Accommodations for a Student with a Physical Disability in a Professional Physical Therapist Education Program

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The Institutional Review Board at Northwestern University approved this case report.

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Background and Purpose. Since 1973, the passage of federal laws and regulations has allowed increased access to education for individuals with disabilities. Faculty in professional education programs must be prepared to address the needs of students with disabilities. The purpose of this case report is to describe the process used to determine reasonable accommodations and the modifications made in a professional physical therapist education program to enable participation by a student with a physical disability.

Case Description. At the age of 17, the student in this case report sustained a Grade V spondylolisthesis. She subsequently underwent 4 surgeries to stabilize her spine. At the time of admission to a physical therapist program, the student presented with functional limitations in standing, sitting, lifting, and bending. Accommodations were developed that enabled her to participate in classroom and clinical education activities.

Outcomes. The student successfully completed all required academic and clinical coursework and received a Doctor of Physical Therapy degree. She is now employed in the outpatient physical therapy department of an academic medical center where she works with patients with a wide variety of medical diagnoses.

Discussion. The faculty faced many challenges while determining and implementing reasonable accommodations that allowed the student to participate in the physical therapist education program. Many of the challenges arose because of physical therapists’ concerns that an individual with functional limitations could not become a physical therapist and practice safely. This case report challenges physical therapist educators to reconsider the requirements to become a capable practitioner.
**Is Physical Therapy Effective in Reducing the Incidence of Falls in Stroke Survivors?**

Presenter: Karen Goodlow, PT, DPT, NCS

**Description.** Falling is a common problem after stroke, with a reported 46-73% of individuals falling in the first six months after stroke. Falls can result in many complications, including soft tissue injury, fracture, rehospitalization, social isolation and depression. Physical therapists are often utilized to reduce falls and improve postural stability after stroke.

**Method.** The literature was searched for evidence to support the use of physical therapy in the reduction of falls after stroke. A systematic review of the literature was performed to evaluate the effectiveness of physical therapy intervention to reduce the intervention of falls in individuals who had suffered stroke. Key search terms included physical therapy, stroke or cerebrovascular accident, and falls. A modified method of the American Academy of Cerebral Palsy and Developmental Medicine was used to systematically grade the level of evidence in each article.

**Results.** Only six studies met search criteria and were reviewed, including five randomized control trials and one non-randomized study. Studies varied in the type of intervention applied, time frame of intervention and in the setting therapy was delivered. Two studies treated subjects within 5-7 days after stroke, two studies recruited subjects 2-4 months after stroke, and the remaining two studies investigated intervention more than one year after stroke.

**Conclusion.** Limited evidence exists to support physical therapy interventions such as the Balance Master® or standing postural training to reduce falls in individuals 2-4 months after stroke. There is no evidence that home therapy is any more or less effective than inpatient therapy immediately after stroke. No evidence exists to support physical therapy intervention to reduce falls more than one year after stroke.
The General Public’s Knowledge and Awareness of Direct Access to Physical Therapy in Illinois

Presenters: Dawn Hall, PT, PhD; Sarah Follmer, SPT; and Krista Davis, SPT

Description. The purpose of this study was to determine the general public’s knowledge of physical therapy in the state of Illinois, their awareness of direct access to physical therapy, and whether or not they would utilize direct access if it were made available to them.

Method. Surveys which asked for demographic information, questions regarding knowledge of physical therapy (i.e. conditions that physical therapists see and do not see), exposure to physical therapy, knowledge of direct access to physical therapy, and utilization of physical therapy were administered to 105 subjects from the general population at various public venues within central Illinois.

Results. Overall 67% of the general public seems to have a broad knowledge of the conditions that physical therapists see and/or do not see patients for; however, approximately 33% of the subjects were uncertain about the scope of physical therapy practice. Only 10.5% of subjects were aware that restricted direct access was available to them within the state of Illinois and 59% of the subjects surveyed indicated that they would use unrestricted direct access if made available to them.

