

PLATFORM & POSTER PRESENTATIONS CSM 2006

PLATFORM PRESENTATIONS

PHYSICAL ACTIVITY DURING REHABILITATION AND FUNCTIONAL OUTCOMES AFTER REHABILITATION IN PATIENTS WITH HIP FRACTURE. Berlin, J., Munin, M., Lenze, E., Greenwald, K., Brach, J., Physical Therapy, University of Pittsburgh, Pittsburgh, PA, University of Pittsburgh Medical Center, Pittsburgh, PA.

Purpose/Hypothesis: To examine the association of physical activity while in rehabilitation to recovery of physical function post rehabilitation in patients post hip fracture. We hypothesized that patients who are more active compared to patients who are less active during rehabilitation will have better recovery of physical function at 3 and 6 months post hip fracture. **Number of Subjects:** Patients included seven community-dwelling older adults post hip fracture (mean age 83 years old, standard deviation = 8.3 years) participating in inpatient rehabilitation (PT/OT). Patients reported similar independence levels in physical function prior to their hip fracture. **Materials/Methods:** Physical activity was measured for 5 consecutive days during rehabilitation using accelerometers (Actigraph) worn on the waist. The Hip Fracture Functional Recovery Scale (HFRS) is a 100 point ordinal scale to assess functional recovery after hip fracture, with higher scores indicating improved function. The HFRS was administered at 3 and 6 months post hip fracture via telephone interview. Patients were divided into groups based on a median split of physical activity counts during rehabilitation: less active < 4129 counts; more active \geq 4129 counts. Welch's T tests were performed to determine differences on the HFRS scores for the less and more active groups at 3 and 6 months. **Results:** Preliminary data revealed the HFRS scores at 3 and 6 months for the less active patients (n=3) ranged from 23-92 (median = 29) and 15-100 (median = 34) respectively. The HFRS scores at 3 and 6 months for the more active patients (n=4) ranged from 25 to 92 (median = 84) and 92-100 (median = 92) respectively. The differences in HFRS between the less active and more active patients were not statistically significant ($p > 0.05$); data collection remains ongoing. **Conclusions:** Physical activity counts during rehabilitation appear to be positively related to functional outcomes at 3 and 6 months post hip fracture. **Clinical Relevance:** Physical activity level during rehabilitation post hip fracture may be representative of patient participation in rehabilitation or may be reflective of health status post fracture.

EFFECTS OF HEALTH PROMOTION INTERVENTIONS ON CARDIORESPIRATORY FITNESS, STRENGTH AND FLEXIBILITY IN OLDER RURAL WOMEN. Hageman, P., Walker, S., Pullen, C., Boeckner, L., Oberdorfer, M., Physical Therapy Education, University of Nebraska Medical Center, Omaha, NE, College of Nursing, University of Nebraska Medical Center, Omaha, NE, Cooperative Extension, University of Nebraska-Lincoln, Scottsbluff, NE.

Purpose/Hypothesis: A feasible and effective approach is needed to promote behavior change consistent with Healthy People 2010 goals in older rural women as this population is at high risk for health and disability related problems. The purpose of this study was to examine whether a tailored or generic behavior change intervention delivered via distance (via newsletters and videotapes) would promote improvements in cardiorespiratory fitness, flexibility and strength among older rural women. **Number of Subjects:** 220 women (ages 50-69 years) were recruited using random digit dialing methods from two geographically separate, but demographically similar rural communities from a midwestern state. **Materials/**

Methods: An experimental pre-test post-test comparison group design was used. The geographic areas were randomized for tailored or generic newsletter messages interventions so as to avoid cross-intervention contamination. Women completed assessments at baseline, 6- and 12-months for behavioral determinants of physical activity behavior and biomarkers. Biomarkers included cardiorespiratory fitness (VO₂max via the 1-mile walk test), strength (lower extremity strength via timed chair stands and upper extremity strength via grip strength), and flexibility (via sit-and-reach). Over the first 6-months, women received 12 tailored or generic newsletters delivered bi-weekly, a NIH-exercise booklet and videotape, and an investigator-designed strength training videotape with elastic bands. Over the second 6-months, women received 6 tailored or generic newsletters delivered monthly. Generic newsletter content included general information about moderate physical activity, flexibility and strength training. The tailored newsletter content was framed using the Health Promotion Model of determinants for changing lifestyle behavior, specifically promoting physical activity, flexibility and strength training. Tailored newsletters were tailored on individual women's reported physical activity behaviors; perceived benefits and barriers to activity, interpersonal influences and self-efficacy for activity; and personal goals for activity. **Results:** Repeated measures ANOVAs revealed significant time effects ($p \leq .001$) for all activity measures, with the only group X time interaction across the 3 time points for chair stands ($p \leq .001$). Planned comparisons revealed significant improvements over time for both tailored and generic newsletter groups in VO₂max, timed chair stands, and sit-and-reach at both 6 and 12 months; whereas grip strength improved at 6 and 12 months in the generic group only. **Conclusions:** Distance delivered health promotion interventions using tailored or generic messaging influenced improvement in selected measures of cardiorespiratory fitness, strength and flexibility in older rural women. **Clinical Relevance:** Clinicians may find these approaches useful as independent or supplemental primary health promotion methods to influence behavior change in a hard-to-reach and vulnerable population of older rural women.

PHYSICAL THERAPY EXAMINATION'S KEY ROLE IN ESTABLISHING MEDICAL DIAGNOSIS IN A PATIENT WITH LOWER EXTREMITY PAIN RELATED TO WALKING. Ciolek, C., Geigle, P., Physical Therapy, Neurologic and Older Adult Clinic, University of Delaware, Newark, DE.

Background & Purpose: The purpose of this presentation is to show how a thorough, focused PT examination reveals clinical information that can improve medical treatment of undiagnosed conditions. Physical therapists are required to critically assess each client presentation to determine the best course: physical therapy treatment, physical therapy treatment and contact primary care physician, refer directly to physician services prior to physical therapy services, or no physical therapy services needed at this time. This specific client case clearly illustrates the foundation principles of physical therapy examination/evaluation, and resultant positive client outcome. This assessment occurred in a specialty-teaching clinic, which facilitates the focus and time for critical physical therapy diagnosis. **Case Description:** This case reflects the physical therapy examination and treatment of a 72 year old client referred with a diagnosis of polyneuropathy of the lower extremities and history of stroke. The physical therapy evaluation noted diminished pedal pulses unilaterally, a slow healing wound on her right 5th toe, pain reported with weight bearing on right lower extremity, and timed activities that recreated the pain syndrome. These combined with a

collection of symptoms (occurring for 3+ years) and consultation with the patient's physician led to further testing and a diagnosis of arterial insufficiency with a resulting positive surgical intervention. **Outcomes:** The client was able to advance her mobility status minimally, mainly balance improvement, during skilled PT prior to the surgical intervention. After the surgical procedure the client participated in limited physical therapy visits and resumed walking functional distances without pain. She reports 'I have my life back again.' Prior to the diagnosis and intervention, the client was able to participate in limited household activities. She was unable to participate in events requiring greater than one to two minutes of weightbearing such as family picnics, walking in the park, grocery shopping, and other activities. She has since resumed most of these activities without pain. **Discussion:** Physical therapists play a key role in establishing a medical diagnosis in cases where the symptoms revolve around functional activities that may not be fully revealed in a typical physician visit. Finely honed examination and evaluation skills are essential, the focused time to execute these skills, and the ability to communicate the assessment data in a collegial manner to the client's healthcare team are all critical to the physical therapist's role in improving client functional outcomes.

MOVEMENT STRATEGIES USED BY OLDER PEOPLE FOR GETTING OUT OF BED. Mount, J., Klaus, G., Kresge, L., Mann, L., Palomba, C., Thomas Jefferson University, Philadelphia, PA.

Purpose/Hypothesis: On a national survey of people over 65 in the US, 27.6% reported having difficulty getting out of bed. A number of these people will seek help from physical therapists in finding a strategy that enables them to rise from bed more easily. Currently, limited information is available on the range of movement strategies that older people can use to get out of bed independently. The purpose of this study is to describe movement patterns used by older adults for rising from bed. **Number of Subjects:** Forty-two older people, 12 males and 30 females, were recruited from an active retirement community. The mean age was 77.5, SD = 12.5 and ages ranged from 65 to 90. Exclusion criteria included any medical condition that affected how people got out of bed. **Materials/Methods:** The room was set up so that subjects could get out of bed on the side they usually got out of at home, and subjects were instructed to get out of bed the way they normally did at home. Subjects were videotaped from the side of the bed and the foot of the bed as they performed 5 trials of getting out of bed, with rest breaks as needed. Movement patterns were categorized for each body part by independent raters using the categories published by Ford-Smith and VanSant in 1993 for adults through age 59. New categories were developed as needed to describe movement patterns that did not fit previously published categories. **Results:** Kappa values ranged from .83 to .91, indicating good interrater reliability. The most frequent movement patterns used were: roll off (38.3%) for the trunk, double push (34.7%) for the far arm, multi-push (36.0%) for the near arm, and synchronous (31.2%) for the legs. Some strategies were used by these older subjects that were not described in the literature on how younger people rise from bed. Chi-squared tests indicated that the frequencies with which movement strategies occurred among subjects over 65 were significantly different from the frequencies with which movement strategies occurred among individuals aged 50 through 59 ($p < .001$) for each of the 4 body parts. The mean movement time for getting out of bed was 5.3 seconds, SD = 2.9. **Conclusions:** A variety of movement patterns are used by older people for rising from bed, with roll off for the trunk, double push for the far arm, multi-push for the near arm, and synchronous for the legs being the most common. The frequency of using various patterns of movement is significantly different for people over 65 compared to people 50-59. **Clinical Relevance:**

Movement patterns described in this study can be used as a guide for physical therapists in teaching age-appropriate strategies for getting out of bed. This research represents the first step towards analyzing relationships among impairments, strategies, and functional independence in this activity of daily living, and ultimately identifying more effective interventions for older people who have difficulty getting out of bed.

CONSIDERATIONS FOR THE USE OF YOGA AS A THERAPEUTIC INTERVENTION IN PHYSICAL THERAPY. Marryott-Lee, K., OP Rehab @ Kennestone, Wellstar Health System, Marietta, GA.

The use of complementary and alternative medicine is on the rise in the United States. In 1999 the National Institutes of Health created the National Center of Complementary and Alternative Medicine (NCCAM) to scientifically study these approaches to determine their appropriateness for use in Western medicine. One of the major branches of complementary and alternative medicine is mind-body interventions, which include hypnosis, biofeedback, tai-chi, and yoga. Yoga is one of the most popular forms of this approach to fitness and healthcare. Yoga has been practiced in the Eastern world for over 5,000 years, however its use in America has only recently become popular. Yoga is commonly defined as the joining together of the mind, body, and spirit. Advocates for yoga believe that its regular practice has many benefits, including improved flexibility, strength, balance, and sense of well-being, however, there is little information published on the therapeutic use of yoga, especially as it applies to motor control and balance. This article provides a review of the current literature regarding the use of yoga in physical therapy and explores the basic premises of yoga, with an emphasis on balance and motor control. Next, a brief review of motor control theories commonly utilized in current physical therapy practice is presented and various interventions for balance are explored in relation to these theories. Finally, the application of yoga as an intervention for balance and motor control is explored from a theoretical perspective and suggestions are offered regarding the future use of yoga in physical therapy.

ASSESSMENT OF FALL RISK FACTORS IN ELDERLY WOMEN BEFORE AND AFTER A PHYSICAL THERAPY INTERVENTION PROGRAM. Elazzazi, A., Gleeson, P., Etnyre, B., Olson, S., Physical Therapy, Utica college, Utica, NY, Physical Therapy, Texas Woman's University, Houston, TX, Rice University, Houston, TX.

Purpose/Hypothesis: Physical mobility is important for promoting good health and maintaining the well-being of all persons. Physical fitness determines the degree of independence and health care needs among the elderly. Functional independence is necessary to lead a normal life and hence it is a mean of assessing quality of life. The purpose of this study was to evaluate the effects of exercises on impairment and physical performance measures in elderly women residing in an assisted living facility with different functional levels. **Number of Subjects:** Participants were 20 elderly females (87.1 ± 3.8 years) in two groups according to their functional levels (a high and a low-functional level groups) **Materials/Methods:** Both high and low-functional level groups participated in a combined program of group and individualized home exercise programs for eight weeks. The outcome measures were: two impairment measures: average strength and habitual gait velocity; four timed tasks: 5-repetition sit-to-stand from a standard chair, 5-repetition step-up forward and step-down backward on a single 4-inch step, 50-foot walk, and up and go. A two-factor repeated measures Multivariate Analysis Of Variance (MANOVA) and a follow-up analysis of variance (ANOVA) were used. **Results:** There was an overall significant main effect of treatment ($F_{6,13} = 15.88, p < .001$),

significant main effect of group ($F_{6,13} = 3.24, p = .03$) but no interaction of treatment by functional level ($F_{6,13} = 0.64, p = .7$) for all the dependent variables used in the MANOVA with the Wilk's Lambda criterion. Results from the follow-up ANOVA showed significant improvement in standardized average strength ($F_{1,18} = 37.9, p < .001$), habitual gait velocity ($F_{1,18} = 15.9, p = .001$), 50-foot walk task ($F_{1,18} = 28.2, p < .001$). Participants were able to perform 5-repetition sit-to-stand ($F_{1,18} = 39.3, p < .001$) and 5-repetition step-up task ($F_{1,18} = 25.67, p < .001$) significantly faster after the intervention compared to before the intervention. They also increased significantly the timed up and go task velocity ($F_{1,18} = 22.3, p < .001$). Additionally, both groups (high and low functional levels) gained similar benefits from this combined group and individualized exercise programs. **Conclusions:** There was no serious adverse effects was reported in this 80 to 95 years old group which may indicate the ability of elderly females to tolerate moderate exercise programs if intensity increases gradually. The increase of habitual and fast gait velocities and the other timed tasks after the intervention may enable subjects to negotiate the environment more effectively and safely. Improvements in physical performance might partially explain a reduction in the risk for falling. **Clinical Relevance:** A moderate intensity eight-week combined exercise program may be effective in improving strength; habitual gait velocity; and performance on the timed measures in elderly females and hence reduce their risk for falls. The gained improvement may occur in individuals who have high or low functional levels.

AGE-RELATED DIFFERENCES IN POSTURAL CONTROL DURING TEMPORALLY-CONSTRAINED STEPPING. Hanke, T., Tiberio, D., Physical Therapy, Midwestern University, Downers Grove, IL, Physical Therapy, University of Connecticut, Storrs, CT.

