

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

7-10 February 2018

Renaissance Mumbai Convention Centre Hotel

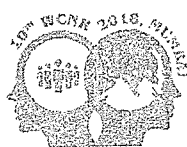
Powai, Mumbai, India

FROM NEUROTECHNOLOGIES  
TO COMMUNITY CARE

# ABSTRACTS

**WFNR**

World Federation for NeuroRehabilitation



Indian Federation of NeuroRehabilitation



- 14:09 - 14:17 'Reboot online' - A randomised controlled trial demonstrating that an internet-delivered multi-disciplinary pain management program is effective in chronic pain  
Steven G Faux, Tania Gardner, Regina Schultz, Jessica Smith, Jill M Newby, Christine T Shiner, Gavin Andrews
- 14:18 - 14:26 The effect of Mirror Neuron Therapy in Parkinson's disease - A systematic review of the literature  
R. S. Ganga Tharan, Hari Hara Subramanyan
- 14:27 - 14:35 Repeated sessions of caloric vestibular stimulation reduce the frequency and severity of episodic migraine  
Mohamed Sakel, Maria Gallagher, David Wilkinson, Philip Ulrich, Rezina Sakel
- 14:36 - 14:44 Effects of gaze direction recognition exercise on pain intensity, balance and disability level in patients with chronic neck pain  
Ugur Cavlak, Mehmet Duray, Sule Simsek, Filiz Altug

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14:00 - 14:44

HALL D

**ORAL PRESENTATION - STROKE**

Co-Chairs: Nitin Dange (*India*), Anil Kharapulkar (*India*)

- 14:00 - 14:08 Upper limb self-efficacy test (upset- stroke) - Its validity and relationship with participants age and time since stroke  
Auwal Abdullahi
- 14:09 - 14:17 Efficacy of Visual Evoked Response (VER) and Brainstem Evoked Response Audiometry (BERA) in Hypoxic Ischemic Encephalopathy (HIE) in patients prognosis  
Maheswarappa B M
- 14:18 - 14:26 Functional connectivity predicts neuroplastic response induced by non-invasive brain stimulation in stroke - Opportunities to individualise stimulation based on connectivity profile  
Brenton Hordacre, Bahar Moezzi, Michael Ridding
- 14:27 - 14:35 Self-regulating brain and muscle activity simultaneously to minimize non-obvious, compensatory tendencies during stroke rehabilitation - A randomized clinical study  
Daphne Menezes, Subhasis Banerji, John Heng, Alakananda Banerjee, Ponusamy Ponvignesh
- 14:36 - 14:44 Robotic Assisted Gait Training (RAGT) for long term rehabilitation of stroke patients  
Ramakant Yadav

program ( $p < 0.05$ ). While there were significant differences in terms of balance ability and disability level in Group II after the treatment program ( $p < 0.05$ ), no significant improvements were observed in Group I ( $p > 0.05$ ).

**Conclusions:** The results of this study indicate that adding GDRE to the physical therapy program leads to much more improvements in balance ability and in disability level among patients with chronic neck pain. GDRE can have a positive impact on the treatment program.

## STROKE

### Upper limb self-efficacy test (upset- stroke): Its validity and relationship with participants age and time since stroke.

Auwal Abdullahi, *Department of Physiotherapy, Bayero University Kano, Kano, Nigeria*

**Objectives:** Upper limb self-efficacy test (UPSET-stroke) was developed to measure one's confidence in his ability to use the upper limb following stroke. However, its validity needs to be further determined. The aim of this study was to determine the relationship between UPSET-stroke and some measures of upper limb function.

**Methods:** The study was an observational study whose data was gotten from a Randomized Controlled Trial approved by the Research Ethics Committee of Kano State Ministry of Health (MOH/Off/797/T.I/176); the data was collected at Murtala Muhammad Specialists hospital. The study participants were acute stroke patients who were  $\leq 4$  weeks post stroke,  $\geq 18$  years of age, had mild to moderate upper limb motor impairment, with no significant cognitive impairment and had no neglect. Baseline data for UPSET-stroke, MAL, WMFT and FM; and participants' age and time since stroke were recorded. The data was analyzed using Pearson Product Moment Correlation.

**Results:** Twenty nine patients (14 males and 15 females) participated in the study with mean age  $57.97 \pm 12.17$  years and time since stroke  $17.41 \pm 7.53$  days. The results showed that there were significant ( $p < 0.001$ ) and large positive correlations between UPSET-stroke and MAL amount of use ( $r = 0.67$ ), MAL how well ( $r = 0.78$ ), WMFT ( $r = 0.65$ ) and FM ( $r = 0.75$ ). However, there were non-significant ( $p > 0.05$ ) and small negative correlation between UPSET-stroke and participants age ( $r = -0.26$ ) and moderate positive correlation with time since stroke ( $r = 0.31$ ).