Conclusion. From this study, it is apparent that the general public is not only unaware of the scope of physical therapy practice within the healthcare arena but also uninformed about the current access to physical therapy; both of which are options to seeking increased medical attention as well as decreasing the time needed for treatment.
Influences on Physical Activity and Exercise Behaviors Among Breast Cancer Survivors

Presenters: Nicole Izzo, SPT; Stephanie Mountford, SPT; Jessica Wilson, SPT
Faculty Preceptors: Antoinette P. Sander, PT, DPT, MS, CLT-LANA; Karen W. Hayes, PT, PhD, FAPTA
Funding support provided by: APTA Oncology Section

Purpose. Fear impacts physical activity/exercise in many populations, but has not been explored in women with breast cancer. The purpose of this study was to investigate whether fear of physical activity/exercise exists among breast cancer survivors, whether fear is a barrier to physical activity/exercise, and the factors that influence that fear.

Number of Subjects. Thirty-four women diagnosed with breast cancer were included in this study (only four were currently receiving treatment). Mean age was 56.9 (sd=9.7) and the majority were Caucasian (African-American=3; Hispanic=1). Most participants received chemotherapy and radiation (n=19), while some only had radiation (n=11) or surgery (n=4). Five women had lymphedema.

Methods. Data were collected during semi-structured focus groups that were tape recorded, transcribed and coded. Demographic, physical activity, and exercise belief information were collected from each participant. Concept maps were created by pairs of investigators to capture important themes and relationships in each group and to check for consistency among coders. After consensus discussions, maps were merged to illustrate common themes. Member checks, performed with study participants, were used to assess the trustworthiness of study results.

Results. Six prominent themes were found to influence physical activity/exercise behaviors: 1) fear of lymphedema, 2) lack of information, 3) need for guidance, 4) cautious confidence (leading to self-imposed barriers), 5) modification and alteration of physical activity/exercise, facilitators and barriers, and 6) values and beliefs. During breast cancer treatment, participants decreased the amount of physical activity/exercise in the short term. Following treatment, participants increased the amount of exercise but altered the type and modified the manner in which they performed physical activity/exercise. Cancer-specific influences that produced changes in physical activity/exercise were: treatment side effects (e.g. neuropathy, fatigue, lymphedema), confusing information, lack of guidelines and a fear of lymphedema. Lack of information and misinformation about lymphedema for those seeking guidance about its management and prevention contributed to a fear of lymphedema. This fear led to self-imposed barriers and modifications to physical activity/exercise. Those barriers were addressed with a cautious confidence according to survivors’ respective life circumstances and values and beliefs concerning physical activity/exercise.

Conclusion. Fear of lymphedema exists among the breast cancer population and is a barrier that influences the type and amount of physical activity/exercise in which survivors participate.
Clinical Relevance. Concerns about lymphedema should be assessed in the evaluation of patients during and following breast cancer treatment. Physical activity/exercise guidelines for health promotion and lymphedema prevention during and post treatment should be developed.
Iontophoresis with Dexamethasone Combined with Traditional Physical Therapy Management in the Treatment of a 61 Year Old Patient with Chronic Plantar Fasciitis

Presenters: Stephanie Peplinski, DPT and Kent E. Irwin, PT, MS, GCS

Background and Purpose. Of the many foot and ankle conditions affecting older adults, chronic plantar fasciitis with its associated pain can cause gait disturbances, difficulty with activities of daily living, balance impairments, and increase the risk of falling. This poster presentation describes the physical therapy examination process and subsequent interventions using iontophoresis with dexamethasone as well as traditional physical therapy strategies in an older adult with chronic plantar fasciitis. Informed consent and IRB approval was obtained to uphold the patient’s rights for this report.

Case Description. The patient was a 61 year-old female with a 10 year history of chronic left foot plantar fasciitis. Physical therapy interventions were chosen to address impairments and functional limitations by focusing on pain control, flexibility, bilateral and single leg stance tasks, and a HEP. The main intervention for pain control was iontophoresis with 4mg/mL of dexamethasone.

Outcomes. After 8 sessions of physical therapy, including 7 treatments of iontophoresis with dexamethasone, the patient demonstrated consistent progress despite the chronicity of her condition. She reported an overall decrease in pain from 6-7/10 to 3/10 and no longer required night splints. She demonstrated increased ankle AROM in all planes. Her weightbearing tolerance improved as evidenced by the ability to comfortably walk up to 2 hours, chase after her grandson, and negotiate the grocery store without increased left foot symptoms.

Conclusion. Iontophoresis with dexamethasone combined with individualized traditional physical therapy significantly decreased plantar foot pain, increased ankle ROM, and improved functional mobility in this older adult with chronic plantar fasciitis.
Transformation through Community Education: Physical Therapist Students Can Teach!