Purpose/Hypothesis: This study assessed the influence of temporal constraints during stepping in place on postural control in younger adults (YA: 21-29 years old), middle-aged adults (MA: 40-54 years old) and older adults (OA: 66-78 years old). Lower limb loading and weight transfer capabilities during standing and stepping change with age. We predicted that OA would modify their posture differently than YA and MA in order to meet the stepping task's temporal demands. **Number of Subjects:** 32 community-dwelling adults (10 YA, 10 MA, 12 OA) participated. OA did not have a history of falling. **Materials/Methods:** Standing on two force platforms, subjects rhythmically stepped out and in to beats of a metronome with their dominant (right) lower limb. The left lower limb was always a support limb (never leaving the ground). Pacing began at 1.0Hz progressed to 2.8Hz and returned to 1.0Hz in 0.6Hz intervals resulting in 7 frequency plateaus. Separate lateral and anterior step direction trials, each lasting approximately 70s, were performed. Kinematic data were collected to determine step characteristics and calculate body center of mass (CM). Group x frequency repeated measures ANOVAs were performed on normalized step and CM motion dependent variables. Comparisons were made across groups between the lowest and highest step frequencies for support limb loading and step deviation from the intended stepping direction. **Results:** There were main effects for group and frequency on CM motion for both step directions (all $p < .001$). CM motion was suppressed then subsequently recruited as pacing frequency increased then decreased again. Post-hoc comparisons confirmed OA had less CM motion than YA and MA for both stepping directions. CM motion was also more variable in OA vs. YA and MA. OA took shorter steps particularly at the highest pacing frequencies. OA exhibited significantly greater (range $p = .035-.002$) support limb loading than YA and MA at the first and last (1Hz) pacing intervals for both step directions. OA exhibited a significant anterior step deviation during lateral stepping compared to YA. **Conclusions:** Posture

adapts to meet task demands during rhythmic unipedal stepping in place as evidenced by the inverse relationship between CM motion and pacing frequency. Differences in CM motion and support limb loading between groups indicate OA modify posture to a greater extent than YA to meet the same temporal constraints. This may be a solution to prolonged weight transfer times during stepping often exhibited by OA. However, this postural adaptation approaches one-legged standing. This may pose additional balance challenges for OA. Anterior step deviation during lateral stepping exhibited only by OA may be needed for stability within this posture. In summary, posture is adapted to meet step task demands and in turn the step serves a postural function for balance maintenance in multiple directions. **Clinical Relevance:** Postural and step-related strategies may be needed by OA to accommodate time-critical stepping situations. Temporally-constrained stepping may be useful as a balance exercise.

FACTORS RELATED TO ADHERENCE TO A 12-WEEK PARTICIPATORY NUTRITION AND PHYSICAL ACTIVITY PROGRAM FOR OLDER ADULTS IN COMMUNITY SETTINGS. Kirk-Sanchez, N., Wellman, N., Kamp, B., Department of Physical Therapy, University of Miami, Coral Gables, FL, National Resource Center on Nutrition, Physical Activity & Aging, Florida International University, Miami, FL.

Purpose/Hypothesis: Many community health education programs for older adults focus on increasing physical activity and improving nutrition. The purpose of this study was to describe factors related to adherence to a 12-week participatory educational program for older adults. **Number of Subjects:** Subjects were 759 participants over the age of 60 recruited from 8 Older Americans Act Nutrition Program sites across the US. **Materials/Methods:** Participants were enrolled in community educational programs utilizing the "Eat Better & Move More Guidebook," part of the US Administration on Aging national campaign, "You Can! Steps to Healthier Aging". The program consisted of 12 weekly sessions, with mini-lessons, participatory activities, goal setting, take home assignments, and incentives. Lessons were geared towards making healthier food choices and increasing physical activity using pedometers and weekly targets to increase number of steps taken per day by 10% per week. Demographic information, modified Katz and Lawton's ADL indices, and nutritional risk using the Nutrition Screening Initiative (NSI) Checklist were collected at baseline and at the end of the program. Adherence was defined as completion of the final session. Factors related to adherence were analyzed using chi-square analyses and t-tests. **Results:** Of the 759 participants beginning the program, 558 (73.5%) completed the final session. A lower percentage of people having difficulty with IADLs than people having no difficulty with IADLs finished the program (67% vs 78%, $p=0.008$); a lower percentage of smokers than non-smokers finished the program (45% vs 75%, $p<0.001$); and a lower percentage of participants with 8 or fewer years of education than those with more education finished the program (61% vs 75-79%, $p=0.017$). Conversely, a higher percentage of participants reporting a household income below the poverty level than those reporting higher incomes finished the program (79% vs 63%, $p=0.005$). Participants who were adherent reported fewer adverse health conditions than those who were not adherent (mean number of health conditions = 1.97 vs 2.34, $p=0.02$) and had lower NSI scores (mean score=3.04 vs 4.05, $p=0.001$). **Conclusions:** People who are dependent in at least one IADL, have more adverse health conditions, have higher nutritional risk, smoke, or have less than an 8th grade education may have a higher risk for not finishing this type of program. People who report household incomes below the poverty level might be more likely to finish this type of program than those with higher incomes. **Clinical Relevance:** Determining factors related to

adherence to participatory community health education programs can help facilitators better identify those at higher risk for attrition. This project was supported, in part, by grant number 90AM2768 from the Administration on Aging, US Department of Health and Human Services.

EFFECT OF A SUPERVISED WALKING PROGRAM TO ENHANCE PHYSICAL ACTIVITY IN THE ELDERLY. Smith, M., Christenson, M., Tschoepe, B., Gorman, I., Scherer, S., Physical Therapy, Regis University, Denver, CO.

Purpose/Hypothesis: Physical activity (PA) has been shown to have positive effects on physical and mental health including reducing risk for heart disease, hypertension, depression, other chronic illnesses, and falls in the elderly. The purpose of this study was to design and implement an intervention that fostered increased PA for residents of an assisted-living (AL) and independent-living (IL) facility to determine effects of regular light PA on health profiles. **Number of Subjects:** Thirty subjects (22 women, 8 men) with a mean age of 79.96 plus or minus 6.7 years participated in the study. **Materials/Methods:** A voluntary 14-week walking program was instituted at an AL and IL facility housed in separate buildings. This 'virtual' walking program encouraged participants to contribute to the cumulative miles needed to travel to Pikes Peak, 78 miles from Denver. Because many residents reported that seasonal variations in weather limited their walking, an indoor walking 'track' was identified and measured at each facility for use during the study. Twice weekly, physical therapy faculty members were present at a designated location and time to monitor and record participation, blood pressure, and distances. To document distances completed, participants received a sticker that they affixed to a name tag to mark each lap. Verbal tips were offered for safety, to adjust pace, direction, and gait kinematics. Total distance walked by each participant was kept and cumulative distance achieved was displayed next to a poster of Pikes Peak. Outcomes evaluated included: resting vital signs, body mass index, 6 minute walk test (6MWT), timed sit-to-stand, perceived health status, perceived exertion, and maximal distance walked. **Results:** Paired t tests showed significant differences in distance walked in both AL and IL ($p=.000$; $p=.013$, respectively), while those in AL also showed differences in 6MWT ($p=.022$) over the 14 weeks. Positive trends were noted for sit-to-stand at both residences and for 6MWT in IL. Interaction with others combined with self-reports of improved fitness motivated residents to continue beyond the 78 mile 'virtual road marker' to travel to the Royal Gorge, and then walk home to Denver, a total of more than 200 cumulative miles! Qualitative assessment of comments provided at the end of the study showed that the positive social networking encouraged ongoing participation. **Conclusions:** A low-budget structured walking program to enhance PA has physical and social benefits. As expected, older residents had reduced 6MWT and initial distances compared to younger, however, most were able to double their walking distance. Older adults have capabilities for improvement that often go untapped related to PA. **Clinical Relevance:** Similar programs can be initiated with minimal costs in residential centers to encourage increased PA and social networking for seniors. Programs like this that encourage increased walking speed and distance may help reduce morbidity and risk for falls in the elderly.

MUSCLE PERFORMANCE OF THE QUADRICEPS IN ELDERS AFTER HIP FRACTURE. String, S., Butler, K., Grill, D., Zwick, A., Mangione, K., Eastlack, M., Physical Therapy, Arcadia University, Glenside, PA.

Purpose/Hypothesis: After hip fracture, elders have decreased lower extremity (LE) strength on the fractured side both acutely and 18 months later. Elders with hip fractures are likely to fall again and

LE weakness is associated with the highest relative risk for future falls. Peak isometric force is commonly reported to characterize muscle performance; however, the ability to generate force quickly has been implicated as important to avoid falling. The rate of force development (RFD) and the impulse (integrated area under the force time curve) may, therefore, be important characteristics to examine in a group of elders known to be at risk of future falls. The purpose of this study was to describe the force/time characteristics of the quadriceps muscles in elders after hip fracture and to compare these characteristics in the injured and non-injured LE. **Number of Subjects:** Subjects were recruited as part of an ongoing exercise trial. Twenty-one subjects (4 men, 17 women) ranging in age from 68 to 91 years (mean = 80) participated in this study. On average, subjects were 6 months post-fracture, had a BMI of 27.4 kg/m², 4 co-morbidities, and a Mini Mental State Exam score of 28. **Materials/Methods:** Subjects performed 4 sec maximal isometric extension contractions on the Kincom dynamometer at 70° of knee flexion. Subjects were instructed to "push as hard and fast" as possible for at least 3 trials, 2 of which had to be within 10% of each other to be considered valid. Peak torque (Nm), RFD (slope of the force time curve) and impulse (the area under the curve) from 0-100 ms and 0-200 ms were the obtained. **Results:** Means and standard deviations are listed first for the involved side and then for the uninjured side. Peak torque (Nm) 72.6 plus or minus 26.7 128.0 plus or minus 44.2 RFD at 100 msec (Nm/sec) 165 plus or minus 162 267 plus or minus 239 RFD at 200 msec (Nm/sec) 168 plus or minus 128 312 plus or minus 156 Impulse at 100 msec (Nm*sec) 0.75 plus or minus .78 1.30 plus or minus 1.35 Impulse at 200 msec (Nm*sec) 3.57 plus or minus 2.97 6.10 plus or minus 3.91 **Conclusions:** Six months after hip fracture, mean peak torque, rate of force development and impulse were decreased when comparing the injured side to the uninjured side. Although peak isometric torque values are comparable to frail elders, RFD and impulse are greatly decreased in elders post hip fracture compared to values reported for elders awaiting elective joint replacement. **Clinical Relevance:** Peak torque, rate of force development and impulse may be important aspects to consider when designing fall prevention exercise programs for elders after hip fracture.

ATTENUATION OF SARCOPENIA IN FRAIL ELDERLY OBESE SUBJECTS UNDERGOING WEIGHT LOSS. Frimel, T., Frye, E., Sinacore, D., Villareal, D., Physical Therapy, Washington University School of Medicine, St. Louis, MO, Internal Medicine, Washington University School of Medicine, St. Louis, MO.

Purpose/Hypothesis: Frail elderly obese subjects who undergo voluntary weight loss may be at further risk for sarcopenia due to the obligatory loss of skeletal muscle mass that accompanies fat loss. **PURPOSE:** To describe the volume of progressive resistance exercise training (PRT) associated with an attenuation of sarcopenia in physically frail obese elderly individuals who voluntarily experienced 10% body weight loss over six months. **Number of Subjects:** Thirteen physically-frail, obese elderly subjects (6 men, 7 women, mean age=69.5 plus or minus 4.8, mean BMI= 37.3 plus or minus 5.3) underwent 6 months of diet-induced weight loss and high-intensity PRT. **Materials/Methods:** Each individual participated in 6 months of PRT, 3 days/wk at an intensity averaging 73% of their baseline 1 repetition maximum (1RM). PRT consisted of 3 sets of 8-12 reps of bilateral knee extension, knee flexion, leg press, seated row, bench press and biceps curls (HOIST™). Total weight loss and total fat-free mass (FFM) were measured. Dual-energy x-ray absorptiometry (DXA) and 1RM strength measures were determined before and after 6 months of intervention. **ANALYSIS:** Training volume was expressed as the average number of repetitions performed multiplied by the average weight lifted during the last week

of PRT for each exercise. The absolute (kg) and percent (%) change in total weight and FFM were determined for each subject. The absolute change in strength was expressed as the mean 1RM pre- and post-6 months of intervention. Paired t-tests were used to evaluate the differences in strength. Statistical significance was set at $p < 0.05$. **Results:** Results are reported as mean plus or minus SD. Participants lost 9.72 plus or minus 4.1kg (9.98%) and 1.7 plus or minus 1.4 (3.13%) FFM over the six month time period. Mean volumes of exercise were: bench press: 1084 plus or minus 589; bicep curls 591 plus or minus 277; seated row 1310 plus or minus 665; knee extension 1871 plus or minus 1157; leg press 1743 plus or minus 722; and knee flexion 1400 plus or minus 838. Weight loss and exercise training significantly increased strength for all exercises ($p < 0.05$). Mean 1RM increased 15.7 plus or minus 16.6 lbs for bench press, 5.9 plus or minus 12.5 lbs for bicep curls; 17.9 plus or minus 13.4 lbs for seated row; 33.6 plus or minus 42.0 lbs for knee extension; 36.9 plus or minus 30.1 lbs for leg press and 18.7 plus or minus 19.6 lbs for knee flexion. **Conclusions:** Diet-induced weight loss causes a decrease in both fat mass and FFM; approximately 75% of weight lost is comprised of fat and 25% of FFM. (Ballor et al. Am J Clin Nutr 1988;47:19-25). However, we found that FFM was maintained in our subjects after diet therapy and resistance exercise training. In addition, diet and exercise therapy in our subjects resulted in a significant increase in muscle strength. **Clinical Relevance:** In sarcopenic obese men and women, resistance exercise training can attenuate the loss of muscle mass during diet restriction weight loss therapy. Supported by NIH/NIA K07AG2116401 and T32 HD07434-13

THE INFLUENCE OF QUADRICEPS FEMORIS ACTIVATION ON QUADRICEPS STRENGTH OUTCOMES. Petterson, S., Snyder-Mackler, L., Physical Therapy Department, University of Delaware, Newark, DE.

