

# 10<sup>TH</sup> WORLD CONGRESS FOR **NEUROREHABILITATION**

7-10 February, 2018

Renaissance Mumbai Convention Centre Hotel

Powai, Mumbai, India

FROM NEUROTECHNOLOGIES  
TO COMMUNITY CARE

# FINAL PROGRAMME

**WFNR**

World Federation for NeuroRehabilitation



Indian Federation of NeuroRehabilitation



Abstract Title	Presenting Author	Category
<b>WFNR</b> World Federation for NeuroRehabilitation (http://wfnr.co.uk) STUDY OF MUSCLE ACTIVITY OF UNAFFECTED LIMB WHILE PERFORMING MIKROK MOVEMENTS IN STROKE.	Soniya Chhibber (India)	Stroke
EMBODIED COGNITIVE TRAINING FOR STROKE PATIENTS' UPPER EXTREMITY FUNCTIONAL RECOVERY: EFFECTS AND NEUROBIOLOGICAL MECHANISMS FROM NEUROTECHNOLOGIES TO COMMUNITY CARE	Junlei Shan (China)	Stroke
EVALUATION OF RESTING-STATE FUNCTIONAL CONNECTIVITY IN RELATION TO MOTOR PERFORMANCE AND RECOVERY AFTER STROKE: A PILOT STUDY USING FNIRS	Sungmin Cha, Republic of Korea	
EXPLORING STROKE PATIENT'S EXPECTATIONS FOR UPPER LIMB MOTOR RECOVERY AND BARRIERS TO ACHIEVING THOSE EXPECTATIONS.	Katie Mead (United Kingdom)	
FEASIBILITY OF POST-STROKE UPPER LIMB REHABILITATION USING EMBODIED VIRTUAL REALITY	Nirmal Narayan (India)	Stroke
FOLLOW-UP NEEDS AFTER STROKE- CAN POST-STROKE CHECKLIST BE PART OF THE SOLUTION?	Emma Kristina Kjörk (Sweden)	Stroke
HAND BASED FUNCTIONAL TRAINING FOR HEMIPARETIC PATIENT WITH IN-HAND MANIPULATION DEFICIT USING COGNITIVE APPROACH - A SINGLE CASE STUDY	Abhinav Navalkishore Mishra (India)	Stroke
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HYPERBARIC OXYGEN THERAPY REDUCES POST-STROKE EDEMA AND IMPROVES OUTCOMES	Ravi Sankaran (India)	Stroke
IMPACT OF STROKE ON BALANCE ABILITY AND POSTURAL sway: A COMPARATIVE STUDY	Ugur Caviak (Turkey)	Stroke
IMPROVEMENT OF PERSISTENCE AND F/M AMPLITUDE RATIO IS IMPORTANT IN CONTROLLING MUSCLE TONE IN PATIENTS WITH CEREBROVASCULAR DISEASE	Toshiaki Suzuki (Japan)	Stroke
INFLUENCE OF ANKLE LOADING ON STANDING POSTURAL CONTROL AND LOWER LIMB MUSCLE ACTIVATION IN PERSONS WITH STROKE	Priyanka Ishwar Laiakia (India)	Stroke



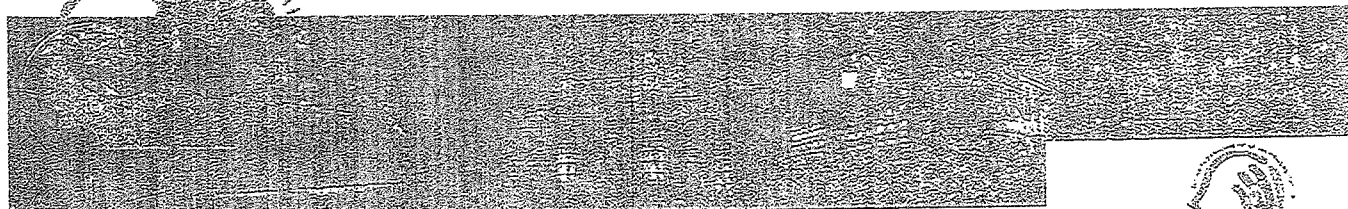
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**Accepted Poster**