Presenter: Ann Vendrely, PT, EdD, DPT

Purpose. Teaching is an important role of the physical therapist, but one that students are often reluctant to accept. This study reports on the outcomes of physical therapy students engaged in teaching health principles to groups in the local community.

Relevance. Physical therapists must be teachers and educators to act as agents of change in the health care environment. Applying current best practices from the field of teaching to work with clients and community groups will help physical therapists in their professional roles.

Participants. Students entering the second year of a graduate physical therapy program participated. The 92 students formed working groups of 2 to 6 for the project.

Methods. Students identified a community group and contacted them with potential topics. The instructor provided consultation and guidance as students conducted a learning needs assessment for the group, prepared learning objectives, developed teaching materials, conducted the learning session and measured the learning outcomes. Academic faculty observed the learning session in the community and graded the project.

Analysis. Qualitative data about the students’ perceptions were gathered. Quantitative data about the community members and topics were also gathered.

Results. During the 6 years of this project, 23 different presentations were delivered to community groups. The physical therapy students instructed 445 people, aged 5 to 96 in schools, nursing homes, hospitals, religious centers, colleges, community centers, health clubs and physical therapy clinics. The students reported a sense of accomplishment at the end of the project. Student comments included, “I didn’t realize how much I learned in school already; I really liked working with the kids and would like to go back next year.” The students demonstrated a new level of maturity and professionalism after the experience.

Conclusions. Transformation did occur during this community education project for physical therapist students. The experience of leaving the comfort of campus to teach in the community has benefits for the physical therapy students and for the community participants who learn from them. Students develop in their professional role as teachers and agents of change.

Implications. Expanding educational opportunities for students into the community will help the students develop their professional demeanor and better understand their role in society.
SCI REHAB: Developing Intervention Documentation to Describe Spinal Cord Injury Physical Therapy Interventions

Presenter: Sally Taylor, PT

**Background and Purpose.** SCIRehab is a five-year, Practice-Based Evidence (PBE) research collaboration among six spinal cord injury (SCI) centers to determine which SCI rehabilitation interventions are associated with positive outcomes at one-year post traumatic injury for 1,500 initial rehabilitation. This project addresses measures including functional independence, medical complications, rehospitalizations, return to productive activity, social integration, and quality of life. PBE study methodology utilizes an observational cohort design that involves a bottom-up, front-line, multi-disciplinary clinician approach.

I will present the process completed by physical therapy (PT) to (a) define key patient characteristics presumed to affect outcomes and/or effectiveness of therapies, (b) identify and define individual components of the PT care process, (c) create PT-specific documentation tools to describe the delivery of those components, and (d) incorporate documentation into routine facility practices. The resulting documentation system of categorizing, coding, and describing PT activities/interventions is comprehensive for therapy work.

Questions that PT’s hope to answer will be presented. For example, what factors influence whether someone with a SCI returns to walking? What is the association between high-tech strengthening equipment compared to basic gym equipment? Variation in practice thus far related to certain centers focusing on the use of gait based intervention will be reviewed.

**Method.** Data is being collected at the point of care using hand-held devices. Use of an electronic data capture method provides the opportunity to collect detailed intervention data, along with measures of patient progress, patient and family participation, and reasons for altering therapy efficiently. The data collection application will be demonstrated.
Background and Purpose. Myasthenia Gravis (MG) is an autoimmune neuromuscular disease characterized by weakness and fatigue of the voluntary muscles. Patients with MG can experience severe respiratory muscle fatigue resulting in a Myasthenic Crisis that can be fatal. The purpose of this poster presentation is to describe a successful course of acute care physical therapy (PT) of a patient who experienced a Myasthenic Crisis.

Case Description. The patient was a 41 year old male who smoked 2-3 packs/day; received 2L/min of Oxygen; and had two CVAs, COPD, two MIs, angioplasty, and impaired hearing. At home, he was modified independent with ADLs and ambulated household distances with a cane. He was diagnosed with MG four months prior to the hospital admission for the Myasthenic Crisis. The acute care PT evaluation revealed poor posture, severe back and bilateral hip pain, decreased strength and endurance, impaired balance, and an inability to safely transfer and ambulate. The patient complained of constant dizziness and diplopia. The PT program included therapeutic exercises, breathing exercises, safety instructions, and gait/functional mobility training.

