

# Combined Sections Meeting - 1998

## Boston, MA

### Poster Presentations

**Not All Facial Paralysis is Bell's Palsy, Making The Right Diagnosis: A Case Study.** *Brach JS, VanSwearingen JM.* Facial Nerve Center, CORE Network and Department of Physical Therapy, University of Pittsburgh, Pittsburgh, PA.

**INTRODUCTION:** A 36 year old male presented with a 14-month history of right facial paralysis and a diagnosis of Bell's Palsy. The gentleman was referred for evaluation and management of his facial muscle weakness.

**CASE DESCRIPTION:** Patient was previously evaluated by his primary care physician and a neurologist in his home town. The patient was seeking further evaluation and management because of persisting pain and disability. The patient's current complaints included facial paralysis, facial pain, regional facial numbness, hyperacusis and excessive tearing from the right eye.

**HISTORY OF PRESENT ILLNESS:** Facial paralysis developed gradually over a 2-4 week period. Steroids were administered 3 weeks after onset. The MRI at 5 months, the CT scan at 11 months and test for viral involvement of peripheral nerves were all negative.

**PHYSICAL EXAM:** Resting facial posture was markedly asymmetrical, voluntary movement was absent in the upper face and minimal for lower facial movements. The Facial Grading System, a comprehensive observational rating scale of resting posture, voluntary movement and abnormal movement, score was 4/100. Surface EMG recordings of right facial muscle activity confirmed the observations. Scores on the Facial Disability Index (a disease specific self report questionnaire of facial functioning and social well being) were physical subscale = 80/100 and social subscale = 64/100. Sensation was diminished in the upper face and absent in the lower face and no evidence of right masseter or temporalis muscle contractions on clinical examination. No abnormalities of cranial nerve testing except for the evidence of dysfunction of cranial nerve V and VII.

**IMPRESSION:** The patient's signs and symptoms were an atypical presentation of Bell's Palsy. Facial paralysis, hyperacusis and excessive tearing of the eye were consistent with Bell's Palsy; however, the gradual onset of paralysis, duration of symptoms without improvement, facial pain and numbness worsening over time, and weakness of jaw muscles argue against a diagnosis of Bell's Palsy. Findings were suggestive of an enlarging peripheral lesion involving motor and sensory innervation of the right side of the face.

**INTERVENTION:** The patient was referred to an Eye Ear Nose and Throat (ENT) specialist; physical therapy deferred pending results of ENT evaluation.

**OUTCOMES AND DISCUSSION:** Results of the ENT examination and the anatomical rationale for the signs, symptoms and findings will be presented. Key factors in the clinical-decision making process that lead to the impression to rule out Bell's Palsy, defer physical therapy, and suspect an alternative explanation for this case of facial paralysis indicating a different intervention will be described.

**Structural Integration Applied to Patients with a Primary Neurologic Diagnosis: Two Case Studies.** *Deutsch JE, Judd P, DeMasi I.* Kessler Institute for Rehabilitation, Program in Physical Therapy UMDNJ-SHRP, Newark, NJ.

**Purpose:** Patients with a primary neurologic diagnosis often exhibit secondary musculoskeletal impairments that interfere with mobility. The purpose of this presentation is to report on the outcome of two patients, (NF) with multiple sclerosis (MS) and (TA) with a traumatic brain injury (TBI), who received Structural Integration (SI), to ameliorate musculoskeletal impairments that interfered with posture and mobility.

**Subjects And Method:** The cases presented were obtained by a retrospective chart review. Each patient received SI performed by a physical therapist with 15 years of experience. She was trained in the Ida Rolf Method of SI and had practiced it for two years. NF received SI concurrent with in-patient physical therapy, TA received SI two years after his brain injury for which he had already received both in and outpatient physical and occupational therapy. Both patients received a ten session SI series of soft tissue manipulation and movement re-education. Both required minor modifications to the program and several physical therapy movement re-education and positioning interventions were included in the treatment.

**Case Histories And Results:** Case 1: NF had a 20 year history of MS and was hospitalized after an exacerbation that required surgical repair of a sacral wound. She received three weeks of physical therapy before being referred for SI. The primary goal of the SI intervention was to improve a poor sitting posture in order to eliminate the need for specialized seating. NF sacral sat in a windswept position with lateral trunk flexion and a forward head. Her severe bilateral hip and knee flexor, and hip adductor posturing limited the active use of her lower extremities. During SI, her lower extremity range of motion (ROM) increased at all pivots, this gain did not persist once treatment was discontinued. Sitting posture and specifically pelvic and trunk alignment improvements persisted after completion of SI. NF did not require specialized seating. Her bed and wheelchair mobility skills improved from unable at the time of admission to distant supervision after SI. NF was discharged to a nursing home and did not require specialized care for hygiene or adaptive seating. Case 2: TA was two years post-TBI when he was referred for SI. He was experiencing balance and gait deficits which interfered with his ability to obtain a job that required extended standing and walking. After the ten session process of SI he improved his balance (measured with the Balance Master), vital capacity (55%), ankle ROM and gait velocity (25% increase). The improvements persisted after SI was discontinued and he participated in additional balance training. He was subsequently able to secure a position at the information booth in a state park.

**Interpretation:** We speculate that the SI process may have aided in the improved mobility of these individuals by restoring their alignment. The improved alignment persisted

only when active movement was used in the newly acquired ROM. For NF we observed an increase in ROM at the pelvis, which allowed her to sit better and move from her lower trunk. In TA's case the measured ROM changes in the ankle may have permitted more symmetrical alignment in stance and indirectly contributed to improving gait.