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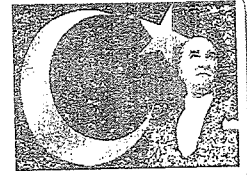
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Abstract Title	Presenting Author	Category
CEREBRAL CHANGES RELATED TO SEXUAL DYSFUNCTION AFTER SPINAL CORD INJURY: A MIXED METHODS STUDY	Carl Froilan Leochico (Philippines)	Cognitive Disorder Neuropsychology
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IMPACT OF THEME OF MUSIC (HAPPY OR SAD) ON ATTENTION, CONCENTRATION & RECALL OF HEALTHY YOUNG ADULTS.	Chitkala Pradeep Deshpande (India)	Cognitive Disorder Neuropsychology
INTERPRETING SPATIAL DYSGRAPHIA AFTER STROKE: STRAIGHT AHEAD OR STRAIGHT ABOVE ?	Dominic Pérennou (France)	Cognitive Disorder Neuropsychology
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SUBLIMINAL SEXUAL PERCEPTION: THE ROLE OF SPINAL CORD	Carl Froilan Leochico (Philippines)	Cognitive Disorder Neuropsychology
CONSTRUCTION OF QUESTIONNAIRE TO ASSESS THIRD PARTY DISABILITY IN MOTHERS OF CHILDREN WITH AUTISM SPECTRUM DISORDER (CWASD)	Rishidhar Ashokkumar Dubey (India)	Cognitive Disorder Neuropsychology





# IMPACT OF STROKE ON BALANCE ABILITY AND POSTURAL SWAY: A COMPARATIVE STUDY



Ayşe UNAL<sup>1</sup>, Mehmet DURAY<sup>1</sup>, Filiz ALTUĞ<sup>1</sup>, Ugur CAVLAK<sup>1</sup>  
<sup>1</sup>Pamukkale University, School of Physical Therapy and Rehabilitation,  
 Department of Neurological Rehabilitation, Denizli-TURKEY.

## BACKGROUND

Stroke is the third most common cause of death and the leading cause of long-term disability. Stroke often results in impaired balance. Postural sway for patients with hemiparesis can be twice that of their age-matched peers. This study was conducted to compare balance ability and postural sway of individuals with hemiparesis and healthy controls.

## MATERIALS AND METHODS

### Participants

A total of 20 individuals with hemiparesis (Group I) and 40 healthy controls (Group II) aged 30-60 years were included. The mean age of the individuals with hemiparesis and healthy controls were 48.6±10.1 yr., 44.05±7.77 yr., respectively. The mean duration of stroke was 9.30±7.97 months. The mean duration of rehabilitation was 7.75±6.43 months (Table 1). Gender distribution by the groups are given in Figure 1.

Table 1. Demographic and clinical data by the groups

Variables	Group I Mean ±SD	Group II Mean ±SD
Age(year)	48.6±10.1	44.05±7.77
Duration of stroke (month)	9.30±7.97	-
Duration of rehabilitation (month)	7.75±6.43	-

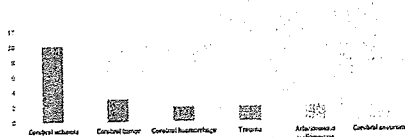


Figure 1. Diagnosis of individuals with hemiparesis

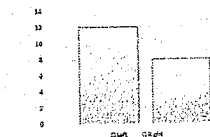


Figure 2. Lateralization of hemiparesis

### Outcome measurements

#### Single-leg stance (SLS) test

When the SLS was performed, individuals with hemiparesis were instructed to stand on paretic leg and healthy controls performed the test with dominant leg.

#### Timed Up & Go (TUG) test

In the TUG test, participants were asked to stand up from a standard chair with a seat height of between 40 and 50 cm, walk a 3-m distance at a normal pace, turn, walk back to the chair, and sit down.

#### SportKAT-550 kinesthetic ability trainer

Postural sway of the participants was assessed by a kinesthetic ability trainer (SportKAT-550) to determine postural sway in four directions. During the test, participants on the platform receive continuous feedback from the monitor, following the position according to the target point of the mark indicating their center of mass changes (Figure3). Lower scores indicate that balance performance is good.