Purpose/Hypothesis: Patients with knee osteoarthritis (OA) and total knee arthroplasty (TKA) have significant impairment in quadriceps strength and quadriceps-demanding functional tasks. Activation deficits as well as muscle atrophy appear to be vital players in the significant weakness exhibited by these patients. Muscle activation deficits can be detrimental to quadriceps strengthening after TKA, impeding the success of traditional strengthening paradigms. The purpose of the current investigation is to determine if muscle activation can be improved after TKA and whether patients with low level activation have greater difficulty improving quadriceps strength. **Number of Subjects:** 73 patients with primary, unilateral knee OA (mean age=64.5 plus or minus 8.9 years; mean BMI=30.4 \pm 4.3). **Materials/Methods:** Testing occurred an average of 11 plus or minus 7 days before scheduled TKA, 27 plus or minus 3 days after TKA prior to the commencement of outpatient PT, at the midterm of rehabilitation, and 3 months, 6 months, and 1 year after TKA. Quadriceps strength and voluntary muscle activation (quantified by central activation ratio (CAR)) were measured using a burst superimposition technique. CAR > 0.94 was classified as high muscle activation, CAR > 0.84 and < 0.94 was considered moderate activation, and CAR < 0.84 was considered low activation. All patients completed 6 weeks of outpatient PT with a primary emphasis on intensive quadriceps strengthening. Group 1 had high CAR, group 2 had moderate CAR, group 3 had low CAR pre and low CAR at 1 year, and group 4 had low CAR pre and moderate or high CAR at 1 year. Paired t-tests were used to determine changes in CAR. Strength outcomes were analyzed using a repeated measures ANOVA (group x time) with Bonferroni post-hoc comparisons. Alpha was set at $p < 0.05$ to determine significance. **Results:** Prior to TKA 44% of patients had high CAR, 25% had a moderate CAR values, and 31% had low CAR values. One year after TKA, 50% of patients had high CAR, 28% had moderate CAR values, and 22% had low CAR values.

57% of patients who had low activation preoperatively demonstrated significant improvement in CAR 1yr after TKA ($t = -6.93$, $p < 0.001$) and 43% of those patients had high CAR levels after TKA ($t = -8.76$, $p < 0.001$). There was no significant difference in preoperative strength between group 3 (mean=13.86 plus or minus 7.44 N/BMI) and group 4 (mean=13.84 plus or minus 5.47 N/BMI) ($F = 0.007$, $p = 0.934$). Group 3 (mean=13.38 plus or minus 6.05 N/BMI) was weakest 1yr postoperatively. Group 4 (mean=19.76 plus or minus 8.58 N/BMI) exhibited similar quadriceps strength to group 1 (mean=23.32 plus or minus 8.54 N/BMI) at 1 year ($F = 6.13$, $p < 0.01$). **Conclusions:** Improvement in CAR is possible after TKA and contributes to improved quadriceps strength outcomes after TKA. Contrary to this, failure to improve CAR after TKA leads to poor strength recovery and persistent quadriceps weakness at 1 year post-operatively. **Clinical Relevance:** Rehabilitation interventions to improve quadriceps strength should aim to improve muscle activation through the use of modalities such as biofeedback and electrical stimulation, especially in individuals with low CAR.

RELIABILITY AND VALIDITY OF SEMMES-WEINSTEIN MONOFILAMENT TESTING IN OLDER COMMUNITY-DWELLING ADULTS. Shaffer, S., Harrison, A., Brown, K., Brennan, K., Rehabilitation Science Doctoral Program, University of Kentucky, Lexington, KY, Physical Therapy, University of Kentucky, Lexington, KY.

Purpose/Hypothesis: Semmes-Weinstein monofilament (SWM) testing is commonly used to identify the loss of protective sensation. Debate continues as to the most efficient, accurate, and reliable protocol for sensory screening. Therefore, the purpose of this study was to assess the reliability and validity of SWM testing in older adults in a health fair setting. **Number of Subjects:** Twenty-three (17 females and 6 males) community dwelling elders, ranging in age from 50-89 years volunteered and completed sensory testing. **Materials/Methods:** Semmes-Weinstein testing was conducted with a 5.07/10g monofilament. The monofilament was applied to dorsum of the big toe and held for approximately one second. Subjects eyes were closed and they verbally responded if they perceived the monofilament. Testing was completed four times on each foot for a total of 8 trials. Inability to perceive the monofilament on 5 or more trials was defined as a positive test for sensory impairment. The Biothesiometer, a reliable and valid instrument for quantitative vibration perception threshold (QVPT) testing, acted as the reference standard. The instrument rested on the pulp of the great toe and the intensity was increased until the subject perceived the vibration. This was repeated three times on each foot. A value exceeding 25 volts served as the criterion for the loss of protective sensation. The protocol was repeated by a second examiner who was blinded to the prior test results. Data analysis included descriptive statistics, intraclass correlation coefficients (ICC), standard error of measurement (SEM), kappa statistic, and Spearman rank correlation coefficients. Contingency tables (2X2) were used to calculate sensitivity and specificity for SWM testing. **Results:** Monofilament ($\kappa = .74$; $r_s = .89-.93$) and QVPT ($\text{ICC} = .77-.94$; $\text{SEM} = 3.4-6.0$ V; $\kappa = .74$) testing demonstrated good to excellent interrater reliability. A significant relationship ($r_s .49$, $p < .05$) also existed between SWM and QVPT scores. Sensitivity, specificity, positive and negative predictive values were 36%, 92%, 80%, and 61% respectively. **Conclusions:** Semmes-Weinstein and QVPT testing were reliable measures in this sample of older community dwelling adults. Monofilament testing demonstrated a high degree of specificity, but lacked adequate sensitivity as a sole screening procedure. Finally, the modest correlation between QVPT and monofilament testing suggests that these tests are predominately examining different domains of sensation. **Clinical Relevance:** Findings imply that the described SWM testing protocol was a reliable and specific

instrument for identifying older adults with a loss of protective sensation. This study supports previous research that suggests clinicians should consider a combination of examination items when screening older adults for sensory impairment.

THE EFFECT OF RESISTANCE TRAINING ON PROXIMAL DISABLEMENT OUTCOMES: A META-ANALYSIS. Huber, G., Department of Physical Therapy and Human Movement Sciences, Northwestern University, Chicago, IL.

Purpose/Hypothesis: Models of disablement progress from systemic changes to alteration of function and the ability to take an active role in society. It is important to understand if resistance training influences the components of disablement in systematic ways. The purpose of this study is to examine the evidence for the effects of resistance training on proximal domains of the disablement model. The proximal domains are pathology and impairment. Frequently reported outcomes for resistance training classified under the proximal domains are increased muscle size (pathology domain) and increased strength (impairment domain). **Number of Subjects:** This meta-analysis examined the effects of resistance training in adults > 60 years of age. Studies published in English from 1980-2001 were reviewed and 61 randomized-control studies and 42 non-randomized studies were analyzed. **Materials/Methods:** Meta-analysis is a quantitative method of synthesizing research. The standardized d-statistic was used for analysis in both fixed and random effects models. Muscle size outcomes were cross-sectional area and Type I and Type II muscle fibers. Strength outcomes were analyzed for ankle dorsiflexion, knee extension, hip abduction, bench press, leg press and power. Meta-regression was used to analyze the effects of moderators. Moderators were based on subject characteristics (age, gender, disease state), program characteristics (exercise dose, length, setting), and study characteristics (publication year and quality). **Results:** The number of effect sizes (ES) varied by domain for both randomized and non-randomized studies as follows: pathology-9/1 and impairment-53/36. Significant effect sizes were found for outcomes in both domains. Moderate-large (0.5-.79) effect sizes were found for muscle size (Type II fiber area, $d=0.71$)-and strength (muscle groups ranged $d=.54 - .78$) in the randomized studies. ES were larger in the non-randomized studies. No consistent pattern of result was identified by the moderator analysis however, resistance training programs for pathology were generally of higher intensity and volume than for the impairment outcomes. **Conclusions:** This study demonstrates the importance of resistance training in improving outcomes for the proximal domains of disablement. Non-randomized studies provide additional information for some underreported outcomes. Moderator analysis demonstrates that the majority of older adults will benefit from resistance training. Improved reporting of training dose in the published literature is needed for analysis of the necessary dose of exercise for each domain. **Clinical Relevance:** There is evidence that resistance training of adequate dose will effect muscle size and strength in varied populations of adults > 60 years of age and should be incorporated in regular physical activity.

BODY IMAGE, SELF-ESTEEM, AND QUALITY OF LIFE IN OLDER INDIVIDUAL WITH LOWER LIMB AMPUTATION. Crosby, L., Miller, C., North Georgia College and State University, Dahlonega, GA.

Purpose/Hypothesis: Many individuals perceive the loss of a body part as a devastating occurrence, affecting various aspects of their well-being. Although amputation may be considered a life-saving measure, individuals who incur amputation often experience negative long-term psychological and psychosocial effects, which may prohibit them from re-integrating into society and living nor-

mal lives. Numerous underlying demographic factors, such as level of amputation, time since amputation and co-morbid conditions have been associated with psychological adjustments of lower limb amputees. The purpose of this study was to compare the psychosocial constructs of body image and self-esteem in relation to reported health performance quality of life in older individuals who lost a limb early in life versus those who lost a limb later in life. **Number of Subjects:** The participants were recruited from a private practice prosthetic clinic. Subjects included in the data analysis were over the age of 50, had a single lower limb amputation, and used a prosthesis. Eleven subjects who experienced a lower limb amputation before the age of 25 were compared to a group of 35 participants who experienced a lower limb amputation after the age of 50. **Materials/Methods:** A series of questionnaires, including the Amputee Image Body Scale (ABIS), Rosenberg's Self-Esteem Scale (RSES), Geriatric Depression Scale-short form (GDS), Satisfaction with Life Scale (SWLS), and Medical Outcomes Survey-Short Form 36 (SF-36) were distributed to an accessible population of people with amputation. **Results:** Individuals who experienced a lower limb amputation before the age of 25 had significantly less concern with body image and higher self-esteem than those who experienced an amputation after the age of 50. When gender, age, level of amputation, time since amputation, and number of co-morbid conditions were controlled for in data analyses, significant differences remained between the under-25 group and the over-50 group for body image and self-esteem. No significant differences were found between groups for reported health performance quality of life. **Conclusions:** Whether a lower limb amputation occurs in early or late life, apparent differences exist in quality of life between older persons with amputation and age-adjusted healthy norms. Additionally, differences exist in persons across all age groups for body image and self-esteem. **Clinical Relevance:** Rehabilitation efforts must therefore continue to address all aspects of the physical and psychosocial domains of health if successful outcomes for older adults with amputation are to be achieved.

POSTER PRESENTATIONS

EFFECTS OF ACUTE FATIGUE OF THE KNEE AND ANKLE MUSCLES ON CONTROL OF BALANCE IN OLDER WOMEN. Bellew, J.W. Click Fenter, P., Faulk, J., Petteway, T., Physical Therapy, Louisiana State University Health Sciences Center, Shreveport, LA.

Purpose/Hypothesis: Aging is associated with loss of muscular strength and endurance with a concomitant increase in the risk of falling. The purpose of this study was to examine the effects of acute fatigue of the knee and ankle musculature on control of static and dynamic balance in older women. **Number of Subjects:** Eighteen women 63-90 years of age (77.3plus or minus 6.4years; 144.2plus or minus 14.5 lbs; 162.4plus or minus 8.0 cm) independently living and without history of falling participated in this case-control repeated measures design. **Materials/Methods:** Balance was quantified before and immediately after inducing acute fatigue to the knee or ankle musculature. Testing was performed on two separate days one week apart randomizing the order of the joint fatigued. Static balance was examined using the single-limb-stance-time-test (SLSTT). Dynamic balance was examined using a modified version of the functional reach (FR) test and the lower extremity reach test (LERT). The modified-FR test required the subject to remain standing in single limb stance on the dominant leg while reaching the upper extremity in the forward (FR-F) and lateral right and left directions (FR-R and FR-L) while the LERT required the subject to remain standing on the dominant limb while reaching the opposite lower extremity as far forward as possible in the anterior direction. Acute fatigue was induced during repeated knee flexion/extension or

ankle dorsiflexion/plantarflexion using a Biodex 3 isokinetic dynamometer. Fatigue was reached when torque was reduced to less than 50% of the maximal voluntary isokinetic torque for three consecutive repetitions. A 2x2 repeated measures ANOVA was used to compare pre-fatigue and post-fatigue conditions following ankle or knee fatigue. Results: FR-F, FR-R, and FR-L were significantly decreased following fatigue of both the ankle and knee musculature ($p=.015 - <.001$), however, the magnitude of change was not significantly different between joints. Following fatigue of the ankle, LERT was unchanged ($p=.199$), but was significantly reduced following fatigue of the knee ($p=.002$). In contrast, knee fatigue showed no effect on SLSTT ($p=.328$) but SLSTT was significantly reduced following fatigue of the ankle ($p=.005$). **Conclusions:** Acute muscular fatigue of the knee and ankle reduces control of balance in older women but this effect is specific to the musculature fatigued and the balance test used. **Clinical Relevance:** Proper selection of clinical tests of balance is critical to detect contributing risk factors such as weakness and test selection must be specific to the joint segments being assessed.

TEST-RETEST RELIABILITY, EXTERNAL STRUCTURE VALIDITY AND RESPONSIVENESS OF GAIT PARAMETERS FOR OLDER ADULT FEMALES WALKING AT PREFERRED AND MAXIMUM VELOCITY. Marchetti, G., Hodges, M., Brown, R., Krohn, K., Physical Therapy, Duquesne University, Pittsburgh, PA, Rehabilitation Medicine, Mercy Hospital of Pittsburgh, Pittsburgh, PA, Clinical Research, Mercy Hospital of Pittsburgh, Pittsburgh, PA.

Purpose/Hypothesis: Gait parameter changes have been associated with reduced functional skills in older adults. They have been used less frequently as outcomes to determine the effectiveness of interventions. The purpose of this study was to determine the reliability, responsiveness and association with quality of life measures for gait velocity and double support time for a group of older adult females participating in an exercise trial of strengthening and aerobic conditioning. **Number of Subjects:** Twenty-six older adult females mean age 72 years (SD 5.6, range 65-82) participating in a community-based exercise trial to improve strength and balance. **Materials/Methods:** Gait parameters were measured using the GaitRite gait analysis system. Subjects completed three trials each at preferred and maximum velocity along a 12 foot walkway. Quality of life (QOL) was measured using the Activities Specific Balance Confidence Scale (ABC) and the Medical Outcome Scale 12-item short form (SF-12). All measures were taken before subjects participated in an eight-week exercise intervention trial. Test-retest reliability was determined using Intraclass Correlation Coefficient (ICC (3,1)). The association between gait parameters (velocity, double support time percent of gait cycle) and quality of life was assessed using linear regression. Measures were repeated following exercise trial. Effects sizes were determined for all measures to determine responsiveness to changes due to exercise interventions. **Results:** Gait velocity measures at preferred and maximum velocity demonstrated excellent reliability (ICC = 0.94, 0.96 respectively). Double support time as percent of gait cycle demonstrated good reliability (ICC = 0.80-0.87). The ABC, SF-12 physical function composite and bodily pain scores were significant predictors of preferred gait velocity ($p < 0.04$, $R^2 = 18\%-36\%$). Maximum velocity was predicted by ABC and SF-12 physical composite score ($p = 0.01$, $R^2 = 26\%-28\%$). Analysis of partial data indicated that preferred gait velocity demonstrates high responsiveness (effect size = 3.80) with post exercise data collection ongoing. Responsiveness of SF-12 physical composite score was 1.3. **Conclusions:** Gait parameters measured using the GaitRite system demonstrated good to excellent test-retest reliability. Gait velocity shows a moderately strong relationship with quality of life measures older adult women begin-

ning an exercise trial. Responsiveness of gait velocity measures to exercise intervention appear high from preliminary data. **Clinical Relevance:** Gait parameters appear to be useful for measuring intervention outcomes in older adult women.