**Conclusions:** UPSET-stroke seems to be a valid instrument for measuring one's confidence in his ability to use the upper limb following stroke.

### Efficacy of visual evoked response (VER) and brainstem evoked response audiometry (BERA) in hypoxic ischemic encephalopathy (HIE) in patients prognosis

Maheswarappa B. M., *Sakra World Hospital, Bangalore, Karnataka,*

*India*

**Objectives:** To study the efficacy of VEP and BERA response in patients with HIE as prognostic factors.

**Methods:** Prospective, cross sectional study, Department of Physical Medicine and Rehabilitation in a private tertiary hospital. Nine patients (6 males, 3 females) with HIE secondary to cardiac arrest, clinically stable transferred for in-patient neuro-rehabilitation from neurology intensive-care-unit were included. Age between 21-70 years, duration of in-patient rehabilitation 8-24 weeks. Intervention – Coma stimulation program and intensive neurorehabilitation. Evoked potentials-VEP and BERA done between 3-4 weeks post HIE. Glasgow Coma Scale(GCS) and Rancho Los Amigo Scale(RLAS) were used to assess neurological status whereas Functional Independence Measure(FIM-F and FIM-C) and Barthel Index(BI) scores were used to assess functional recovery and scores were compared at admission vs discharge.

**Results:** Positive VEP was observed in five patients, Positive BERA was observed in eight patients. Out of five patients with positive VEP and BERA three showed significant change in mean score in GCS and RALS at admission 7.3 and 2.0 to 15 and 8.5 respectively at discharge. FIM –F, FIM-C and BI also changed considerably from 13.00 5.00 and 0 at admission to 85.0, 33.33 and 91.66 respectively at discharge. Two patients had marginal change in GCS and RALS from but no change in FIM –F, FIM-C and BI score at admission and discharge. Three patient with only positive BERA and One with absent both BERA and VEP didn't show any change at admission and discharge.

**Conclusions:** Patients with positive VEP and BERA had better cognitive and functional outcome as compare to only positive BERA and absent VEP. Early coma stimulation and aggressive neurorehabilitation in the initial 12-24 weeks may enhance better neurological recovery in patients with positive VEP and BERA.

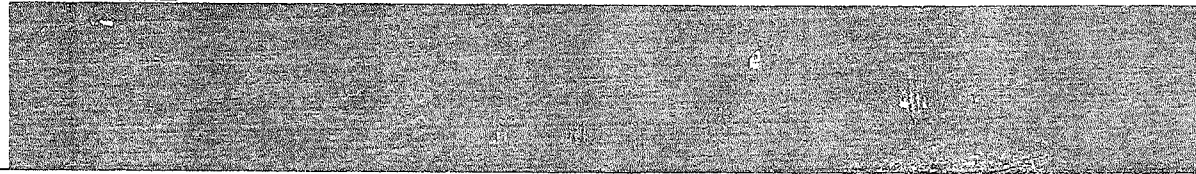
### Functional connectivity predicts neuroplastic response induced by non-invasive brain stimulation in stroke: Opportunities to individualise stimulation based on connectivity profile

Brenton Hordacre, *University of South Australia, City East Campus, Frome Road, Adelaide, South Australia, Australia*

**Objectives:** Non-invasive brain stimulation (NIBS) is a strong candidate to assist neurorehabilitation as it can induce neuroplasticity and improve motor function. However, responses to NIBS are highly variable. Here we investigate brain connectivity to predict neuroplasticity induction.

**Methods:** Two randomised, sham-controlled, participant-blind, cross-over experiments were conducted. Experiment 1 investigated whether functional connectivity could predict physiological and behavioural change induced by an inhibitory NIBS paradigm (continuous theta burst stimulation) in 18 healthy adults. Experiment 2 investigated whether functional connectivity could predict physiological change induced by an excitatory NIBS paradigm (anodal transcranial direct





UPDATES : [here...](http://wcnr2018.in/menu.html) (<http://wcnr2018.in/menu.html>)

10th World Congress for NeuroRehabilitation, Mumbai, India has been granted 21 European CME credits (ECV)

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and general distress (all  $p < 0.001$ ). Moderate effect sizes were observed between the intervention and usual care group for measures of pain self-efficacy, kinesiophobia and pain-related disability. Improvements were significantly greater for the intervention group post-treatment, and were largely maintained at 3-month follow-up.

**Conclusions:** Reboot Online is a unique and effective way to deliver evidence-based multidisciplinary pain management. It represents a pragmatic alternative and adjunct to face-to-face programs, to increase the accessibility of specialist pain management services to those with chronic pain.