**Relevance:** These findings may be considered in three ways: 1) SI, a systematic soft-tissue and movement re-education approach may be a useful intervention for patients with a primary neurologic diagnosis who present with chronic neuromuscular dysfunction, 2) the restoration of musculoskeletal alignment may be a pre-requisite for improving mobility and 3) maintaining newly acquired ROM appears to require the superimposition of movement.

#### **Effects of Body Weight Support Ambulation Training on the Functional Mobility of Two Patients with Chronic Stroke.**

*Miller EW, Quinn M, Gawlik T.* University of Indianapolis, Indianapolis, IN.

**PURPOSE:** The purpose of these case studies was to investigate the recently documented ambulation retraining program involving body weight support (BWS) for patients who are status post cerebrovascular accidents (CVA). The case studies specifically addressed if using BWS with treadmill ambulation and with over ground ambulation could improve the functional status of those with chronic CVA.

**PARTICIPANTS:** Two women, ages 87 and 93 years, received BWS treatment. Both women had suffered a CVA greater than 2 years prior to the initiation of treatment and neither was currently receiving physical therapy intervention. Participant A was independently ambulatory with a rolling walker within the nursing facility, but had difficulty with balance and endurance. Participant B required minimal assistance with activities of daily living and ambulated not with a device, but by pushing her wheelchair. Her difficulties were primarily with impulsivity and endurance.

**METHODS:** Prior to treatment, each participant was assessed using five assessment tools typically used in the clinic to depict functional status. Treatment consisted of BWS ambulation training three times a week for six to seven weeks with each treatment day consisting of four sessions. Three of the sessions were on the treadmill and the last session was over ground. Each participant began with 40% BWS at .5 miles per hour (mph) on the treadmill. Participants progressed through three levels of BWS (40%, 20%, 0%) and three speeds (.5 mph, .75 mph, 1 mph). Decisions about treatment progression were made based on the symmetry and endurance that each participant exhibited during BWS ambulation.

**RESULTS:** Improvements in function, as measured by typical clinical assessment tools, were demonstrated by both participants, Participant A more dramatically than Participant B. Specific scores for each of the five assessment tools are discussed.

**CONCLUSION:** Patients with chronic CVA are able to make functional improvements following BWS ambulation training as measured by typical clinical assessment tools.

**RELEVANCE:** Body weight support ambulation training is an alternative, task oriented approach to stroke rehabilitation that facilitates function as typically measured by clinicians. Further investigations are needed.

**Correlation of Somatosensory Vibrissal Afferent Discharge to Periodicity of Tactile Gratings.** *Carvell GE, Goldreich D, Prigg T, Simons DJ.* Department of Physical Therapy, School of Health and Rehabilitation Sciences and Department of Neurobiology, School of Medicine, University of Pittsburgh, Pittsburgh, PA 15260. Supported by: NSF IBN-9602101 and NIH NS-19950.

Previous work in our lab has demonstrated that rats, using their mystacial vibrissae (whiskers), can be trained to distinguish differences in tactile gratings at a level comparable to humans using their fingertips. However, animals who had all whiskers trimmed for the first 45 days of life could not make such discriminations as adults using their regrown whiskers. There are several hypotheses regarding somatosensory system function that could explain normal vs. abnormal behavior. To test these hypotheses, we plan to record neuronal activity from major cell stations in the trigeminal pathway in normal and deprived animals performing such tactile discrimination tasks. We have developed an automated behavioral training device that provides a water reward for rats performing a vibrissal-based tactile discrimination task. A Power Macintosh computer running a custom software program controls the presentation of different discriminanda and behavioral cues for training. Simultaneously, the program monitors selected behavioral events and collects neurophysiological data while the animal palpates the discriminandum with its whiskers. We are perfecting a method to monitor grating contacts by whiskers, made conductive, by carbon microfilaments attached to the hairs. We record neuronal activity using a tungsten microelectrode advanced into the brain by way of a custom-designed miniature micromanipulator attached to the animal's head. We record mystacial pad muscle activity using implanted fine-wire electrodes. We are developing a custom-designed program to distinguish individual unit spikes (action potentials) from multi-unit recordings. We have trained one animal from which recordings suggest that there are differences in firing patterns of trigeminal afferents caused by whisking of different textures. Several other animals are currently being tested; this is work in progress.

**Bilateral Transfer of an Activity of Daily Living in Normals with Implications to Rehabilitation.** *Eckardt JH, Eckardt SM, Sclater CR, Beatus J.* University of Maryland Eastern Shore, Princess Anne, Maryland.

**Background And Purpose:** The objective of this study was to determine if practicing an ADL with a given limb increases the proficiency of task performance with the opposite and symmetrical limb, and to determine the clinical relevancy of such a technique.

**Subjects:** Part one consisted of twenty right-handed university students (11 females and 9 males) ranging from 21 to 35 years of age. Part two was an A1-B-A2 single-case study involving a right-handed individual 2 months post left lacunar infarct of the middle cerebral artery.

**Methods:** Part one subjects were pre-tested, using their left hand with respect to time and amount of spillage, for a pouring task using water. Following pre-testing, subjects practiced the same task with their right hand 100 times, and were immediately post-tested with the left hand to determine if any increased proficiency resulted. Part two occurred during alternating days over a 5 day time period. Day one the subject performed the pre-test using sugar as a medium, was given a 50-minute break, and was