PARTIAL BODY WEIGHT SUPPORT TREADMILL TRAINING IMPROVES BALANCE AND GAIT IN A FRAIL OLDER ADULT. Farrell, M., Miller, J., Watson, H., Cicirello, N., Physical Therapy, Pacific University, Forest Grove, OR.

Purpose/Hypothesis: Partial body weight support treadmill training (PBWSTT) has been documented to improve balance, walking ability, gait speed, and gait symmetry in people who have experienced a stroke, spinal cord injury, or traumatic brain injury. Given these improvements and the task specific nature of PBWSTT, one question is whether this intervention could have a similar effect in frail older adults at a high risk for falls. By supporting part of the person's body weight, the postural demands of walking are decreased, improving the ability to walk with a normal gait pattern at a desired faster speed. Also, by supporting some of the body weight, the energy demands are decreased, allowing the person to walk for longer distances. This intervention may allow for improvements in gait speed and balance in frail older adults and therefore increase their mobility and decrease their risk for falls. The purpose of this study was to determine the effects of PBWSTT on the balance and gait characteristics of an older adult with a history of falls. **Number of Subjects:** One. **Materials/Methods:** A single subject ABAA design with multiple measurements was used. The subject was a 97 year-old female with a history of balance problems and falls. The Berg Balance Scale (BBS), Modified Falls Efficacy Scale (MFES), and the GAITRite computerized gait analysis system were utilized in data collection. The A1 phase consisted of outcome measures gathered four times per week for two weeks to establish a baseline. The B phase, the intervention phase, consisted of PBWSTT three times per week for four weeks with outcome measurements recorded two of three sessions each week. The A2 phase immediately followed the B phase and mirrored the A1 phase. The A3 phase was scheduled to be performed five months after the B phase and mirror the A1 phase. Data was analyzed using the two standard deviation band method, with two consecutive data points outside the band considered a significant change. **Results:** Compared to the A1 phase, the subject demonstrated significant increases in BBS score, velocity, cadence, and stride length, and a significant decrease in base of support in the B and A2 phases. As a result of a change in our subject's medical status during the time between the A2 and A3 phases, data was not collected for the A3 phase. Average BBS scores for the A1, B, and A2 phases were 33.25, 40.5, and 44.8 respectively. Gait speed averaged .61 m/s in the A1 phase, .85 m/s in the B phase, and .84 m/s in the A2 phase. **Conclusions:** A 97-year-old female with a history of balance deficits and falls was found to tolerate and benefit from a four-week training program of partial body weight support treadmill training as demonstrated by improvements in balance and gait characteristics. These improvements were maintained throughout the two-week follow up. **Clinical Relevance:** Decreased balance and slower gait speed are associated with falls in older adults. PBWSTT may be an effective intervention to improve balance and gait and decrease the risk for falls.

FACTORS INFLUENCING HEALTH RELATED QUALITY OF LIFE IN COMMUNITY DWELLING OLDER ADULTS AGED 60 YEARS AND OVER. Greenberger, H., Riddle, D., Jewell, D., Wigglesworth, J., Physical Therapy, Virginia Commonwealth University, Richmond, VA, Physical Therapy, Virginia Commonwealth University, Richmond, VA, Physical Therapy, Virginia Commonwealth University, Richmond, VA, Ithaca College, Ithaca, NY.

Purpose/Hypothesis: Interest in patient-reported health care outcomes such as health related quality of life (HRQL) has increased dramatically over the past decade. Typically, HRQL has been conceptualized as having at least three domains: physical, psychological, and social functioning. Although research has attempted to identify factors that influence HRQL, few studies have simultaneously examined how various factors impact HRQL in the elderly. The purpose of this study was to develop and test a causal model to identify factors influencing HRQL. The constructs and observed variables hypothesized to influence HRQL included physiological well-being, housing satisfaction, socioeconomic status, religion/spirituality, age, gender, and marital status. **Number of Subjects:** Three hundred and sixty three (363) participants were drawn from a random sample of community dwelling elderly living in Tompkins County, NY (mean age, 74.9; SD, 8.5; range 60-103). Tompkins County is located in central NY, and home to a large university and mid-size college. **Materials/Methods:** This study was a non-experimental retrospective design using secondary survey data from the 'Pathways to Quality Life' study. Using confirmatory factor analysis, a measurement model of HRQL was tested and validated. The final HRQL model was defined by four constructs: general health perception, physical functioning, psychological functioning, and social functioning. Once this model was validated, structural equation modeling was used to test the full model examining factors influencing HRQL. Several goodness-of-fit indices were used to assess model fit. Modification indices were used to provide clues as to what changes would be appropriate to improve model fit. Respecifications to the model were based on theoretical rationale. **Results:** Greater levels of physiological well-being, increased frequency of attendance at religious events, and increased satisfaction with housing significantly influenced HRQL ($p = .000, .006, .023$, respectively). Socioeconomic status, age, gender, and marital status did not have a significant effect on HRQL. In addition, housing satisfaction had a significant direct effect on psychological functioning ($p = .000$) and social functioning ($p = .000$). Factors used to predict HRQL explained 38% of the variance in HRQL. **Conclusions:** Physiological well-being, housing satisfaction, and attendance at religious events appear to have a significant influence on HRQL. Further, the underlying concepts of HRQL are invariant to differences in demographics such as age, gender, and marital status. **Clinical Relevance:** The results of this study suggest that greater attention be considered to other domains that may be important to the adult population. These influencing factors may need to be accounted for when using HRQL instruments to study health outcomes in the elderly.

THE EFFECT OF WEIGHTED EXERCISES ON BONE MINERAL DENSITY IN POST MENOPAUSAL WOMEN. Bemis-Dougherty, A., Zehnacker, C., Physical Medicine and Rehabilitation, Johns Hopkins Hospital, Baltimore, MD, Widener University, Chester, PA.

Purpose: Osteoporosis is both preventable and treatable with therapeutic exercise playing an important role along with adequate nutrition and medication if required. Physical therapy interventions for women with osteoporosis have generally emphasized postural awareness, aerobic conditioning, and balance training as preventative measures and have paid scant attention to weight training exercises to stimulate bone formation. The purpose of this systematic review was to determine if exercise programs utilizing weights are an effective method to maintain or increase the bone mineral density (BMD) in postmenopausal women to prevent or decrease the sequelae associated with osteoporosis. Description: A computerized search of the MEDLINE, PEDro, and Science Citation databases was conducted for the years 1990 through February 2005. The search was performed using English language-only keyword searches

using MESH terms 'osteoporosis', 'postmenopausal', 'exercise', 'weight training', and 'bone mineral density'. Inclusion criteria consisted of 1) randomized controlled trials with more than 15 participants, 2) self-selected group trials, 3) less than a 35% drop out rate, 4) postmenopausal women between the ages of 40 to 80 years old, 5) DEXA scan as the method of determining bone mineral density, and 6) incorporation of weighted or resistive exercises as a therapeutic intervention to promote osteogenesis. A total of 20 articles were critically evaluated for the quality of an intervention study using the criteria developed by MacDermid.¹⁸ These twenty articles were identified and reviewed with respect to specific exercise programs including their duration, frequency, and intensity and their effect on the BMD at the lumbar spine, femoral neck, femoral trochanter, lumbar spine, and distal radius. The articles were critically evaluated. **Summary of Use:** Our review revealed evidence to support the effectiveness of weight training exercises to increase bone mineral density in post-menopausal women. The increases in BMD were site-specific and required high loading with a training intensity of 70% to 90% of 1 RM for 8-12 repetitions of 2 to 3 sets of over one year duration to promote osteogenic changes. Most of the studies indicated that exercises that were effective in maintaining or increasing BMD had a combination of weight training with ground force exercises such as the use of a weighted vest and jumping combined with resistive exercises. **Importance to Members:** Weighted exercises can help in maintaining bone mineral density in postmenopausal women and increasing bone density of the spine and hip in women with osteopenia and osteoporosis. The exercise program must be incorporated into a lifestyle change and be lifelong due to the chronic nature of bone loss in older women. Physical therapists need to challenge their patients with postmenopausal osteopenia and osteoporosis to the point of osteogenesis. For these patients there should be a longer intervention with follow-up to review and modify the treatment program to stimulate bone formation.

COMPARISON OF VARIETY OF BALANCE MEASURES IN BALANCE-IMPAIRED OLDER ADULTS UNDER DIFFERENT VISUAL CONDITIONS. Huang, M., Burgess, R., Weber, M., Greenwald, N., Physical Therapy, University of Mississippi Medical Center, Jackson, MS.

Purpose/Hypothesis: The purpose of this study was to compare differences in balance measures among older adults with different degrees of balance impairments under two dissimilar visual conditions. **Number of Subjects:** This study was conducted on 89 adults with balance impairments (>60 years). **Materials/Methods:** Subjects were divided into three groups based upon the initial Tinetti score: Minimal risk of fall (MINRF, n=29), moderate risk of fall (MODRF, n=30) and maximal risk of fall (MAXRF, n=30). Three balance measures, Functional reach (FR), Timed-up and Go (TUG) and Tinetti (TIN), were tested with two different visual conditions: eyes open with normal vision (EONV) and eye open with vision blurred (EOVB). All data were analyzed using repeated ANOVA and Univariate post hoc analysis. **Results:** Blurred vision significantly decreased FR ($p < 0.01$) and TIN ($p < 0.01$) scores and increased TUG ($p < 0.01$) scores in all three groups. Subjects in MINRF group performed better in all three tests than those in MODRF ($p < 0.01$) and MAXRF ($p < 0.01$) groups. The subjects in MODRF performed better in all three tests than those in MAXRF ($p < 0.01$). There was no significant interaction between vision and risk of falls in FR ($p > 0.05$) scores, but there were significant interactions between vision and risk of falls in TUG ($p < 0.01$) and TIN ($p < 0.01$) scores. **Conclusions:** Blurred vision significantly altered all three balance measure scores in all groups. However, blurred vision had a greater influence on TUG and TIN scores than FR scores in subjects with higher risk of falls. **Clinical**

Relevance: Results of this study suggest that dynamic balance measures with a gait component are better balance indicators than static balance measure without a gait component in older adults with both blurred vision and moderate to severe balance impairment.

TEST-RETEST RELIABILITY OF THE STAR EXCURSION BALANCE TEST IN A GERIATRIC POPULATION. Stockert, B., Barakatt, E., Physical Therapy, California State University Sacramento, Sacramento, CA.

Purpose/Hypothesis: The purpose of this study was to: 1) determine the test-retest reliability of the Star Excursion Balance Test in subjects >59 years old; 2) compare the findings to data collected on 20-39 yo subjects from a previous study; and 3) determine the impact of subject height on test performance. **Number of Subjects:** Geriatric subjects (n=42) were 60-92 years old (mean = 73.3) and ranged in height from 60-75 inches (mean = 65.7). All subjects were community dwelling adults able to stand and walk independently. Subjects were excluded if they had a condition known to impair balance in standing. The young subjects from the previous study (n=18) were 22-34 years old (mean = 27.9) and ranged in height from 65-73 inches (means 68.6). **Materials/Methods:** Informed consent was obtained from all subjects prior to entry into the study. Subjects were placed in the center of the Star Grid. Subjects stood on one lower extremity (LE) and reached as far as possible in 5 specific directions with the opposite LE. Both LEs were tested (10 movements; 3 trials each). Reach was quantified by measuring the furthest excursion of the great toe for each designated movement. **ANALYSES:** Data were analyzed using SPSS 13.0. The 3 trials for each movement were converted to a mean. Test-retest reliability was estimated with an Intraclass Correlation Coefficient (ICC) calculated for each movement and the test overall. A t-test was used to compare mean reach between the young and geriatric groups for each of the 10 movements. The relationship between subject height, reach and normalized reach (reach expressed as a percentage of subject height) was examined using a Pearson product-moment coefficient of correlation. **Results:** Test-retest reliability estimates (ICCs) ranged from 0.91-0.95. Reach and normalized reach were significantly lower in the geriatric group for each movement ($p < 0.001$). Reach was significantly correlated to subject height for all movements ($p < 0.05$). However, reach expressed as a percentage of subject height (normalized reach) was not correlated to subject height for any of the movements. **Conclusions:** The Star Excursion Balance Test has excellent test-retest reliability in a geriatric population. Reach and normalized reach in the elderly subjects were significantly less than in young subjects. While reach was significantly correlated to subject height, normalized reach was not significantly correlated to subject height, i.e. subject height did not affect test performance when the data was normalized to the height of the subject. **Clinical Relevance:** The Star Excursion Balance Test has test-retest reliability that is excellent for use as a clinical instrument. In addition, these results suggest that testers can compare community dwelling subjects of different heights and ages. These findings may allow for the development of standards for performance on the Star Excursion Balance Test, regardless of subject height or age, and determine who may be at an elevated risk of falling.

RELIABILITY AND VALIDITY OF AN OBJECTIVE MEASURE OF SITTING BALANCE. Medley, A., Thompson, M., Matinyarare, D., Pace, G., Tapley, M., Vianna, L., Kim, N., School of Physical Therapy, Texas Woman's University, Dallas, TX.