Outcomes. Outcome measures utilized were the Numerical Rating Scale for pain, Manual Muscle Testing for strength, a Facility Generated Balance Classification System, the 6 Minute Walk Test, and the Borg Scale of Perceived Rate of Exertion. After six PT sessions, the patient showed improvements in posture, balance, endurance, functional mobility, and gait distance.

Discussion. With expertise in movement dysfunction, PTs are in the ideal position to initiate early mobility, facilitate recovery, and lessen the hospital stay of patients with MG.
Physical Therapy Management of a Complex Pediatric Patient Diagnosed with Cleidocranial Dystosis (CCD), Cortical Visual Impairment (CVI) and Myoclonic Seizures
Presenters: Kate Szymanski, DPT and Deborah K. Anderson, PT, MS, PCS

**Background and Purpose.** The purpose of this poster presentation is to describe a unique pediatric patient with cleidocranial dystosis, cortical visual impairment and myoclonic seizures, and to support the need for physical therapy treatment in order to increase this child’s quality of life. This case report was approved by the Midwestern University IRB and the child’s family provided full written and informed consent.

**Case Description.** The 18 month old child, Jennifer, presented with significant delays (>50%) in all areas of development: cognitive, motor, communication, social/emotional and self-help/adaptive. Following a comprehensive physical therapy evaluation, Jennifer received physical therapy intervention one a week for 9 weeks. Interventions included: flexibility, strengthening, balance, weight bearing, and mobility activities.

**Outcomes.** Jennifer’s age equivalent score on the PDMS-2 increased from 6.7 to 7.4 months and the INFANIB score increased from 74 to 78. The score changes on these standardized assessments; although not statistically significant, provide a method for tracking progress or change in motor behavior. Jennifer exhibited improved strength as measured by improved head control, acquisition of independent sitting balance and prone pivoting, and the development of protective extension reactions.

**Discussion.** There is not evidence for the use of one specific intervention for a child with these three diagnoses. However, facilitating and promoting the development of functional movement and motor skills is critical for improving quality of life in a child. The improvements that Jennifer exhibited at the end of nine physical therapy treatments support the effectiveness of physical therapy for a child with these complex diagnoses.
Purpose. A suburban university studied the coping strategies related to the self-reported stress of graduate level physical therapy students during the 2007-2008 academic year.

Subjects and Method. Forty-four students (23 MPT and 21 DPT) completed the Coping Resources Inventory (CRI) once every trimester (Fall 2007, Winter 2008, and Spring 2008) during the academic year. The CRI measures five basic ways people handle stress on five separate scales. The CRI is constructed to facilitate an emphasis on resources rather than deficits in a student’s coping strategies. Following IRB approval, PT faculty collaborated with University Counseling staff to administer the CRI. The counseling staff analyzed the raw data and reported the findings to the PT faculty. Comparative results are based on student gender, trimester, and use of resources. No students were individually identified, however, students were encouraged each testing cycle to seek assistance at the Counseling Center if feeling stressed or overwhelmed.

Conclusion. Aggregate data results will be complete by August 2008.
Wiihab in action; improving quality of life and function.
Presenter: Roberta O’Shea, PT, PhD

Authors: Roberta O’Shea, PT, PhD,
        Shecanna Woomer, SPT

Background and Purpose. Virtual reality gaming systems have expanded the impact and effectiveness of rehabilitation. Physical Therapists are studying the use of gaming systems as a therapy tool. The Nintendo Wii offers simulated movement programs that require the participant to control virtual players in the game via wireless remotes. Research has been completed on several case studies and several games with positive results, however, no research exists involving people with life long disabilities. Thus far, clinical therapists have found strength, range of motion, and compliance gains with using gaming systems as an intervention tool\(^1,2\).

In Illinois, a suburban university and a long term care agency combined efforts to study effects of the Nintendo Wii system on movement of and socialization opportunities for residents in a community integrated group home. The authors predict that introduction of the Wii will increase social opportunities for the housemates as well as increase the physical activity within the home.

Method. Following IRB approval, psychometric and time sampling data was collected. Six males with a variety of life long disabilities including physical and cognitive impairments had unlimited access to the gaming system located in the home living area. Time sampling of participation occurred for 4 variable hours over the course of a week, through a 9 week period. Pre and Post measures for strength, range of motion, Berg Balance test, and Forward reach test were recorded. Post-test interviews are to be conducted with each participant.

