edema in upper limb.

**Category**

Rehabilitation

## Recruitment centers

**1**

**Recruitment center**

**Name of recruitment center**

School of rehabiltion clinic, Firoozgar hospital, Shafa-Yahyaian hospital

**Full name of responsible person**

Akram Azad

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**2**

**Recruitment center**

**Name of recruitment center**

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**Full name of responsible person**

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**3**

**Recruitment center**

**Name of recruitment center**

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## Sponsors / Funding sources

**1**

**Sponsor**

**Name of organization / entity**

Iran University of Medical Sciences

**Full name of responsible person**

Seeid Kazem Malakoti-Vice-Chancellor's Office for Research

**Street address**

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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**

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**
Iran University of Medical Sciences

**Full name of responsible person**
Akram Azad

**Position**
Assistant Professor

**Latest degree**
Ph.D.

**Other areas of specialty/work**
Occupational Therapy

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## Person responsible for scientific inquiries

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## Person responsible for updating data

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**Other areas of specialty/work**
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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**
Yes - There is a plan to make this available

**Statistical Analysis Plan**
Yes - There is a plan to make this available

**Informed Consent Form**
Yes - There is a plan to make this available

**Clinical Study Report**
Yes - There is a plan to make this available

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

**Data Dictionary**
Not applicable

**Title and more details about the data/document**
Not Decided

**When the data will become available and for how long**
Not Decided

**To whom data/document is available**
Not Decided

**Under which criteria data/document could be used**
Not Decided

**From where data/document is obtainable**
Not Decided

**What processes are involved for a request to access data/document**
Not Decided

**Comments**