Purpose/Hypothesis: Available balance measures are primarily for people who can stand and are not valid for those who are primarily non-ambulators. The purpose of this study was to assess the

reliability and validity of an objective measure of sitting balance. **Number of Subjects:** Participants were 14 primarily non-ambulatory older adults (mean age 81.5 years), 11 content expert clinicians, 4 raters who were PT students and 2 geriatric experienced PTs. **Materials/Methods:** Older participants performed 11 tasks ranging from quiet sitting to a sit to stand transfer, with 5 repeated on foam for a total of 16 items. The test was scored by student and experienced raters. Participants rated their steadiness on each item using a 5-point scale. Raters viewed video of the original testing and rescored participants performance to determine reliability. Content experts rated the importance of each item using a 5-point scale and made suggestions for improvement. Data analysis included ICCs, one way ANOVA, paired sample t-tests, Chronbachs alpha, and Pearson correlations. **Results:** Intrarater reliability of the raters ranged from ICC=.86 to 1.0. Interrater reliability for total scores was ICC=.97. There were no differences in the mean rating for each item and for the total score between the student and experienced raters. The entire tool demonstrated internal consistency (Chronbachs alpha=.76), but two items had an alpha below the desired level of .4. Most (61%) participants considered themselves fairly steady when performing the test as a whole. There was a strong relationship ($r=.84, p=.001$) between total score of self-assessed steadiness and total score on the balance tool. The mean rating of importance for each item ranged from 2.30 to 3.82. In general, the experts felt that items on foam were not useful. **Conclusions:** The 16-item tool appears to be reliable for assessing sitting balance in primarily non-ambulatory subjects. It demonstrates excellent intra and interrater reliability which is not dependent on rater experience. The tool appears to have good face and content validity for assessing balance in primarily non-ambulatory subjects. Based on the findings the tool will be modified to eliminate redundant items and items with poor internal consistency. Further study is necessary to determine reliability and validity of the revised 10-item tool. **Clinical Relevance:** This study demonstrates that this measure of sitting balance may be an effective tool for individuals who are primarily non-ambulatory. The future 10-item tool may provide clinicians with an objective measure of sitting balance and should be used in clinical practice to measure and monitor changes in sitting balance over time.

EFFECTS OF AN 8-WEEK STRETCHING PROGRAM ON THE PASSIVE RESISTIVE TORQUE AND STATIC STRESS-RELAXATION PROPERTIES OF THE CALF MUSCLE-TENDON UNIT OF OLDER WOMEN. Gajdosik, R., Vander Linden, D., McNair, P., Williams, A., School of Physical Therapy and Rehabilitation Science, The University of Montana, Missoula, MT, Department of Physical Therapy, Eastern Washington University, Spokane, WA, School of Physiotherapy, Auckland University of Technology, Auckland, New Zealand.

Purpose/Hypothesis: Calf muscle-tendon unit (MTU) stretching programs are used to increase dorsiflexion range of motion at the ankle. Their effects on the passive resistive torque (PRT) and static stress relaxation (SSR) properties of aged calf MTUs, however, have not been studied. The purpose of this initial study was to describe and examine the effects of an 8-week stretching program on the PRT and SSR properties of the calf MTU of older women. **Number of Subjects:** Thirteen women aged 65-82 years with limited active dorsiflexion RoM $\leq 8^\circ$ participated with informed consent. **Materials/Methods:** After a pre-testing stretching exercise and relaxation training, a Kin-Com[®] dynamometer stretched the right calf MTU by moving the ankle from relaxed plantarflexion to maximal tolerated dorsiflexion (DF) and held a static (constant) stretch at the maximal DF angle for 60 seconds (s). The decline in torque during the 60s stretch was recorded while negligible surface EMG activ-

ity was monitored for the soleus, gastrocnemius and tibialis anterior muscles. The women were then randomly assigned to a group that stretched both ankles to maximal DF 10 times for 15s each, 3-times a week for 8-weeks (n=6, SG) or to a control group (n=7, CG) that did not stretch. The tests were repeated after the stretching program and descriptive statistics and ANOVA analyses were used to examine the program's influence on the maximal DF angle, the maximal tolerated PRT, and the SSR measured as the absolute torque decline and the percent torque decline (maximal PRT=100%) during the 60s static stretch. **Results:** The maximal passive DF angle increased for the SG from 12.3plus or minus 3.1° to 18.5plus or minus 4.37° (P=0.003), but not for the CG (test=13.6 ± 4.4°, retest=13.7 ± 5.9°). The maximal PRT increased for the SG from 16.1 ± 2.3 Nm to 26.6 ± 10.6 Nm (P=0.033), but not for the CG (test=17.5 ± s 5.3 Nm, retest=17.6 ± 4.5 Nm). The absolute torque decline increased for the SG from 2.9plus or minus 0.7 Nm to 4.1 ± 1.4 Nm, and the total percent torque decline decreased from 18.3 ± 7.3 % to 15.5 ± 2.6 %, but the changes were not significant. The CG showed similar test-retest values for the absolute torque decline (2.6 ± 0.7 to 2.5 ± 0.8) and the total percent torque decline (15.0 ± 2.9% to 14.0 ± 1.9%). **Conclusions:** The stretching program increased the maximal tolerated DF stretch angle and PRT. Although the lack of significant changes in the SSR properties was probably influenced by the small sample size, the stretching program appeared to increase the ability to sustain a greater PRT load during the 60s maximal DF stretch. The responses suggest physical adaptations in the calf MTU that increased their ability to sustain and maintain a tolerated static stretch load. **Clinical Relevance:** Calf MTU stretching programs for older women can increase the maximal DF angle, and also bring about the ability to withstand a maximal tolerated static stretch. The passive static adaptations may have implications for enhancing functional static and dynamic balance and ambulatory activities.

THE EFFECT OF SHOULDER IMMOBILIZATION ON BALANCE IN THE COMMUNITY-DWELLING ELDERLY POPULATION. Coleman, A., Camper, T., Dalton, A., McCoy, R., Winningham, T., Physical Therapy, University of Tennessee, Memphis, TN.

Purpose/Hypothesis: It has been estimated that approximately one-third of adults 65 years and older are likely to experience a fall. A common fracture of the elderly population is the proximal humeral fracture that typically occurs when falling on an outstretched hand. Standard treatment of the non-displaced stable fracture involves external immobilization of the shoulder with a sling that anchors the upper extremity to the trunk. The purpose of this study is to examine the effect of shoulder immobilization on balance as measured by the Berg Balance Scale (BBS). **Number of Subjects:** Twenty-seven subjects participated in the study. The subjects were recruited by word of mouth to family and acquaintances of the investigators. Men and women age 65 years or older who were English speaking, able to follow directions, and living independently in the community were eligible to participate. Subjects were excluded if they had a history of CVA, TIA, Parkinson's disease, lower extremity joint replacement or upper extremity immobilization within the past month. **Materials/Methods:** The BBS was administered twice to each participant. After completing a health questionnaire and signing the Informed Consent, the subject chose a colored chip to determine if they would wear the sling during the first or second trial. The sling was fitted on the side of the dominant hand and the subject was given 2 minutes to accommodate to the device prior to testing. The same investigator administered both tests to each subject and the subject was not informed of their score until both testing sessions were completed. **Results:** The Wilcoxon matched pairs signed rank test was performed on the data indicating a significant difference between pairs (P=0.0074). A total of 18

out of 27 subjects demonstrated a difference between the first and second test. In considering those 18 subjects, 14 scored lower on the BBS with the sling as compared to no sling. **Conclusions:** This study investigated the impact of shoulder immobilization on balance in the community-dwelling elderly population. The results indicate that immobilizing the shoulder has a negative impact on balance as measured by the BBS. It should be noted that out of the 14 subjects who scored lower on the BBS with the sling, 12 of those subjects were tested with the sling on first. It is possible that the subject scored higher on the second trial due to previous experience taking the test. **Clinical Relevance:** Fractures of the proximal end of the humerus are fairly common in the elderly population. Initial treatment of the non-displaced stable fracture involves immobilizing the shoulder with a sling that anchors the arm to the trunk. Typically, physical therapy is not initiated until the patient is ready for range of motion exercises to the shoulder. If shoulder immobilization places the individual at a greater risk for falls due to the impact on balance, earlier physical therapy intervention such as balance screening may be indicated.

RELATIONSHIP BETWEEN ELDERLY PERSONS' SCORES ON THE POMA BALANCE SUBSCALE AND ASSISTIVE DEVICE USE. Mitchell, K., Newton, R., Programs in Rehabilitation Sciences, Drexel University, Philadelphia, PA. Department of Physical Therapy, Temple University, Philadelphia, PA.

Purpose/Hypothesis: The purposes of this study were: 1) To examine the relationship between elderly persons' scores on the balance subscale (B-subscale) of the Performance-Oriented Mobility Assessment (POMA) and the use of an assistive device (AD); and 2) To determine if a cut score of 12/16 indicated device use. **Number of Subjects:** Eighty-two older adults, between the ages of 68-93 years (x = 82.1, SD = 5.6), were recruited from two suburban retirement communities. **Materials/Methods:** The study consisted of a one-time assessment of balance. The participants completed a questionnaire pertaining to device use, health status, activity level and fall history. Balance abilities were assessed using the B-subscale of the POMA. The 'repeat arising task' was performed after the B-subscale to evaluate the participant's performance on the sit to stand task without using hands. **Results:** A significant difference in the scores of the B-subscale was observed between the group using ADs (x = 10.8) and the group not using an assistive device (x = 13.4), (Mann-Whitney U, p < .001). The association between health status, activity level and device use was examined through the use of cross-tabulations. Elders using ADs were less likely to rate their life style as active, or their health status as good or excellent. The cut score of 12 points was identified as a significant indicator of device use (Chi Square, p = .00027). The 'repeat arising task' demonstrated that 76.8% of those retested could rise to standing without using their hands for support. **Conclusions:** Older adults using an AD will score lower on the B-subscale of the POMA, and report lower activity level and lower health status than older adults who do not use devices. A score of <12 on the POMA B-subscale is indicative of AD usage. The tendency for older adults to use their hands to assist with rising to stand may be a habit or safety measure rather than reflective of impaired balance ability. **Clinical Relevance:** The B-subscale is a useful assessment for screening functional balance in older adults and, given the findings of this study, less active elders receiving a score of 12 or less should be evaluated for an AD. Older adults who use their hands on the rising task should repeat the task to determine if they can perform the task with out hands. Future studies will investigate revising the instructions of the B-subscale to more accurately reflect the balance abilities of those tested.

CHANGES IN HEAD STABILITY AND GAIT DURING PRO-PRIOCEPTIVE AND VISUAL CHALLENGES TO BALANCE. Rogers, H., Cromwell, R., Physical Therapy, UTMB - SAHS, Galveston, TX.

Purpose/Hypothesis: Identify balance strategies produced by young and older adults during gait under conditions of proprioceptive challenge and simultaneous proprioceptive and visual challenge. **Number of Subjects:** 10 adults participated in this pilot study: 5 young (mean age = 27.2) and 5 older adults (mean age = 68). All were independent with gait with no visual, neurologic, orthopedic or balance disorders that could impair gait. **Materials/Methods:** In this 2(group) X 4(condition) factorial design study, all subjects walked under 4 conditions: a level firm surface, unstable surface, firm surface with vision obscured, and unstable surface/vision obscured. Adaptive balance strategies were measured by changes in gait velocity, stride length, cadence, Gait Stability Ratio (GSR) and head stability (peak head and trunk velocity in 3 planes of motion: sagittal, frontal and horizontal). Data was analyzed in SPSS Statistical Software using ANOVA/Repeated Measures to determine differences between groups (age) and within groups (gait conditions 1-4). **Results:** Significant differences were found between age groups for GSR ($p=.03$) and stride length ($p=.025$); older adults exhibited higher GSR scores and shorter strides than young adults. Significant differences were found between conditions for gait velocity ($p<.000$), cadence ($p=.001$), peak sagittal plane head velocity ($p=.017$), peak frontal plane trunk velocity ($p=.005$) and peak horizontal plane head ($p=.018$) and trunk velocity ($p=.003$). All subjects exhibited decreased gait velocity, increased cadence, and increased head (frontal and horizontal planes) and trunk velocity (sagittal and horizontal planes) during gait under the conditions of unstable surface and unstable surface/vision obscured. Predominant movement patterns in all planes of motion consisted of trunk followed by head movement (time lag of 0-.2 sec) with both segments moving in the same directions. **Conclusions:** Older adults seek greater stability (increased GSR and decreased stride length) than young adults regardless of surface. However, both groups display similar adaptations to gait velocity, cadence, and head stability (head and trunk velocity) under proprioceptive and combined proprioceptive/visual challenges to balance. **Clinical Relevance:** Most falls occur during gait, especially on irregular surfaces. Gait requires dynamic balance, adaptive balance strategies, and integration of multiple sensory/motor systems. Adults must produce specific adaptive strategies to maintain dynamic balance, especially under multiple sensory system challenge. Differences between gait and head stability of older and young adults have been established; however, it has not been shown that older and young adults adapt similarly when balance challenge is high. This study reveals a trend for older and young adults to choose similar balance strategies in terms of adaptations to gait and head stability. This information may increase insight into how healthy older adults adapt to prevent falls.

INCREASING PHYSICAL ACTIVITY IN COMMUNITY-DWELLING OLDER ADULTS WITH TYPE II DIABETES USING PEDOMETERS AND TELEPHONE FOLLOW-UP. Gaunaurd, I., Pinto, M., Kirk-Sanchez, N., Research, Miami VA Medical Center, Miami, FL, Physical Therapy, Jackson Memorial Hospital, Miami, FL, Physical Therapy, University of Miami, Miller School of Medicine, Miami, FL.

Purpose/Hypothesis: Type II Diabetes Mellitus (DM) is a condition affecting many people throughout the world. Research has demonstrated that patients with type II DM have poor compliance towards therapy intervention, which includes dietary modification and increased physical activity. The purpose of the study was to demonstrate that sedentary subjects with Type II DM who received

weekly phone calls and wore a pedometer daily, could show an improvement in activity levels, from baseline, over a 16 week period. **Number of Subjects:** Ten subjects were recruited, 5 homebound and 5 from a local senior center, to participate in the study. **Materials/Methods:** Pedometers were used to measure participants' baseline steps over 2 weeks and a goal was established to increase their steps by 10% per week over the final 14 week period. Subjects were instructed how to use the pedometer during an initial face to face visit and then self reported their progress through daily phone calls for the first two weeks and weekly phone calls for the final 14 weeks. Subjects also completed the physical function subscale of the SF-36 (PF-10). **Results:** The mean age of the five homebound subjects was 71.8 years old, and of the five senior center subjects was 79 years old. The ten participants averaged a 32% increase in steps walked throughout the 16 week study. The average number of pre-test steps for the homebound subjects was 1585, and for the senior center subjects was 5131. The average number of post-test steps for the homebound subjects was 2243, a 56% gain in steps, and for the senior center subjects was 5432, an 8% gain in steps. Homebound subjects showed a 13 point increase on the PF-10, while the senior center subjects showed a 15 point decrease. **Conclusions:** The homebound subjects showed a greater improvement in steps taken per week and physical function (PF-10) compared to the senior center participants. Notably, the ten participants were adherent to both wearing their step counters and recording the steps daily. **Clinical Relevance:** We were able to show that the participants can wear pedometers and monitor steps taken for a period of 16 weeks with initial training and telephone follow-up and demonstrate an increase in physical activity. For sedentary homebound subjects, use of pedometers with periodic telephone support and weekly goal setting may be an inexpensive and effective way to increase activity levels.