Conclusion. Results and conclusions for the study are in-progress and shall be completed in August 2008.
Impact of inter-university collaboration on PT and OT students
Presenter: Roberta O’Shea, PT, PhD
Authors: Roberta O’Shea, PT, PhD
Shecanna Woomer, SPT

**Background and Purpose.** This project began as a creative option created by two professors to secure PT and OT assessment services for 23 individuals with life long disabilities who live in a community integrated system.

**Method.** Two Illinois universities investigated the impressions of students after a novel evaluation experience to determine the resulting impact. Twenty-three MPT students from a semi-rural state university were randomly matched with 23 MOT students from a private suburban institution. Each student pair assessed an individual from an agency that provides supported employment and housing for adults with lifelong disabilities. This project forced the students to reach beyond their university peers and provide a needed service to an underserved population. The pairs were charged with completing a discipline specific assessment as well as interviewing the work supervisor and house manager. The students completed a comprehensive unified report that included all data collected along with an individual intervention program. The collaborative reports were presented to the client and supervisors. Data addressing impressions, efforts, and impacts of working with unfamiliar student partners was collected via student surveys.

**Results and Conclusion.** Results are still being analyzed, however preliminary views showed skepticism and nervousness prior to the project and appreciation of the partner’s individual expertise in creating a high level report to improve the quality of life for an underserved population. This project demonstrates that universities can collaborate to solve service delivery issues while providing students with a unique experience that provides practice with communication between professional peers.
Frailty as Pattern Formation
Presenters: Timothy A. Hanke, PT, PhD and Sandra J. Levi, PT, PhD

Synopsis. The purpose of this theory presentation is to explain how principles of pattern formation in complex systems (Kelso, 1995; Nicolis & Prigogine, 1989) can inform the understanding of the transition from vitality to frailty. Vitality is a state of resilience. Resilience is the capacity for adaptation in the face of ever changing environmental challenges where frailty is a state reflecting the incapacity to adapt to changing environments.

Frailty as pattern formation departs from other approaches to understanding frailty not by examining vitality or frailty alone, but by primarily examining the transition from vitality to frailty. Currently, frailty is seen as either a medical syndrome with a particular phenotype or as an index of an accumulation of deficits across many domains. The former seeks an underlying biological process while the latter uses behavioral and biological factors to predict multiple adverse outcomes. In the pattern formation approach an individual is seen as transitioning from vitality to frailty when the individual exhibits large fluctuations in medical and functional status (critical fluctuations); takes a longer time to recover from perturbations to health (critical slowing down); and regaining vitality from a frail state is more difficult and takes longer than the original transition from vitality to frailty (hysteresis). Physical therapy aimed at minimizing fluctuations in health and reducing recovery time from perturbations may preserve vitality more effectively than physical therapy aimed at changing a patient from a state of poor health to a better state of health.
Inter-rater and Intra-rater reliability in the Assessment of Accessory Motion at the Glenohumeral Joint with and without Scapular Stabilization: A Pilot Study
Principal Investigator: Karen Stevens, PT, MS, OCS

Student Researchers: Eric Infante, SPT, ATC; Robert Kane, SPT; Giovanni Berardi, SPT; Kristy McGuinness, SPT

Purpose. The purpose of this study was to examine whether scapular stabilization affected inter- and intra-rater reliability when evaluating glenohumeral accessory motion.

Subjects and Methods. Twenty-eight subjects (age: 24.3 ± 4.3) participated in this study. Two experienced examiners and one non-experienced examiner evaluated both shoulders of all subjects in a standardized position. All subjects donned the scapular stabilization device at all times however, the examiners were blinded to whether the scapula was stabilized or not. The examiners used the Kaltenborn Classification of Joint Mobility Scale to grade the amount of accessory motion.

Analysis. The Wilcoxon Signed Rank and Spearman Rank were used to investigate the difference and relationship respectively for stabilized versus non-stabilized evaluations and intra-rater reliability. Friedman’s ANOVA and Spearman Rank were used to investigate the difference and relationship respectively for inter-rater reliability.

Results. No difference was found between stabilized and non-stabilized accessory motion evaluations (p>.05). There were no differences for intra-rater reliability for two of the examiners (p>.05), and reliability ranged from Low to High. There was a significant difference for inter-rater reliability (p<.05), and reliability ranged from Low to Moderate.