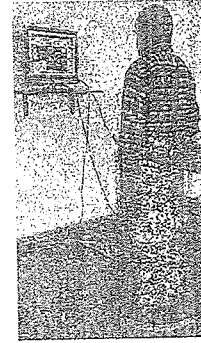


Figure 3. Assessment of postural sway via SportKAT-550.

## RESULTS

The mean balance scores and postural sway values of the participants are shown in Table 2. In all outcome measurements just used in this study, individuals with hemiparesis showed lowest scores compared to the healthy controls ( $p < 0.05$ ).

Table 2. Comparison of balance scores and postural sway values by the groups

Variables	Group I Mean ± SD	Group II Mean ± SD	p*
Single-leg stance test (sec)	8.52 ± 5.12	59.53 ± 43.04	0.017
Timed up & go test (sec)	17.82 ± 5.26	6.74 ± 0.84	0.001
SportKAT-550	967.90 ± 658.97	470.60 ± 193.80	0.001
Balance Index score			

\*Independent samples t test

## CONCLUSION

Stroke has a negative impact on static and dynamic balance ability. It also disturbs postural sway of the hemiparetic individuals. That's why; physical therapists should focus on improving static and dynamic balance ability and postural sway in patients with hemiparetic stroke in early term.

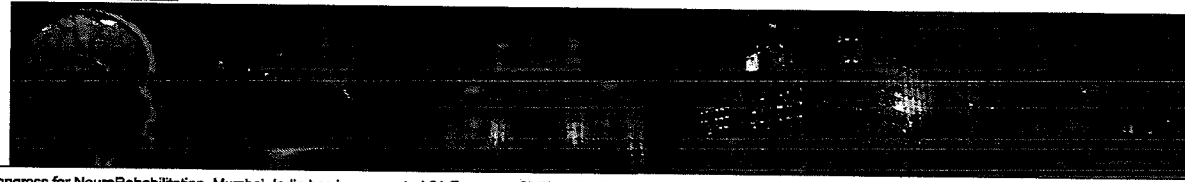
## REFERENCES

1. Tyson, S. F., Hanley, M., Chillala, J., Selley, A., & Tallis, R. C. (2006). Balance disability after stroke. *Physical therapy, 85*(1), 30-38.
2. Hendrickson, J., Patterson, K. K., Inness, E. L., McIlroy, W. E., & Mansfield, A. (2014). Relationship between asymmetry of quiet standing balance control and walking post-stroke. *Gait & Posture, 39*(1), 177-181.

Corresponding address: ucavlak@pau.edu.tr



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UPDATES : here... (http://wcnr2018.in/menu.html) | 10<sup>th</sup> World Congress for NeuroRehabilitation, Mumbai, India has been granted 21 European CME credits (ECN)

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**Results:** Case 1: A 61 years old gentleman was admitted to the neurological rehabilitation ward 2 weeks after acquiring bilateral pontine infarct due to vertebrobasilar artery stenosis. He presented with right hemiplegia, left sided cerebellar signs, anarthria, bilateral facial palsy and oropharyngeal dysphagia; requiring naso-gastric feeding. Within the first week of admission, he developed disturbingly loud hiccups exceeding 2 days. Symptoms dramatically improved with initiation of low dose chlorpromazine. Pharmacological intervention ceased after 5 days, upon full symptomatic control.

**Case 2:** A 43 years old gentleman was admitted to the neurological rehabilitation ward 1 week following a left lateral medullary infarct. He developed distressing intractable hiccups averaging 20-30 hiccups/minute. This resulted in physical exhaustion, sleep disruption and social deprivation. Symptoms were refractory to wide range of single pharmacological intervention. Eventual relief was achieved with dual pharmacological therapy. Symptoms continued at a lesser frequency till 3 months post stroke and pharmacological management was de-escalated.