### The effect of mirror neuron therapy in Parkinson's disease: A systematic review of the literature

R. S. Ganga Tharan, *Faculty Of Physiotherapy And Hospital, Meenakshi, Chennai, Tamilnadu, India*

**Objectives:** The objective of this study was to evaluate the effectiveness of mirror neuron therapy in treating parkinson's patient's using systematic review

**Methods:** A systematic literature search of the Cochrane Database of controlled trials, PubMed/MEDLINE, CINAHL, EMBASE, PsycINFO, PEDro, RehabTrials and Rehadat, also Google scholar was made

No restrictions were made regarding study design and type of Parkinsonism.

Studies that had Mirror neuron therapy given as a long-term treatment were included. The studies were assessed for eligibility and risk of bias by using the Amsterdam–Maastricht Consensus List. The studies were heterogeneous regarding design, size, conditions studied and outcome measures. The search keywords were mirror neuron therapy, movement disorders, Parkinson disease. The search was tabulated for easy analysis

So a total of 986 studies were reviewed and a conclusion was drawn after careful aggregation and segregation of the results

**Methods:** From the detailed review it's clearly noticeable that mirror neuron therapy is an effective physio treatment tool to treat the patients with Parkinson's disease

**Results:** From the detailed review it's clearly noticeable that mirror neuron therapy is an effective physio treatment tool to treat the patients with Parkinson's disease

**Conclusions:** The mirror neurons which are abundantly pooled in the pre-motor cortex can be used to train and treat the Parkinson's patient effectively by improving their cognitive skill by the method of self-realization and visual stimulation.

### Repeated sessions of caloric vestibular stimulation reduce the frequency and severity of episodic migraine

Mohamed Sakel, *East Kent University NHS Hospital, Canterbury, Kent, United Kingdom*

**Objectives:** Migraine causes significant disability in ~12% of people

worldwide. Current preventatives do not provide full relief. Caloric vestibular stimulation has been shown, albeit in small, uncontrolled samples, to acutely mitigate pain, including the pain experienced during attacks. We evaluated, via a multi-site randomised, controlled trial, the efficacy and safety of repeated caloric vestibular stimulation as an adjuvant therapy for episodic migraine prevention (clinicaltrials.gov: NCT01899040).

**Methods:** 81 participants diagnosed with episodic migraine without aura completed a 1month pre-treatment baseline followed by 3 months of twice daily sham or active caloric vestibular stimulation. The active saw-tooth waveform discharged warm and cool currents to the left and right ears respectively via a novel thermo-electric device inserted within the left external ear canal (Scion Neurostim). To avoid preferential hemispheric activation, this mapping was reversed every 2 days. In the placebo condition, participants followed the same procedure but the device remained unpowered. Headache frequency was captured via electronic diary.

**Results:** Per-protocol analysis showed that active-arm participants experienced immediate and steady declines in migraine days over the treatment period and exhibited significantly fewer migraine days during the final treatment month ( $-3.6 \pm 0.7$  days), compared to placebo-arm participants ( $-0.9 \pm 0.7$  days). Secondary analyses showed that active-arm participants also experienced significantly greater reductions in both acute prescription medication usage and total monthly pain levels. Active-arm participants showed no adverse effects in mood, cognition and balance. Participants completed the trial with an average rate of 90% treatment compliance, and no serious adverse events were recorded.

**Conclusions:** Caloric vestibular stimulation significantly reduced migraine days, subjective headache pain scores and the need for migraine abortive medications. The clinical efficacy, minimal side effects, self-administrative and adjunctive nature of the caloric vestibular stimulation therapy indicate that the procedure has the potential to provide substantial clinical and economic benefits for episodic migraine prophylaxis.

### Effects of gaze direction recognition exercise on pain intensity, balance and disability level in patients with chronic neck pain

Ugur Cavlak, *Pamukkale University, Denizli, Turkey*

**Objectives:** To determine contributions of the gaze direction recognition exercise (GDRE) to improve pain intensity, balance, and disability level among patients with chronic neck pain.

**Methods:** Eligible 40 patients were randomized to physical therapy program (Group I) or physical therapy plus GDRE (Group II) and were scheduled to receive a 3-week treatment, 5 sessions in a week. Pain Intensity was measured by a Visual Analog Scale (VAS). The Neck Disability Index (NDI) was used to determine disability level. To evaluate balance ability, four step square test (FSST) and single leg balance test (SLBT) with eyes opened and closed were used. All measurements were applied before and after a 3-week treatment program.

**Results:** VAS scores of the two groups decreased after the treatment