TREATMENT OF ARTHRITIC KNEE PAIN USING PHOTO-THERAPY: A CASE STUDY. Johnson, S., Bulkow, B., Progressive Step Rehab, Milwaukee, WI.

Background & Purpose: Phototherapy is an emerging treatment modality being used in a variety of physical therapy settings. According to the literature, phototherapy has had a significant effect on decreasing pain and increasing range of motion. The investigators wished to assess the effects of superluminous diodes (SLD) and cold laser on knee pain in a geriatric patient who was not responding to conventional physical therapy interventions. **Case Description:** An 85 year-old female, with limited mobility and increased dependence as a result of severe knee pain presented to physical therapy for evaluation and treatment. Patient's history revealed advanced osteoarthritis in both knees. Although recommended for bilateral joint arthroplasty, other health conditions made the patient a poor surgical candidate. Patient was sent to a skilled nursing facility for conservative management of her knee pain. Patient was evaluated by physical therapy on May 2, 2005 and at that time was moderate assist of 2 with all transfers and ambulated 3 steps and wheeled walker. After four treatment sessions that included traditional gait and transfer training, open chain therapeutic exercise without resistance and cold pack application the patient had made minimal progress. Due to the lack of initial progress, the investigators elected to add phototherapy treatment to the patient's plan of care. **Outcomes:** Patient was treated using a Med-X Phototherapy unit which delivers predominately infrared SLD @ 870nm, 2 Joules/min, and cold laser @ 100 mW with 3 33 mW GaAlAs, 6 Joules/min. Manufacturer treatment protocol was followed: placing the two SLDs over the medial and lateral joint space (10 Joules per Diode), followed by the anterior and posterior joint space (10 Joules per Diode). Cold laser was then applied to the

anterolateral joint space(10 joules). A total of six treatments were delivered at a rate of three times per week. During this time traditional therapies were continued . At the completion of therapy on 5/27/05 patient was: independently transferring and ambulating 200' with a wheeled walker, and negotiating stairs with handrail and supervision. Patient returned to home with spouse and continues to reside in the community with decreased pain and functional mobility. **Discussion:** Resident was making limited progress with traditional therapy intervention, and was exploring permanent nursing home placement. Following the addition of Phototherapy patient made rapid progress, exhibiting decreased pain and increased mobility. It appears to the investigators that the addition of Phototherapy treatments had a significant effect on this patients outcome. Case studies inherently lack the controls and randomization necessary to draw any significant conclusions; however, the results warrent further investigation.

VALIDITY OF A NEW FALL RISK SCREEN. Killough, J., Physical Therapy, College of St. Scholastica, Duluth, MN, Physical Therapy - Bridge Program, Simmons College, Boston, MA.

Purpose/Hypothesis: Falls are a common problem among community dwelling elderly and the consequences can be severe, leading to long confinement or death. The Coalition for Community Fall Prevention (CCFP) developed a screen that could not only assess for those at risk, but also could identify areas of potential risk that would assist in interventions to prevent falls. The primary objective was to determine the sensitivity and specificity of the ability of the screen to detect community dwelling elders who would fall in the next year. **Number of Subjects:** The subjects were 122 community-dwelling individuals over the age of 65 recruited from senior citizen living complexes, health fairs, wellness seminars, senior centers and the general community. They demonstrated the ability to walk for six meters with or without an assistive device, to follow directions and to answer the survey questions. Before participating in the study, all subjects signed an informed consent. **Materials/Methods:** The CCFP Fall Risk Screen was administered to volunteers who wished to assess their risk for fall. The screen consists of 10 yes/no questions related to risk factors for fall, the Timed Up and Go Test (TUG), and a question asking about any falls in the previous year. The risk factors included: medications, urinary incontinence, balance, strength, lightheadedness/dizziness, vision, alcohol use, lower extremity pain, and fear of falling. Those who had 4 or more yes questions, or a TUG of > 13.5 seconds, or a fall in the previous year were considered at risk. The subjects were called approximately every 3 months during the following year and asked about any falls or steps taken to prevent falls. SPSS 12 was used for analysis and Chi-square tests were performed on the cross tabulations used to determine sensitivity and specificity. **Results:** Of the 122 subjects, 76 were shown to be at risk and 46 tested negative for fall risk. There were 47 of the 122 subjects who fell, 39 of those tested positive with the screen and 8 tested negative. The Pearson Chi-Square probability was 0.000, indicating these results did not occur by chance. The sensitivity of the screen was: 78.7 % and the specificity was: 50.7%. While the predictive value of a positive test was 51.3%, the predictive value of a negative test was 82.6%. **Conclusions:** This suggests the test, which takes less than 5 minutes to administer, can alert the medical team to elderly persons who are not at risk for fall. For those who test positive there is a 1.6 times increased risk of falling, warranting a closer look at the risk factors and developing a plan to prevent falls. Further investigation should include an assessment of the usefulness of this screen in primary care settings to lower the fall rate by its ability to identify those potentially at risk and thus allow for preventative remediation. **Clinical Relevance:** This screen that is quick an easy to administer may provide a useful tool for therapists

and other health providers to identify patients who need intervention to lower the risk of falls.

DOES PARTICIPATION IN A WELLNESS SCREENING PROGRAM PROMOTE PHYSICAL ACTIVITY MODIFICATIONS IN COMMUNITY DWELLING OLDER ADULTS? Schrodt, L., McPherson, S., Crowe, A., Martin, W., Western Carolina University, Cullowhee, NC.

Purpose/Hypothesis: Wellness screenings are popular ways to assess physical function in older adults. However, the effectiveness of screenings to change physical activity behavior is unclear. The purposes of this study were to assess in older adults: (1) whether participation in a screening program results in physical activity modification, (2) whether physical activity modification differs based on functional ability, and (3) participant perceptions of the value of a screening program. **Number of Subjects:** Community dwelling older adults (N=27, 82.7 plus or minus 3.7 years, 63% female) who volunteered for a physical function screening program and completed follow up interviews. **Materials/Methods:** Screenings included lower body function and balance measures (gait speed, repeated chair raise, timed 360° turn, and tandem stance). A physical therapist provided each participant with a written and verbal report of their performance compared to normative data and individualized physical activity recommendations for improving physical function after screening. Recommendations included verbal instructions, demonstrations, handouts, and referral for a physical therapy evaluation if needed. Physical activity modifications and participant perceptions were assessed via telephone interviews 90 days after screening. Individuals who performed below normative values on the functional measures were identified as having low functional ability. **Results:** Nineteen participants received recommendations to modify physical activity participation. Of these, 11 participants reported adopting and maintaining at least one modification. Chi-square analysis demonstrated no difference ($p>.05$) between groups (high function vs. low function) for activity modifications; with 40% of both groups making at least one modification. Addition of balance and strengthening activities was the most frequent modification reported ($n=6$). Five participants reported attending an exercise class or increasing duration of physical activity. Five of the 7 participants who received a recommendation for a physical therapy evaluation reported receiving one upon follow up. Most ($n=22$) participants reported increased awareness of the importance of physical activity. Participants favorably rated the recommendations (8 on 0-10 scale), and cited the overall program and identification of deficits as the most helpful in understanding their level of function. **Conclusions:** Participation in a screening program followed by individual recommendations resulted in physical activity modification in some older adults. High and low function groups demonstrated similar rates of activity modification. Most participants reported the screening program enhanced awareness of their physical ability and the role of physical activity in maintaining independence. **Clinical Relevance:** Community screenings are accessible, low-cost ways to assess function in older adults. Screenings enhance awareness of functional ability and may facilitate physical activity modifications and promote physical therapy consultation for functional deficits.

A CROSS-SECTIONAL STUDY OF BALANCE-RELATED MEASURES WITH OLDER ADULTS WHO PARTICIPATE IN TAI CHI, YOGA, OR NO EXERCISE. Cissel, E., Cours, J., Teel, S., Hakim, R., Physical Therapy, University of Scranton, Scranton, PA.

Purpose/Hypothesis: Although there is a growing body of evidence on the positive effects of Tai Chi, there is very little scientific research on the benefits of Yoga, particularly for older adults.

Gauchard et al. (2003) reported that proprioceptive activities, such as Tai Chi and Yoga, are more beneficial to balance regulation and precision as compared to general conditioning exercises such as jogging, cycling and swimming. Given that approximately 25-35% of people over the age of 65 experience at least one fall per year (Tinetti et al., 1988), the effect of low impact exercises, such as Tai Chi and Yoga, on the balance of older adults should be explored. The purpose of this study was to compare balance-related measures among older adults who participate in either Tai Chi, Yoga, or no exercise. **Number of Subjects:** A cross-sectional study was conducted on a convenience sample of 52 healthy, older adults (>65 years) categorized according to their current participation in Tai Chi (n=21), Yoga (n=11), or no exercise (n=20). **Materials/Methods:** Each participant was measured on one occasion. The measures included the Single Leg Stance (SLS), the Multidirectional Reach Test (MDRT), the Fullerton Advanced Balance Scale (FAB), the Activities-specific Balance Confidence Scale (ABC), and the Timed-Stand-To-Floor Test (TSFL). The data was analyzed using multiple one-way analysis of variance procedures (ANOVAs) followed by Tukeys HSD post-hoc analysis. **Results:** There were no significant differences between the groups for SLS and ABC scores. The Tai Chi and Yoga groups scored significantly higher on the FAB ($p=0.001$) than the no exercise group. The Tai Chi group scored significantly higher than both the Yoga and no exercise groups on all directions of the MDRT (forward $p=0.002$; backward $p=0.008$; right $p=0.000$; and left $p=0.000$), and the Yoga group scored significantly higher than the no exercise group on the left ($p=0.004$) and right ($p=0.008$) reach directions. For TSFL testing, the average times and compliance rates were as follows: Tai Chi group = 10.4 sec/76.1%, Yoga group = 7.1 sec/54.5% and no exercise group = 8.4 sec/30.0%, while the non-compliant subjects were either unable or unwilling to perform the task. **Conclusions:** Both the Tai Chi and Yoga exercise groups demonstrated better balance performance than the no exercise group. Although less dynamic than Tai Chi, Yoga may promote dynamic balance gains through the practice of postures/asanas, breathing, relaxation and meditation. Further experimental research is warranted with a larger sample of older adults. **Clinical Relevance:** As the population of older adults continues to grow, alternative forms of exercise such as Tai Chi and Yoga should be considered to improve fitness and balance. Tai Chi and Yoga are both economical and effective methods of low impact exercise that can be incorporated into fall prevention programs in many settings.

PHYSICAL PERFORMANCE OF ELDERLY WOMEN RESIDING IN ASSISTED-LIVING FACILITIES AND IN THE COMMUNITY: A COMPARATIVE STUDY. Elazzazi, A., Gleeson, P., Etnyre, B., Olson, S., Physical Therapy, Utica College, Utica, NY, Physical Therapy, Texas Woman's University, Houston, TX, Rice University, Houston, TX.

Purpose/Hypothesis: Elderly persons may leave their homes and move into assisted-living facility if they need more help than the family or community can offer. The majority of persons residing in assisted-living facilities are women, over the age of 75 years, and need assistance with at least one activity of daily living. Approximately 40 percent of assisted-living facilities residents use assistive devices for locomotion. This study investigated the differences in selected measures of functional performance and incidence of falls between elderly women living in the community and those residing in assisted-living facilities. **Number of Subjects:** Participants included 53 community dwellers and 43 assisted-living facility residents whose average ages were 80.4 +/- 5.1 years and 84.4 +/- 5.3 years, respectively. **Materials/Methods:** Outcome measures included three timed tasks and two balance tasks. The timed tasks were 5-repetition sit-to-stand from a standard chair, 5-repetition step-up and down on a four-inch step and 50-foot walk. The

balance tasks included single-leg stance and functional reach. The data were analyzed using unpaired t-test with an alpha level of .05 to indicate statistical significance. The difference in incidents of fall between groups was analyzed using Mann-Whitney U-test. **Results:** There was no significant difference in any of the measured physical performance tasks between community dwellers and assisted-living facilities residents. Additionally, fall rates were not different between groups as indicated by the nonsignificant Mann-Whitney U-test with fall rates of approximately 38 percent and 44 percent for the community dwelling and assisted-living facility groups, respectively. **Conclusions:** Although the existing literature indicated that older individuals might seek residence in an assisted-living facility because of a need for assistance in at least one activities of daily living, the results of the present study suggest that the functional levels of older women in the community and assisted-living facilities are, in fact, similar. **Clinical Relevance:** The outcomes of this study suggest that data gathered about functional performance of either group maybe applied to the other group. Additionally, this study adds to the pool of normative data that is needed to further researchers and clinicians understanding of functional limitations in elderly women.

ASSISTIVE DEVICES AND GAIT IN THE ELDERLY. Tissier, S., Protas, E., PT Department, UTMB, Galveston, TX.

Purpose/Hypothesis: To compare temporal, spatial and oxygen costs of gait while elderly subjects walk normally, with a new assistive device and with 2 other commercially available assistive devices. The new device, called the WalkAbout, has been developed to enable disabled individuals to walk and perform other activities of daily living without the risk for falling. **Number of Subjects:** Thirteen, healthy subjects between the ages of 70 and 90 who could walk without an assistive device volunteered for this study. **Materials/Methods:** Walkabout description: the device completely surrounds the user in frame. The frame opens on one side to allow the person to enter the device. Merry Walker description: it is a walker/chair combination that surrounds the user, and is somewhat close in design to the walkAbout. Procedures: Gait analysis: An instrumented walkway (GaitRite, CIR systems, New Jersey) was used to measure temporal and spatial parameters of gait. The subject was asked to walk from one end of the mat to the other end as fast but as safe as possible. The subject performed the test under four conditions: normal walking, walking with a walkabout, walking with a standard wheel walker, and walking with a Merry walker. The spatial parameters measured are step length and stride length. The temporal parameters are gait speed, cadence (number of steps/ambulation time), normalized gait speed (Gait velocity/average leg length). Five minute walk Test: Each subject was tested under the same 4 conditions while walking in a rectangular hallway for 5 minutes. The subject was fitted with a portable gas analyzer (Vo2000, Medical Graphics, St Paul, MN.) The distance walked in 5 minutes was recorded and used to calculate the oxygen consumption per millimeter per kilogram body weight per meter walked ($VO_2\text{ml.kg}^{-1}.\text{m}^{-1}$). The respiratory exchange ratio and the expired minute ventilation were measured. **Results:** Gait speed, normalized gait speed, step and stride lengths were all decreased while using the Merry Walker device as compared to walking without an assistive device. Neither the wheeled walker nor the WalkAbout differed significantly from normal walking except for faster cadence in the WalkAbout. The distance walked and gait speed were decreased and the respiratory exchange ratio and minute ventilation were increased with the Merry Walker compared to normal walking. The oxygen consumption was higher for the wheeled walker and Merry walker compared to normal walking, but there was no difference for the WalkAbout. **Conclusions:** The new assistive device, the WalkAbout, allowed rel-

atively normal spatial and temporal parameters of gait, while a comparable device impeded normal gait. The oxygen demands of walking were similar to unassisted walking for the WalkAbout, but were higher for the wheeled walker and Merry walker. **Clinical Relevance:** These results may help to prescribe most effective and safe devices for older adults, especially those with balance issue.