Conclusions. The results of this pilot study suggest that scapular stabilization does not improve inter- and intra-rater reliability for glenohumeral accessory motion testing. Physical therapists should use caution when making intervention decisions based on accessory motion testing alone.
Rehabilitation and Outcome in a Patient with a Traumatic Above the Elbow Amputation with Replantation: A Case Report

Authors: Traci Priebe, SPT and Christian C. Evans, PT,

Introduction. Rehabilitation of a patient with an upper extremity amputation is challenging, yet the literature contains few reports detailing physical therapy intervention and outcome for these patients.

Purpose. To describe the rehabilitation of a patient status-post traumatic above the elbow amputation after reconstructive/reattachment (replantation) surgery.

Subject. A 50 year old female with a right above the elbow replantation.

Methods. The patient received therapy for a total of 52 visits, 3 times/week, starting one month post-surgery. Therapy focused on improving coordination, strength, and range of motion as well as decreasing pain and improving functional use of her right upper extremity and was performed in parallel with occupational therapy.

Outcome. The subject increased active range of motion (AROM) at the elbow (49° increase in extension and 34° increase in flexion) and at other right upper extremity joints except for the 4th and 5th interphalangeal joints, which lost AROM. In addition, she gained grip strength in the right upper extremity (increased from 5 to 41 lbs) and reported the newly acquired ability to feed herself and tie her shoes with her right upper extremity. Nevertheless, the patient completed rehabilitation with a deficit in hand extension and minimal decrease in pain and was unable to reach a neutral elbow position.

Discussion. Despite having many of the characteristics considered appropriate for surgical reconstruction, the subject had a mixed outcome after rehabilitation. Further research is needed to determine the most effective rehabilitation techniques and optimal parameters for the management of patients with an upper extremity replantation.
Single Leg Stance and Stability after Achilles’ Tendon Repair

Presenter: Meri Goehring PT, PhD

Student presenters: Jared Wise SPT, Justin Pawula SPT, Sarah Lundine SPT, Cody Mischler SPT, Tara Lanser SPT, Sara Fajardo SPT

Purpose. The purpose of this study is to determine the effect of Achilles’ tendon rupture repair on long term balance and stability. This study will look at single leg stance time and single leg stance sway in subjects with repaired Achilles’ tendon rupture.

Subjects and Method. These subjects will have had surgical repair within 6 to 24 months from date of testing. The surgically repaired leg will be compared to the opposite leg in each participant. Single leg stance time will be measured as the amount of time a person can stand on one leg with their eyes open. This test will be repeated with eyes closed. The other factor, single limb stance sway, calculates how much an individual involuntarily moves during single limb stance. Using the Balance Master, the single limb limits of stability will be determined. Stability will be measured with eyes open then repeated with eyes closed. Subjects will not be allowed to hold on to anything during testing and will have arms crossed and shoes removed for all tests. Each patient will perform three trials of both tests. If a subject looses their balance during a trial, that trial will be disregarded and repeated.

Outcome. Data analysis will be performed to determine if significant changes are present when comparing the legs of affected versus unaffected Achilles’ tendon repair patients.
A Model for Integration of Neurological Clinical Practice into a DPT Curriculum
Presenter: Heather Henderson PT, NCS

Synopsis. For Universities that are not directly associated with major medical facilities, patient contact during the entry level physical therapy program may be limited. Patient experiences are especially important for application of didactic information into the clinical environment. While common to simulate patient interactions, it is often difficult for students to duplicate the multiple signs and symptoms that patients with neurological diagnoses may possess. The Neuro Clinic was primarily developed to facilitate student understanding of neurological diagnoses through the evaluation and treatment of patients.

This poster details the background, development, and implementation of the Neuro clinic into the entry level DPT program at Rosalind Franklin University. Fourteen patients were evaluated and treated by second year DPT students in groups of 2-3. Each patient was seen consistently by a student group one time a week, over an 8 week period. Students were responsible for all aspects of patient care and documentation of the examination, re-examination, daily SOAP notes, and discharge. Additionally students were given an evidence based practice assignment to validate the treatments they provided.

