# Kinematic Motion Analyses of Upper Extremity After Intensive Training with Spring-assisted Dynamic Hand Orthosis in Patient with Stroke

Submission date	Recruitment status	Prospectively registered
11/10/2010	No longer recruiting	Protocol
Registration date	Overall study status	Statistical analysis plan
19/10/2010	Completed	Results
Last Edited	Condition category	[] Individual participant data
19/10/2010	Circulatory System	<ul> <li>Record updated in last year</li> </ul>

**Plain English summary of protocol**Not provided at time of registration

## Contact information

Type(s)

Scientific

#### Contact name

Dr Young-Keun Woo

#### Contact details

Department of Physical Therapy Andong Science College 496 Kyu-ri SeoHu-Myeon Andong City Gyeongsangbuk-do Korea, South 760-709

# Additional identifiers

Protocol serial number 2009-44

# Study information

Scientific Title

Effects of Spring Assisted Dynamic Hand Orthosis Training on Functions and Movement Smoothness of the Hemiparetic Upper Extremity: A randomised controlled trial

#### Acronym

**SADHO** 

#### **Study objectives**

The purpose of this experiment was to evaluate the effectiveness of training using a spring assisted dynamic hand orthosis on smoothness of movement, clinical assessment score, and grip strength of the affected limb in hemiparetic patients. To determine resultant velocity and jerkiness score for movement smoothness, the Box and Block Test (BBT), Action Research Arm Test (ARAT), and Fugl-Meyer Assessment (FMA) for functions of the hemiparetic upper extremity were conducted.

#### Ethics approval required

Old ethics approval format

#### Ethics approval(s)

Yonsei University, College of Medicine approved on the 25th of March 2010 (ref: 2009-44)

#### Study design

Randomised comparative interventional pretest-posttest control group design

### Primary study design

Interventional

### Study type(s)

Treatment

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

Hemiparesis due to Stroke

#### **Interventions**

Patients will undergo training activities while each wore a spring assisted dynamic hand orthosis. Training will be guided by a physiotherapist for 1 hour per day per week for 4 weeks.

### **Intervention Type**

Other

#### Phase

Not Applicable

#### Primary outcome(s)

3 clinical assessments and the measurement of grip strength. Fugl-Meyer Assessment and grip strength and Action Research Arm Test and Box and Block Test.

All outcomes were measured at baseline and after 4 weeks of training.

#### Key secondary outcome(s))

Spatiotemporal parameters were collected using a 3-D motion analysis system and workstation software pre- and post-test (VICON MX system, Oxford Metrics, U.K.). Data collection was

conducted at the Motion Analysis Research Laboratory in the Yonsei University. All outcomes were measured at baseline and after 4 weeks of training.

### Completion date

15/03/2010

# **Eligibility**

### Key inclusion criteria

- 1. 18 years or older
- 2. Unilateral hemiparesis more than 6 months post-stroke duration
- 3. No current or previous orthopedic or surgical histories affecting the hemiparetic upper extremity
- 4. Mini-Mental State Examination (MMSE) Korean version score ≥ 23 (to ensure that they fully understood the study procedure)
- 5. Patients should have at least some active voluntary movement of the upper extremity (i.e., 10 degrees of shoulder flexion/abduction, 10 degrees of elbow flexion/extension, and 30 degrees of interphalangeal proximal joints / 20 degrees of interphalangeal distal joints of volitional finger flexion when the hand is positioned in wrist and finger extension)
- 6. No flaccidity of the affected limb
- 7. No severe contracture or spasticity of the affected wrist or hand

### Participant type(s)

Patient

## Healthy volunteers allowed

No

### Age group

Adult

#### Lower age limit

18 years

#### Sex

All

## Key exclusion criteria

Does not match inclusion criteria

#### Date of first enrolment

23/12/2009

#### Date of final enrolment

15/03/2010

## Locations

#### Countries of recruitment

Korea, South

Study participating centre Department of Physical Therapy Gyeongsangbuk-do Korea, South 760-709

# **Sponsor information**

### Organisation

Yonsei University College of Medicine (South Korea)

#### **ROR**

https://ror.org/01wjejq96

# Funder(s)

## Funder type

Other

#### **Funder Name**

Investigator funded (South Korea) - Dissertation project

## **Results and Publications**

Individual participant data (IPD) sharing plan

## IPD sharing plan summary

Not provided at time of registration

## **Study outputs**

Output type **Details** Date created Date added Peer reviewed? Patient-facing?

Participant information sheet 11/11/2025 11/11/2025 No Participant information sheet

Yes