EVIDENCE FOR PRACTICE: EFFECTIVENESS OF RESISTANCE EXERCISE IN POST-MENOPAUSAL WOMEN WITH DECREASED BONE MINERAL DENSITY. Habeck, A., Zimmermann, C., Physical Therapy, Concordia University Wisconsin, Mequon, WI, Physical Therapy, Advanced Health Care, Milwaukee, WI.

Purpose/Hypothesis: The purpose of this systematic literature review was to critically evaluate the evidence regarding the effect of resistance exercise on bone mineral density (BMD), functional capacity and disability in post-menopausal women with diminished BMD. **Number of Subjects:** Thirteen studies in peer-reviewed journals met the following review criteria: post-menopausal women, diagnosed with low BMD and involved in a resistance training program; outcome measures of pathophysiology, functional ability or disability, based on the Nagi Disablement Model; and publication in English. **Materials/Methods:** A literature search was performed using MEDline, PubMed, and CINAHL. A modified method of the American Academy of Cerebral Palsy and Developmental Medicine was used for the systematic literature review. Studies were appraised based on design, sample size, internal/external validity, and statistical significance and clinical importance of results. **Results:** The 13 studies meeting the review criteria were published between 1989 and 2004. All were randomized controlled trials with 20 or more participants. None had serious threats to internal or external validity. The control group, in most of the studies, received some form of "health education." Study outcomes included measures of pathophysiology, BMD, functional capacity (ADL ability; timed mobility tasks; self-reported physical functioning (Osteoporosis Quality of Life Questionnaire)), and disability (depressive symptoms; perceived health status; self-reported disability). Eight of the 13 studies reported statistically significant increases in BMD or stabilization of bone loss. Three studies reported no statistically significant benefit to BMD. Fracture rates were examined in 3 studies with the exercise group in 2 of the studies demonstrating a statistically significant reduction in fractures. The third study identified no fracture rate difference between groups. Strength was significantly improved in 10 of the 13 studies. One study reported no improvement in back extensor, abdominal or quadriceps strength. Three studies demonstrated significant improvements in quality of life and pain levels. Two of 3 studies demonstrated a significant improvement in balance measures in the exercise group. **Conclusions:** This systematic review of 13 studies identified strong evidence examining the effect of resistance exercise on BMD, function and disability in post-menopausal women with decreased BMD. Resistance exercise was shown to be significantly better than a control intervention for the outcomes of BMD, strength, pain intensity, function, and quality of life. There was no evidence suggesting that resistance exercise is harmful to physiological, impairment, or functional outcomes. **Clinical Relevance:** Personal experience suggests that current physical therapy practice rarely includes resistance exercise as a routine part of home programs for persons with osteoporosis and osteopenia. The evidence reviewed supports resistance exercise as safe and effective in improving patients' BMD, strength, and quality of life.

DOES DIABETES INFLUENCE FUNCTION IN CHRONIC STROKE SURVIVORS? A PILOT STUDY. Kluding, P., Physical Therapy and

Rehabilitation Sciences, University of Kansas Medical Center, Kansas City, KS.

Purpose/Hypothesis: Stroke and diabetes are both leading causes of adult disability and growing public health problems. Type 2 diabetes mellitus is a known risk factor for stroke, and approximately 30% of people with stroke also have a diagnosis of diabetes. This percentage will likely increase with the increasing prevalence of diabetes in the population. However, the influence of diabetes on function in people with chronic stroke has not been specifically examined. The purpose of this pilot study was to examine differences between subjects with stroke and diabetes (SD) and subjects with stroke alone (SA) in measures of obesity, physical fitness, and motor function. **Number of Subjects:** Five SD subjects were compared to 5 age- and gender-matched SA subjects. The mean age was 62.4 (± 8.2) years and the mean time since stroke was 5.2 (± 4.5) years. **Materials/Methods:** Body mass index (BMI) was calculated from height and weight. A measure of estimated V_{O2max} , calculated from self-report of current exercise habits, age, and BMI, was used to examine physical fitness. The Fugl-Meyer total score (sensation, upper and lower limb motor control) was used to give an indication of motor control on the paretic side. Grip strength of both hands and isometric strength of both lower extremities were tested using hand-held dynamometers. **Results:** SD subjects had higher BMI ($30.6 \text{ kg/m}^2 \pm 4.4$) and lower estimated V_{O2max} ($15.8 \text{ kgml/min} \pm 6.2$) than SA subjects (BMI $25.7 \text{ kg/m}^2 \pm 3.5$ and estimated V_{O2max} $19.6 \text{ kgml/min} \pm 4.42$). SD subjects also had a lower total Fugl Meyer score (73.8 ± 27.1) than SA subjects (81.3 ± 36.6). Isometric strength was weaker in the SD subjects for all muscles tested on the hemiplegic side (grip, hip flexion and abduction, knee extension and flexion, and ankle dorsiflexion) compared to the SA subjects. The differences in this small sample were not statistically significant, although grip strength approached significant levels in an independent t test ($p = 0.065$). This work is ongoing, and more subjects will be tested in the future. **Conclusions:** Our primary conclusion from this pilot project is that these outcome measures are appropriate and sensitive to detect differences between SD and SA subjects. However, the use of a maximal exercise test would give a more precise indication of cardiorespiratory fitness than the estimate used here. These preliminary findings indicate that the presence of diabetes may have an influence on function in chronic stroke survivors, and this question merits further investigation. **Clinical Relevance:** Physical therapists who are involved with rehabilitation of stroke survivors need to be aware of the possible influence of diabetes and obesity on physical fitness, motor function, and muscle strength. Diabetic complications such as peripheral neuropathy may affect motor function, and autonomic neuropathy may influence the ability of an individual to exercise. Although both diabetes and stroke contribute individually to disability, little is understood about the interaction of these two pathologies on the various systems of the body.

PRIOR FALLS AND LEVEL OF CONFIDENCE IN THE PERFORMANCE OF ACTIVITIES OF DAILY LIVING IN INDIVIDUALS WITH PARKINSONS DISEASE. Davenport, M., Physical Therapy, East Tennessee State University, Johnson City, TN.

Purpose/Hypothesis: Lack of confidence in the ability to safely perform everyday activities can have serious functional consequences. Few studies have examined the relationship between previous falls and the self-reported ability to safely perform routine functional tasks in individuals with Parkinsons disease (PD). The purpose of this study is to determine the impact of prior falls on self-efficacy by examining the relationship between fall status and scores on the Modified Falls Efficacy Scale (MFES). A further aim is to

evaluate the MFES in predicting fall-risk in individuals with PD. **Number of Subjects:** Subjects consisted of eighteen community dwelling adults (ages 51 to 81); 6 with PD who had one or more falls within the previous 12 months, 6 with PD without such history, and 6 normal controls. **Materials/ Methods:** The MFES was used to measure each subject's confidence in his/her ability to perform 14 daily living tasks. Each was rated from 1 to 10, with a maximum aggregate score of 140. A higher score indicates a greater perceived level of confidence. **Results:** The average MFES score was 5.1 (SD \pm 2.2) for fallers, 7.9 for non-fallers (SD \pm .9) and 10 for controls. A significant difference was noted in average MFES score between fallers and non-fallers with PD ($p \leq .05$). Stepwise regression analysis indicated that the MFES discriminated between fallers and non-fallers with PD in their confidence in performing the following activities: bathing, crossing roads and ascending/descending stairs. In three activities, chair and bed transfers, and answering the telephone, the non-fallers were significantly less confident than were the controls, while the fallers exhibited no similar significant lack of confidence. In all other cases except two, fallers, and in some cases non-fallers, were significantly less confident than controls in those tasks. Finally, no significant differences were noted between fallers and non-fallers during dressing and light housekeeping. **Conclusions:** Lack of confidence in performing the activities of daily living is not always dependent upon a history of falls. Those who have fallen may have adopted strategies that they presume minimize the risk of subsequent falls. It is apparent from the data however that most who have fallen at least once in the previous year are acutely aware of the risk of falling again, and are therefore less confident than controls or non-fallers in performing most of the measured activities of daily living. **Clinical Relevance:** Psychoemotional factors regarding falls education should be part of a comprehensive treatment program aimed at promoting the positive aspects (activity and participation) of the World Health Organization (WHO) model of Functioning, Disability and Health. Individuals with Parkinsons disease should be taught 1) to recognize behaviors that place them at lowered levels of self confidence and 2) to explore safe options for reducing the resultant handicap that all too often results from simply the fear of falling.

TEST-RETEST AND INTERRATER RELIABILITY OF TWO POSTURAL MEASURES IN POST-MENOPAUSAL WOMEN WITH OSTEOPOROSIS. Gunther, J., Kolodziej, T., Bish, C., Tiberi, J., Physical Therapy, Daemen College, E. Amherst, NY.

Purpose/Hypothesis: Post-menopausal women may present with thoracic hyperkyphosis, placing them at risk for vertebral compression fractures and impaired balance. Reliable outcome measures are needed to evaluate therapeutic interventions aimed at improving posture. The purpose of this study was to determine the reliability of the Reedco Posture Scale (RPS) and the Kyphosis Index (KI). **Number of Subjects:** Five females with osteoporosis (mean age 66.2 \pm 7.5 years) were recruited from a local osteoporosis support group. **Materials/Methods:** Informed consent was obtained from each participant. Four physical therapists with at least 10 years of clinical experience tested each subject. The order of testing (i.e. RPS and KI) was randomized for the first subject each therapist tested and the order was alternated for each subject thereafter. Subjects were tested sequentially by each of four therapists. The therapist order was not randomized. 30 seconds rest was given between tests to reduce fatigue. Subjects were tested with shoes off, wearing shorts and a hospital gown opened to the back. Subjects were told to stand in their best posture. The RPS was administered by assigning an ordinal value from 0 to 10 by visual inspection of 10 postural traits viewed laterally or from behind. To measure the KI, a flexicurve ruler was placed along the spine and the molded shape of the

spinal curve was traced on grid paper. KI was calculated as described by Lundon, et al. 1998 and others. The five subjects returned in one week and were re-tested by one of the testers. **Results:** KI ranged from 9.24 to 22.80. No significant difference in KI was found between raters (One-way ANOVA, $F=.861$, $p=.488$). Interrater reliability for the KI was good (ICC (2,1)=.83). There was no significant difference between test-retest KI (Students t , $p = .5366$). No significant interrater difference was found in total RPS scores (Kruskal-Wallis nonparametric ANOVA, $H=6.96$, $p=.07$). However, one item (head tilt position) was significantly different between therapists ($H=8.049$, $p=.045$). There was no significant test-retest difference in total RPS scores (Wilcoxon t , $p=.5217$). One of the 10 RPS items (lower back) was significantly different at post-test (Wilcoxon t , $p=.0379$). **Conclusions:** These results support the reliability of the KI as a clinical measure in this population. However, interrater differences in total RPS scores approached significance, and several individual scale items showed significant interrater or test-retest differences. Further improvement of the reliability of the RPS should precede clinical use as an outcome measure. **Clinical Relevance:** Post-menopausal women with osteoporosis may experience vertebral compression fractures and functional limitations secondary to kyphotic spinal deformity. Clinical interventions that reduce postural deformities have potential for improving physical function in this group. Measurement of thoracic kyphosis and whole body posture are potentially important as clinical outcome measures in this population.

IDENTIFICATION OF THE KEY COMPONENTS OF CAR TRANSFERS BY INDIVIDUALS WITH DEMENTIA. Elrod, C., Bass, B., Colvin, K., Physical Therapy, Marymount University, Arlington, VA.

Purpose/Hypothesis: The purpose of this study was to identify the key components of performing car entries by individuals with dementia. **Number of Subjects:** Sixteen clients from a suburban Alzheimer's day center were videotaped performing car entries. **Materials/Methods:** A modified Delphi technique involving three panels of experienced physical therapists viewing videotapes of car entries was used to identify the key components. Descriptive and Q-sort analyses were utilized. **Results:** Ninety-four key terms or phrases were identified by the first panel. The Q-sort analysis from the second group organized the data into eight categories, each with multiple indicators. There was more than 85 percent agreement between the two experts in the Q-sort analysis outcomes. The newly identified key components/ categories were enhanced and validated by the third panel. The seven key components, as reflected in the format of a Functional Components Table, were approach to the car, stability, repositioning inside the car, guidance and assistance, door management, seat belt management, and time spent to perform the task. **Conclusions:** Key components of car entries performed by individuals with dementia were identified by several experienced clinicians using a modified Delphi technique. Further research needs to be conducted in order to validate the key components as a functional measurement tool which could be used by healthcare facilities and practitioners as an outcome measurement for evaluative and intervention planning to enhance the quality of life of individuals with dementia. **Clinical Relevance:** Individuals diagnosed with dementia present with cognitive and motor deficits that can hinder or prevent them from performing daily activities including the ability to get into a car. The inability to perform car entries may compromise a person's independence by reducing his desire and capability to leave his home and be active in the community. This functional limitation could cause an individual to become homebound, potentially resulting in a decreased quality of life, increased caregiver burden and risk of institutionalization. Identifying the key components of car entries provides clinicians

with a way to objectively measure improvement or decline in function and provide more tools to direct physical therapy interventions.

THE RELATIONSHIP BETWEEN ACHIEVEMENT OF WALKING GOALS AND EXERCISE SELF-EFFICACY IN POST-MENOPAUSAL AFRICAN AMERICAN WOMEN. Williams, B., Bezner, J., Chesbro, S., Leavitt, R., Howard University, Washington, DC, Rocky Mountain University of Health Professions, Provo, UT, University of Connecticut, Storrs, CT.