Outcomes. Outcomes included surveys and comments from patients and students on the impact of the clinic. Example findings included student reports of improved patient communication, examination, treatment planning and goal writing with 90-100% agreement. Patients reported benefits physically, functionally and socially with 85-100% agreement, along with 100% agreement to return next year. The Neuro Clinic successfully integrated classroom learning, evidence based practice, and student insight into the evaluation and treatment of patients with neurological diagnoses.
Synopsis. The rehabilitation level of care has substantial challenges in delivering 3 hours of therapy with the complex medical patients at his level of care. To achieve therapy delivery targets, the entire care team must be coordinated, flexible and efficient. The Alexian Rehabilitation Hospital, a two floors, 66-bed, free standing rehabilitation hospital, has achieved a benchmark process to this end. Our process combines shared drive scheduling and patient printed schedule wheelchair. These two tools make the therapy schedule accessible to all members of the care team. Additionally, it utilizes real time schedule changes that are communicated through a designated team member with a “hotline” cell number. All team members have and call this number as needed. A centralized posting for missed units is updated by the designated “hotline” designee on an ongoing basis. It allows staff to make-up units from a pick list as their time allows throughout the day. It also combines OT, PT, ST in a single patient schedule discussion. Lastly, a key group representing therapy scheduler, OT, PT & ST teams meets each day to discuss patient needs, staffing and plan tailored care for the following day. This combined discussion is shared with each discipline prior to the shared drive schedule being completed by each discipline.
Physical determinants of walking ability in individuals with spinal cord injury.
Presenter: Poonan Saraf

Purpose/Hypothesis. The purpose of this study was to investigate the relative contributions of various physical impairments to laboratory- and community-based measures of walking activity in ambulatory subjects with spinal cord injury. A secondary aim was to determine whether these relationships differ in community- versus non-community ambulators. We hypothesize that lower extremity strength, postural control and cardiopulmonary/metabolic measures, but not spasticity, will be primarily associated with both laboratory and community-based measures of locomotor activity.

Number of subjects. Thirty subjects (6 women) classified as motor incomplete spinal cord injury (ASIA C or D) with lesions between C1-T10 level and at least 6 months prior to testing. All subjects were capable of walking independently without physical assistance.

Materials/Methods. The study was performed in 2 separate sessions. In the 1st session, we determined impairments in neuromuscular and cardiopulmonary/metabolic function, including assessment of postural control/balance. Primary independent measures included estimates of spasticity and spasms, maximal voluntary torques of bilateral hip flexors and knee extensors and clinical measures of lower extremity strength (Lower Extremity Motor Scores-LEMS), static balance (Berg Balance Scale; BBS), gait efficiency during over ground walking (O₂ cost) and, peak oxygen consumption (peak VO₂) during treadmill walking. The 2nd session included assessment of laboratory-based measures of walking ability, including gait speed at self-selected and “fast as possible” velocities over short distances (GaitMat II®), walking distance over a longer duration (6-min walk test); and a community-based measure of daily stepping activity in the home or community (Step Activity Monitor ®).

Results. All laboratory- and community-based locomotor measures correlated significantly with measures of strength, BBS, O₂ cost, peak VO₂, but not spasticity/spasms. A step-wise multiple linear regression revealed that BBS was the primary predictor of all laboratory-based measures, with O₂ cost a secondary predictor in community walkers vs peak VO₂ in non-community walkers. In contrast, knee extensor strength was the primary predictor of stepping activity in the community.

Conclusions. Laboratory measures of walking ability after SCI appear to be related to measures of static balance, cardiovascular fitness and gait efficiency. Community stepping ability appears to be due primarily to knee extensor strength, although static balance also plays an important role.

Clinical relevance. These data provide a framework to direct our therapeutic/rehabilitation interventions on those specific neuromuscular or cardiopulmonary deficits for maximizing the recovery of independent, ambulatory function in subjects with spinal cord injury.
Strength and Mobility Training for a 459 Pound, Critically Ill Patient
Presenters: Elizabeth A. Ruiz, DPT and Sandra J. Levi, PT, PhD

Introduction. The increased mortality, medical sequelae and mobility impairment among morbidly obese patients makes the selection of appropriate exercise challenging. The purpose of this case report is to describe an intensive 8-day course of strength and mobility training for a ventilator-dependent, morbidly obese patient.

