

# NewroSpeaks

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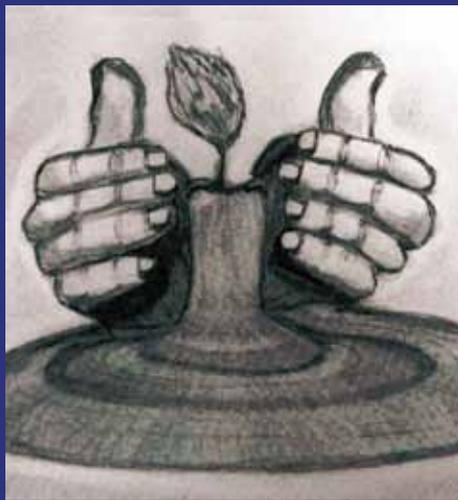
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**“Protecting the glow”**

- by V.Siddharth

*This art represents the health care team's efforts to nurture and save lives.*



Message from

**Prof. Dr. Sharan Srinivasan**, CMD, PRS Neurosciences

**“The world cannot afford disability!”**

“We are a clinical neurosciences company with cutting edge expertise in the fields of neuro modulation & neuro rehabilitation. With over 75 years of combined experience in the field of Neurosciences, Neurorehabilitation and cutting-edge technologies - our specialists, custom-built software (and equipments) with patented & proprietary protocols & procedures are all knitted together for achieving the best possible diagnosis, treatment, and outcomes at acceptable costs.

Our mission is to craft the customized neuro modulation & neuro rehabilitation programs that enable independence with daily living activities and restoring patients to their maximum possible functional potential with dignity.

I congratulate our team for formally beginning the publication of our own in-house newsletter. Since the awareness of the various nuances of these fields are lacking among the healthcare community, this newsletter's intention is to bridge that gap and mainstream the need for an organized multi-disciplinary neuro rehabilitation.”

#### About this newsletter

The importance of academic discussion and sharing of information in the field of neuroscience and neurorehabilitation must be reinforced. We conduct weekly academic programs which we share via this newsletter Do revert to us with comments and feedbacks to [newroacademics@gmail.com](mailto:newroacademics@gmail.com).



## V. Siddharth

Senior Occupational Therapist  
Advanced Neuro Rehab Specialist,  
AGM Research and Academics



Fig 1

### Take away pearls

*Occupational therapist are trained to be innovative.*

*Occupational therapist deal in both restoration of function and provide compensatory strategies involving object modification and adaptation, task modification and environmental modifications for selfcare, work and leisure related task.*

# Innovation in Occupational Therapy

**Background :** A patient with right hemiplegia due to stroke was undergoing occupational therapy. His problems were inability to grasp and release, wrist extension, consequent depression and reluctance to accept therapy.

## Solution

### Functional wrist extension orthosis (Stroke)\* - (Fig 1)

This orthosis has a proximal harness, a metal arm piece with inner padding and cloth straps, a forearm piece made of cloth which holds a plastic pipe and a hand piece made of metal with inner padding. The hand piece is connected to the arm piece using a wire.

## Features

This is a customized functional orthosis which can be worn below the upper body clothes with least visibility. This device extends the wrist every time the elbow is extended. This orthosis provides proximal upper limb stability and reflexive release of the spastic fingers and thumb thus allowing the patient to perform fine prehension tasks, which were otherwise impossible. The version 1\* provides the support for the wrist only. The version 2\* will help to extend the fingers as the wrist extends.

## Benefits

With the version 1 orthosis\* on, the patient could use the right hand to retrain to achieve a reflexive release and grasp things while maintaining the wrist in extension. He could participate in bimanual tasks without a therapist holding on to him.

## Patient's response

He was enthusiastic about its benefits and used the orthotic support and continued retraining his hand. He was able toprehend small objects and tried some activities as a means of recreation. The learning lasted beyond the use of the orthosis.

This product is under patent\*



Case presentation on role of cognitive retraining in stroke

By **Sneha Hari**  
Speech Language Pathologist

### Take away pearls

*Physical functionality and cognitive ability are two cogs of the nervous system – like the hardware & software of any smart device!. One cannot be effective without the other*

*Most of us are not even aware of subtle cognitive deficits our patient's may be experiencing and the role of 'poor cognition' as one of the major impediments of recovery after a stroke.*

*The role of a formal cognitive & behavioural assessment and ensuring that the therapies are more effective and functionally meaningful are the highlights of this case report.*

## Case Presentation

**Brief history:** This 53-year-old Indian-American homemaker, was apparently normal till June, 2019 when she was rushed to the hospital in Chicago, with complaints of gradually increasing weakness of the left side of her body with drooping of the face and slurring of speech and anxiety. There was no history of LOC reported. She was a known hypertensive and diabetic on medications. She was evaluated with an MRI Brain & diagnosed to have suffered from an acute ischemic stroke affecting the right basal ganglia, pons and frontal lobe with a few old infarcts.

