

# Paralysis post stroke, rehabilitation therapy by immobilizing the normal upper arm

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| <b>Submission date</b><br>05/03/2012   | <b>Recruitment status</b><br>No longer recruiting | <input type="checkbox"/> Prospectively registered<br><input type="checkbox"/> Protocol                       |
| <b>Registration date</b><br>13/03/2012 | <b>Overall study status</b><br>Completed          | <input type="checkbox"/> Statistical analysis plan<br><input type="checkbox"/> Results                       |
| <b>Last Edited</b><br>10/09/2014       | <b>Condition category</b><br>Circulatory System   | <input type="checkbox"/> Individual participant data<br><input type="checkbox"/> Record updated in last year |

## Plain English summary of protocol

### Background and study aims

A stroke is the result of damage to the blood circulation of the brain, often causing paralysis of the arm and leg of one side of the body. Recovery from this paralysis is difficult and can take months or years, with poor results especially in the recovery of a paralyzed hand. In recent years a new rehabilitation method has been used which involves immobilizing the healthy upper limb and subjecting the paralyzed upper limb to a process of intensive rehabilitation for 5 hours daily for 10 days, with surprisingly good results in terms of recovery of movement in the affected upper limb.

### Who can participate?

People of any age with paralysis caused by a stroke, at least one year after the stroke, who retain at least traces of movement in the affected hand.

### What does the study involve?

The rehabilitation procedure used with patients involves immobilization of the upper healthy limb by a device specially designed to prevent movement of this limb especially the hand, and subjecting the affected limb to perform movements of daily living such as lifting a glass of water to their mouths, touching the head, and picking up small objects with the fingers. The movements of the affected limb are evaluated before and after the rehabilitation.

### What are the possible benefits and risks of participating?

The potential benefit of this treatment is improved movement of the affected limb. There are no risks involved with this treatment.

### Where is the study run from?

This study will be performed in the service of neurorehabilitation of the Neurological Institute of Colombia in Medellin, Republic of Colombia.

### When is the study starting and how long is it expected to run for?

The study ran from July 2009 to December 2012.

Who is funding the study?  
The study is funded by the Neurological Institute of Colombia.

Who is the main contact?  
Jose Ivan Jimenez  
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## Contact information

**Type(s)**  
Scientific

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## Additional identifiers

**Protocol serial number**  
N/A

## Study information

**Scientific Title**  
Motor rehabilitation: brain plasticity or neuronal regeneration?

### Study objectives

The effectiveness of motor rehabilitation by means of constraint-induced therapy following a stroke has been clearly established by the publication of several research papers. Constraint-induced therapy involves restricting the motility of the healthy upper limb and forcing the affected upper limb for 5 hours daily for 10 days to perform exercises described as movements of everyday life.

On the other hand, the explanations of the change that occur in the central nervous system with intensive constraint therapy have not been investigated properly and there are various theories such as brain plasticity is responsible for the improvement of motility.

Hypothesis:  
Improvement that occurs with constraint-induced therapy is caused by regeneration of the corticospinal or pyramidal neurons. We intend to test the validity of this hypothesis that contradicts the dogma of non-regeneration of neurons.

**Ethics approval required**

Old ethics approval format

**Ethics approval(s)**

Ethics Committee of the Neurological Institute of Colombia, 17/02/2009

**Study design**

Quasi-experimental clinical trial

**Primary study design**

Interventional

**Study type(s)**

Treatment

**Health condition(s) or problem(s) studied**

Stroke motor deficit

**Interventions**

Patients who meet inclusion criteria will undergo physical rehabilitation therapy consisting of immobilizing the upper healthy limb by means of a specially designed vest and forcing the affected upper limb to perform movements described as the movements of everyday life, such as lifting a glass of water, touching an ear, scratching the head, picking up small objects with the fingers, etc.

This therapy will be for 5 hours daily Monday through Friday for two weeks; the rest of the day the patient will continue with his good arm immobilized. The immobilization of the arm should be removed at night. During this therapy a physiotherapist will be all the time forcing the patient to perform the movements ordered.

**Intervention Type**

Other

**Phase**

Not Applicable

**Primary outcome(s)**

1. Before and after constriction-induced therapy, the movement of the arm of patient are measured, taking into account the angle of movement at the level of fingers, wrist, elbow and shoulder, and also assessing the strength of these movements.
2. The movements of the arm and gait of the patient will be filmed before and after the therapy. Furthermore, patients will undergo a functional magnetic resonance imaging (fMRI) scan before and after the therapy.

The comparison of the above parameters before and after treatment will measure the effectiveness of treatment.

**Key secondary outcome(s)**

Changes in motor cortex activity, assessed by fMRI, allow evaluation of the role of the cortical areas in the rehabilitation of the motor function by the therapy

**Completion date**

30/06/2012

## Eligibility

### Key inclusion criteria

1. Patients of either gender without age limits
2. Presence of motor deficits due for stroke with hemiparesis or monoparesis
3. At least 3 years after the stroke
4. The affected arm should have at least traces of movement

### Participant type(s)

Patient

### Healthy volunteers allowed

No

### Age group

Adult

### Sex

All

### Key exclusion criteria

1. Presence of joint contractures
2. Lower motor neuron pathology
3. Pathology that compromises the neuromuscular junction
4. Spinal cord pathology
5. Inability to understand instructions and adhere to the intervention

### Date of first enrolment

30/06/2010

### Date of final enrolment

30/06/2012

## Locations

### Countries of recruitment

Colombia

### Study participating centre

Calle 55 No. 46-36

Medellin

Colombia

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# Sponsor information

## Organisation

Neurological Institute of Colombia (Colombia)

## ROR

<https://ror.org/00fsjh77>

# Funder(s)

## Funder type

Hospital/treatment centre

## Funder Name

Neurological Institute of Colombia (Colombia)

# Results and Publications

## Individual participant data (IPD) sharing plan

## IPD sharing plan summary

Not provided at time of registration