Case description. A 459 pound, 59 year old, female patient in the ICU on mechanical ventilation for respiratory failure had bilateral pneumonia, systemic lupus erythematosus, sleep apnea, hypertension, stomach ulcers and 3 open wounds on her right heel and bilateral trochanters. Key initial examination results included 1) inability to complete active range in gravity-eliminated positions for all hip, knee and ankle motions bilaterally; 2) maximal assistance to move from supine to sit and 3) score of 20/100 the SF-36 physical functioning scale. Physical therapy intervention emphasized progressive lower extremity strength training with close monitoring of cardio-respiratory status and transfer/gait training. After 8 days, the patient was discharged to a short-stay skilled nursing facility. Key discharge examination results included 1) performance of active hip, knee and ankle motions against gravity bilaterally; 2) ambulation of 350 feet with a rolling walker, supervision and supplemental oxygen and 3) score of 35/100 on the SF-36 physical function scale.

Discussion. Complications of prolonged bed rest can be more life threatening than underlying conditions alone. Patients on ventilators with extreme weight may be at risk for inappropriately low intensity exercises interventions. This case illustrates that an exercise intervention including progressive strengthening correlated with rapid advancement in ambulatory distance without any adverse events.
Resistance Training Volume: Comparison of Rotator Cuff Repair Patients in Physical Therapy vs. Initial Training Volume of Work Conditioning/Work Hardening Program
Presenters: Wade A. Meyer PT,DPT, CSCS  Matthew J. Kruger MS, CSCS, CPT

Background and Purpose. Physical Therapy (PT) patients with work-related injuries/deficits will often progress to a Work Conditioning/Hardening (WC/WH) program prior to discharge from formal rehabilitation. Resistance training volume (RTvol) has been utilized to monitor progression and predict functional outcomes of rotator cuff repair patients as part of a sports performance WC/WH program. However, RTvol has not typically been calculated as a component of physical therapy protocols following rotator cuff repair. The purpose of this study is to compare the ending RTvol while in physical therapy compared to initial RTvol of the WC/WH program.

Method. A retrospective analysis of the RTvol of 30 (23 men, 7 women) rotator cuff repair patients participating in a supervised physical therapy program was completed. Upper extremity volume was calculated for both groups as: Volume = Sets X Repetitions X Weight. The RTvol was calculated on the last participating day of the physical therapy program. Retrospective analysis was also completed for 48 (41 men, 7 women) rotator cuff repair patients participating in the WC/WH program. Exercise volume was calculated as the average daily training volume of the first week of participation in the WC/WH program.

Conclusion. Analysis of the data revealed that progression in a supervised physical therapy program following rotator cuff repair based on RTvol would assist clinicians in preparation for the WC/WH program. Additionally, increased awareness of RTvol in PT and formal rehabilitation programs could allow for improved functional outcomes when attempting to return post – rotator cuff repair patients to high levels of athletics, work and function.
Intent and Choice of Female Licensed and Student Physical Therapist Employment Before and After Childbirth
Presenter: Nora Francis, PT, DHS, OTR; Kristine Bayers SPT; Maggie Clement SPT; Lisa Doman SPT; Erica Kraemer SPT; Melody Royster SPT; Meg Ryan SPT; Babette Sanders, PT, MS

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Synopsis. APTA data from 2007 states 65.3% of members are female. Employment trends for women who are about to enter or have recently entered the work force indicate that more women want to stay at home after childbirth. To determine if these trends are also true in physical therapy, an electronic survey was distributed by APTA to 3546 female PTs 10-15 years post-graduation, 656 were returned. 4141 surveys were sent to current female SPTs, 516 were returned. The PTs’ survey compared intent versus choice of PTs before and after childbirth. The student survey questioned intentions only. Both assessed the factors affecting decisions for employment after childbirth.

Factors that influenced PTs to return to work (in rank order) were family income, desire to return to work, and job flexibility. Factors that influenced PTs to stay at home were desire to stay at home with children, personal attitudes/beliefs, and extended family location/support. A greater number of PTs anticipated returning to work part-time than full-time following childbirth; however, their actual employment status upon return to work was full-time. These findings were consistent with other professions. Factors that SPTs anticipated to influence decisions for employment status following childbirth were job flexibility, health status of child, and job satisfaction. 42% of the SPTs anticipated returning to work full-time; 39% expect to return to work part-time. These numbers are higher than in other professions. These findings provide important guidelines in recruitment and retention of female PTs and may have implications for future work force issues.