**Conclusions:** Hiccups may occur in all types of brain infarctions, commonly the brain stem ischaemic strokes involving the pontomedullary areas. Persistent and intractable hiccups is distressing-causing sleep deprivation, physically exhaustion and may lead to aspiration pneumonia. Hiccups have significant impact on post stroke rehabilitation and is potentially detrimental to an individual's quality of life. Treatment using drugs which targets specific neurotransmitters related to the hiccup reflex arc results in promising outcome for symptomatic control.

### T-125: Hyperbaric oxygen therapy reduces post-stroke edema and improves outcomes

Ravi Sankaran, *Amrita Institute of Medical Sciences, Cochin, Kerala, India*

**Objectives:** To assess the efficacy of hyperbaric oxygen therapy (HBOT) in patients with ischemic stroke

**Methods:** A Retrospective case-control study in a tertiary level neuro-rehabilitation unit. 10 cases received HBOT immediately post-stroke and had CT changes in Hounsfield units were tracked along with DRS and KPS. They were matched to similar controls for NIHSS and baseline CT. Hounsfield changes and KPS at weekly intervals for 4 weeks were used as outcome measures.

**Results:** There was a significant difference in KPS and Hounsfield units favoring the HBOT group. 0 cases expired in the first 3 months compared to 4 in the control group.

**Conclusions:** There was a significant difference in KPS and Hounsfield units favoring the HBOT group. 0 cases expired in the first 3 months compared to 4 in the control group.

### T-126: Impact of stroke on balance ability and postural sway: A comparative study

Ugur Cavlak, *Pamukkale University, Denizli, Turkey*

**Objectives:** To compare patients with stroke and healthy controls in

terms of balance ability and postural sway.

**Methods:** Twenty hemiparetic participants (mean age:  $48.6 \pm 10.1$ yr) and 40 healthy controls (mean age:  $44.05 \pm 7.77$ yr) were included and compared in this study. One single leg test (eyes open) and timed up & go test were used to assess balance ability. Postural sway of the participants was assessed by a kinesthetic ability trainer (SPORT-KAT 550) to determine postural sways in four directions.

**Results:** In all outcome measurements just used in this study, the hemiparetic participants showed lowest scores compared to the healthy controls ( $p < 0.05$ ).

**Conclusions:** Hemiparetic stroke decreases static and dynamic balance ability and increases postural sway of the subjects. That's why; physical therapists should improve static and dynamic balance ability and decrease postural sways in early phase of the treatment program of the patients with hemiparetic stroke.

### T-127: Improvement of persistence and F/M amplitude ratio is important in controlling muscle tone in patients with cerebrovascular disease

Toshiaki Suzuki, *Naka, Graduate School of Kansai University of Health Science, Sennan, Osaka, Japan*

**Objectives:** In our previous research, persistence and F/M amplitude ratio were reflected in the magnitude of muscle tone and voluntary movement. We conducted physical therapy in a patient with cerebrovascular disease who had severe dysfunction of the thumb with hypertonus of thenar muscles. We have presented the characteristics of F-wave data and clinical findings after physical therapy in this patient.

**Methods:** We treated a male patient with right hemiparesis (age, 67 years) and cerebral hemorrhage, using physical therapy (20 min, twice a week). The morbidity period from onset was 114 months. The patient could not move the affected fingers, especially the thumb. The clinical findings were as follows: the MAS of thenar muscles was 2, and the tendon reflex of the arm was classified as slight hyperreflexia. Physical therapy consisted of stretching of finger, especially thumb, muscles. We tested the F-wave of the right thenar muscles after stimulating the right median nerve of the wrist at rest. Persistence and F/M amplitude ratio were analyzed using measurable F-waves. After several months, we again tested the clinical findings and F-waves and compared the data to judge the effect of physical therapy.

**Results:** A persistence of 97% and F/M amplitude ratio of 1.92% were observed at the first trial. After several months, the motion of affected fingers was improved but the movement of the thumb was poor. F/M amplitude ratio was improved, but persistence was almost unchanged.

**Conclusions:** Persistence and F/M amplitude ratio were reflected in the excitability of spinal neural function and clinical findings, such as muscle tone. It is critical that both persistence and F/M amplitude ratio are improved to control muscle tone and voluntary movement in patients with cerebrovascular disease.

### T-128: Influence of ankle loading on standing