**Clinical course:** She has undergone intensive rehabilitation (4-5 hours/ day) with us in 2 stages.

**1st stage:** When she was brought into our hospital for neurorehabilitation on 05/02/2020 (about 8 months after the stroke), she was minimally conscious, bedridden, with a GCS of E4V3M6 and RLA – III. The tracheostomy had just been closed and she was on PEG feeds. She had a spastic left hemiplegia with poor comprehension and minimal verbalization. Her behavior was obnoxious. At the end of this stage of rehab, which lasted about 8 months, she had become more conscious and aware, recognizing close relatives, indicating needs, actively assisting the caregiver in some of her ADL, with some improvement in the motor control of the left sided limbs (LL > UL). Her behavior was also stabilizing.

**2nd Stage:** She came back from the US a few months later for further neurorehabilitation. In this stage we were focused on 2 things – to improve her FIL (Functional Independence Level) as well as her cognition & communication.

**Procedure done:** On readmission, we conducted a detailed neuropsychological evaluation & communication evaluation and based on the results obtained (as per our patented protocols), a multi-sensory cognition-based therapy plan was instituted. All the scores in the first 'basic' module were in less than the 3rd percentile indicating severe cognitive deficits. This, along with her frequent behavioral outbursts, was also affecting her ability to achieve motor recovery & FIL goals planned. She was put on module I retraining.

**Outcome :** At the end of 3 months of retraining, her behavior became cordial and there was drastic reduction in the aversive responses to the therapist while participating in therapies. Her attention span significantly improved as were her communication ability .She even participated better in physical therapy which helped her walk with a side walker. Not only did her interactions become more socially relevant, but she also regained her insights and the motivation to get better and achieve her FIL results. She was near independent for her feeding & grooming.



## Journal Club Presentation

### ‘Mirror therapy versus Biofeedback in combination with conventional rehabilitation for upper limb rehab’

By Abhishek Pattanaik  
Occupational Therapist

#### Action pending :

- It was decided that we will plan a similar study based on the CAREPa – Re principle with a bigger sample size.
- We will do a comparative study against the standardized tools using ARAT and FMA to prove the stability of our P2I system.
- We can design the sample based on the clinical presentation to get a clear prognostication on the possibility of hand function recovery after a brain stroke.

#### Take away pearls

*Mirror therapy and Biofeedback are part of comprehensive neurorehabilitation.*

## Journal Club

“Effects of electromyography (EMG) biofeedback training and mirror therapy (mt) on functional recovery of hand in Stroke survivors: a comparative study”

Abhishek Pattanaik, Mr. Jeetendra Mohapatra , Mr. Pankaj Bajpai, National Institute for Locomotor Disabilities India

**Journal:** EPRA International Journal of Research and Development

**Impact factor:** 8.013

**Abstract:** This study was done in the inpatient and outpatient department of occupational therapy at NILD. The investigators used convenient sampling method to select 30 stroke survivors into 3 groups with 10 in each group, AA group (Conventional OT only), AB group (Conventional OT with EMG biofeedback training) and AC group (Conventional OT with Mirror Therapy). The treatment duration for all three groups was same. Each group receives occupational therapy intervention for 3 months, 3 sessions (each session will be 45 minutes) in a week. In AB group and AC group the subjects received 15 minutes of EMG biofeedback training and mirror therapy respectively in addition to 30 minutes of conventional occupational therapy. The investigators used Fugl -Meyer Assessment (FMA) – Upper Extremity and Action Research Arm Test (ARAT) are two outcome measures. This study has shown that EMG-BF training along with conventional occupational therapy resulted in significant improvement of hand function than mirror therapy with conventional occupational therapy and conventional occupational therapy alone.

**Conclusions:** The application of EMG-BF training along with conventional occupational therapy resulted in beneficial effects on functional recovery of hand in stroke survivors.

**Discussion:** At Newro we regularly receive patients with inability to use their hand due to stroke. We use mirror therapy and biofeedback regularly to facilitate recovery. This study has given direction to how can we prioritize these strategies in our regular therapy plans.

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