Purpose/Hypothesis: The purpose of this study was to investigate the relationship between the achievement of walking goals and exercise self-efficacy in postmenopausal African American women. **Number of Subjects:** Participants in this study were 43 women who self-identified as African American (mean age = 58; range = 50-68). Thirty-five women completed the study. Inclusion criteria included cessation of menses for at least one year and no participation in a regular exercise program. Presence of an acute musculoskeletal injury, impaired ambulation or mobility, classification as high risk according to the ACSM guidelines for exercise participation, or history of coronary artery disease. **Materials/Methods:** Participants engaged in a 6-week walking program with two walking goals. Exercise self-efficacy was assessed using the Self-Efficacy for Exercise Questionnaire and semi-structured interviews. All participants completed the PAR-Q health history questionnaire, the Demographic Data Form, the Self-efficacy for Exercise Questionnaire and the 7-day Physical Activity Recall. Blood pressure, heart rate, height and weight were assessed according to established guidelines. All participants met with the principal investigator to develop goals for the number of daily steps to be walked and the intensity/duration of bouts of walking. One goal was based on the ACSM-CDC minimum physical activity recommendations to perform 30 minutes of brisk walking 4 or more days/week. This goal was the same for the entire sample. The other goal was a steps/day goal and was negotiated based on the baseline average daily steps, the current pedometer guidelines of 10,000 steps/day, recommendation by the principal investigator, and the participant's suggested targeted value. All participants recorded their daily walking activity in their walking logs for 6 weeks after the one-week baseline period. At the end of each week, participants faxed their walking logs to the principal investigator. **Results:** Participants who met the brisk walking goal demonstrated higher exercise self-efficacy than those who did not ($p=.003$). Those who met the average daily step goal tended to have higher exercise self-efficacy ($p=.108$) compared to those who did not. Participants were most confident they would continue exercise when they were 'bad mood' or 'on vacation'. They were least confident they would continue exercise when it was 'raining or snowing' or they perceived they 'didn't have time'. **Conclusions:** Women who have higher levels of exercise self-efficacy before engaging in an exercise program have more successful outcomes. Even minimal success with exercise appears to increase one's confidence in future exercise participation. **Clinical Relevance:** Enhancing exercise self-efficacy in African American women should be a goal of every health care professional, since self-efficacy seems to be an important indicator of success in performing regular exercise for this population and regular exercise promotes health and prevents disease.

THE EFFECT OF A WALKING PROGRAM ON PERCEIVED BENEFITS AND BARRIERS TO EXERCISE IN POST-MENOPAUSAL AFRICAN AMERICAN WOMEN. Williams, B., Bezner, J., Chesbro, S., Leavitt, R., Howard University, Washington, DC, Rocky Mountain University of Health Professions, Provo, UT, University of Connecticut, Storrs, CT.

Purpose/Hypothesis: The benefits of exercise are many, yet rates of exercise among adults remain low. This finding is especially

true for African American women who are at increased risk for heart disease, diabetes, and obesity. The incidence of coronary heart disease and diabetes is greater in the African American population compared to the white population. Factors that increase the risk of diabetes and coronary artery disease in African American women are high fat diets, lack of regular exercise and obesity. Researchers have shown that people who exercise reduce their risk of diabetes, coronary heart disease and obesity, yet African American women have lower rates of regular physical activity than whites as well as other ethnic minorities. Physical activity participation in adults has been associated with many positive health outcomes. The purpose of this study was to investigate the effect of a walking program on perceived benefits/barriers to exercise in African American women. **Number of Subjects:** Participants in this study were 43 women who self-identified as African American. Thirty-five women completed the study. Inclusion criteria included cessation of menses for at least one year and not engaged in a regular exercise program. Exclusion criteria included presence of acute musculoskeletal condition, impaired ambulation or mobility, classification as high risk for exercise participation, or history of coronary artery disease. **Materials/Methods:** Participants engaged in a 6-week walking program with two walking goals. One goal was based on the ACSM minimum physical activity recommendation to briskly walk 30 minutes/day and was the same for the entire sample. The other goal was a steps/day goal and was negotiated based on the baseline average daily steps, the current pedometer guidelines of 10,000 steps/day, recommendation by the principal investigator, and the participant's suggested targeted value. Perceived benefits and barriers to exercise were assessed pre- and post- intervention using the Exercise Benefits/Barriers Scale (EBBS). **Results:** Eighteen participants (51%) met the brisk walking goal, 12 participants (34%) met the step/day goal, and 10 participants (29%) met both goals. There was no significant difference on the scores of the benefits scale or barriers scale between those who met one or both walking goals and those who did not ($p=.094$). No significant change was noted between pre- and post- intervention scores on the EBBS. The most commonly cited barriers on the EBBS were related to exercise being tiring, fatiguing and hard work. The most frequently cited barrier to exercise during the interviews was lack of time due to work and family responsibilities. **Conclusions:** In this study, success in a walking program did not affect perceived benefits/barriers. Scores on the EBBS did not accurately predict exercise participation. **Clinical Relevance:** Consideration should be given to the identification and minimization of unique barriers affecting different ethnic/cultural groups when designing exercise programs.

STANDING BALANCE TESTS USED BY EMPLOYED PHYSICAL THERAPISTS IN MICHIGAN: A PILOT STUDY. Saliga, S., Bongiovanni, C., Oakland University, Leonard, MI.

Purpose/Hypothesis: Standing balance measures are used to assess balance and the ability to perform functional activities. There are many balance measures. Research has shown that some balance tests are reliable and valid and are more sensitive for certain populations and impairments. It is important that physical therapists (PTs) accurately choose the most appropriate tests to assess problems and document improvement. The purpose of this study was to investigate the balance tests used by PTs in Michigan and to investigate the reasons why PTs use or do not use certain tests. **Number of Subjects:** A written questionnaire and informed consent was sent to 250 PTs selected randomly from a list of licensed PTs in Michigan. The return rate was 37.2 percent. Fourteen returns were excluded, as the respondent was not employed at the time of the survey. This left 79 useable surveys. **Materials/Methods:** A survey instrument developed for this study consisted of demographic

information, a list of balance tests, a list of reasons for choosing to use or not use the tests and several open-ended questions. Following IRB approval and a pilot survey, the survey was distributed to the PT group. **Results:** SPSS 12.0 was used to determine frequencies and Chi-squares. Relationships between the balance tests used and the following were explored: the type of facility the PT was employed at, the category of diagnoses of patients treated (eg. orthopedic, neurological), membership in the APTA, years experience as a PT, number of journals articles read regarding balance and continuing education on balance. The two most common tests reported by the PTs were the one-legged stance test and the balance grading scale (push and nudge). The most common reasons for choosing a certain balance test were ease of administering the test and convenience of the test. The most common reasons for not choosing one of the listed test were that the PT was unaware of the test, they did not know how to administer the test, and the place of employment did not use it or it was not on the clinical evaluation form. Chi-square analysis showed that PTs employed in an outpatient facility were more likely to use the one-legged stance test. Those PTs that saw patients with neurological injuries (regardless of facility type) were more likely to use the Rhombert scale. No other significant relationships were found. **Conclusions:** Most respondents in this study continue to use tests that do not have established reliability and validity. Valid tests of balance allow for clinicians to accurately describe the abilities the patient and monitor changes during intervention. PTs in this study chose to use balance tests based on ease and convenience of the tests. This study also showed a lack of knowledge regarding balance tests that have been in the literature. **Clinical Relevance:** Results of this study suggest there is a gap between the findings of research on balance tests and clinical practice of PTs with the assessment of standing balance. In addition, educators may need to consider which tests are being taught in the educational curriculum.

BEHAVIORAL RESPONSES OF OLDER ADULTS FOLLOWING SCREENING AND EDUCATION TO REDUCE THE RISK OF FALLING AT A COMMUNITY HEALTH FAIR. Clouten, N., Village, D., Physical Therapy, Andrews University, Berrien Springs, MI.

Purpose/Hypothesis: Screening for risk of falls has become popular at community health fairs because of the high risk of falling among the senior population. The purposes of this study were to determine if a change in fall-risk behavior would occur following participation in the assessment and education provided at a health fair, to determine if individuals at risk for fall would follow recommendations over six months, and to compare the results with a similar study conducted over one month. **Number of Subjects:** 157 senior volunteers participated in a fall prevention screening at the Senior Expo, a community health fair. **Materials/Methods:** The Timed Up and Go (TUG) and Functional Reach (FR) tests were used to assess the participants' risk of falling. Following the screening the testers reviewed the results with each participant and prepared the scores to indicate high, moderate or low risk of falling. Verbal and written instructions, including helpful tips to reduce the risk of falling were provided. Testers included DPT students enrolled in a geriatric course with a service-learning component. Individual telephone interviews using a structured questionnaire were scheduled at one month and six months after the Senior Expo. **Results:** One hundred and twenty seven participants were contacted at one month and 94 at six months. One month after the Senior Expo 70% of the participants interviewed reported that they had changed at least one behavior and 55% had changed between two and four behaviors. After six months over 90% of the participants reported that they were implementing at least five of the eight risk reduction behaviors. All of the high risk participants visited their physician

after the screening and half of them visited a physical therapist. There was a significant increase in participation with each of the eight risk reduction behaviors between the one- and six-month surveys. **Conclusions:** This study replicated a previous study conducted in another part of the country with the addition of a six-month telephone follow-up to inquire about maintenance of behavior change. The one-month telephone interview reminded participants about the risk reduction behaviors and provided further impetus for change. Screening and education at a community health expo with follow-up telephone contact do promote behaviors that can reduce the risk of falls among seniors. **Clinical Relevance:** This study illustrates the importance of education and prevention activities. The two telephone interviews found participants receptive and reinforced the importance of risk reduction behaviors. As behavior changes lead to decreased falls among older adults the detrimental effects of falls would be reduced.

THE FIRST STEP TO ACTIVE HEALTH PROGRAM FOR OLDER ADULTS WITH PRE-DIABETES. Lee, R., Dankart, M., Page, P., East Jefferson Hospital Wellness Center, Metairie, LA, The Hygenic Corporation, Baton Rouge, LA.

Purpose/Hypothesis: As the aging population increases, the number of individuals with chronic diseases will also continue to increase. The role of physical activity in chronic diseases such as diabetes is becoming increasingly important for both prevention and management. The purpose of this pilot study was to evaluate the effectiveness of the First Step to Active Health group exercise program in older adults referred by family physicians to the hospital wellness center. **Number of Subjects:** 7. **Materials/Methods:** Subjects were diagnosed with a cluster of obesity, diabetes, hypertension, and dyslipidemia (clinically referred to as "Metabolic Syndrome"). The group program met once a week to discuss behavioral changes and to gradually introduce a 4-step program that included cardiorespiratory, flexibility, strengthening, and balance activities. Each participant continued the program at home at least 3 additional days per week. Before and after the 10 week program, fitness was assessed with the Senior Fitness Test (Rikli & Jones, 2000). Data were analyzed with paired-sample t-test. Results: Systolic blood pressure decreased significantly by 9% ($t = -2.62, p = .04$), while diastolic blood pressure and body weight did not change. Upper body muscular strength & endurance (+32%, $t = -4.94, p = .004$) and lower body muscular strength and endurance (+17%, $t = -2.98, p = .025$) improved significantly. There were no significant improvements in upper or lower body flexibility. Gait, mobility, and cardiorespiratory fitness improved, although not significantly. There were no reported injuries with the program, and the subjective reports of the individuals indicate they enjoyed the program. All subjects are enrolled in an advanced program to continue their group exercise program. **Conclusions:** The First Step to Active Health Program significantly improved blood pressure and muscular strength and endurance in older adults with pre-metabolic syndrome. Results will be evaluated again in these individuals after completing another 10 weeks to examine longer-term effects of the program. Further research should increase sample size and evaluate other variables related to disease management such as glucose levels, blood lipids, and medication utilization. **Clinical Relevance:** The program shows promise as a structured intervention for management of chronic diseases with physical activity.

MENTAL PRACTICE AND MOTOR LEARNING OF A FUNCTIONAL MOTOR TASK IN OLDER ADULTS. Tunney, N., Billings, K., Jackson, K., Blakely, B., Hill, M., Burch, D., Physical Therapy, Georgia State University, Atlanta, GA.

Purpose/Hypothesis: The purpose of this study was to examine the influence of mental practice on motor learning of a functional motor task in older adults following a single session of guided physical practice. The task under investigation involved the use of a quad cane to ambulate on level surfaces and to ascend and descend 4 steps following a specific gait sequence. Our hypothesis is that mental practice will improve motor learning of a functional motor task in older adults. **Number of Subjects:** Nineteen community dwelling older adults (aged 66-89) independent in ambulation and stair-climbing, with no prior experience using a quad cane, and with no diagnosis of dementia participated in the study. **Materials/Methods:** A standard large base quad cane, a flight of stairs with at least 4 steps and a railing on the right side on ascent, a video camcorder, blank videotapes, and a stopwatch were needed, a consent form and a general information questionnaire, The Mini Mental State Examination (MMSE). A motor task scoring form developed for use in this study. All subjects were trained in a specific gait sequence for ambulation on level surfaces and ascending and descending 4 stairs with a quad cane following a scripted training procedure. Those in the experimental group received a set of written instructions with photographs describing the motor task procedure, and were instructed to mentally rehearse the task 4 times in the interval between training and testing. Control subjects did not receive instructions and did not mentally rehearse the motor task. Neither group engaged in physical practice in the interval between training and testing. Subjects were scored on their performance of the motor task on the final practice trial of the training session, and again 48- 72 hours later, using a specially designed scoring form. Scores achieved on the motor test by the group who engaged in mental practice were compared with those without mental practice. **Results:** Subjects in the mental practice group scored significantly higher on the motor test date than the control subjects ($p < .01$). A comparison of the difference in scores from training to test date between the two groups revealed that the mental practice group retained the learned novel skill significantly better than the control group ($p < 0.05$). **Conclusions:** These findings suggest that for older adults, mental practice facilitates motor learning of a functional motor task following a single session of guided physical practice. **Clinical Relevance:** Mental rehearsal may be beneficial in situations where physical practice is restricted, contraindicated, where safety concerns exist, where assistance for physical practice is needed but unavailable, where there are medical complications, or for an individual who is deconditioned and fatigues easily.

OUTCOME EVALUATION OF A PILOT PATIENT EDUCATION AND GOAL BASED PHYSICAL ACTIVITY PROGRAM FOR OLDER ADULTS WITH DIABETES. Pariser, G., Clark, L., Emmons, R., Physical Therapy, Louisiana State University Health Sciences Center, New Orleans, LA, Department of Physical Therapy, Medical Center of Louisiana, New Orleans, LA.

Purpose/Hypothesis: The purpose of this study was to develop and evaluate a pilot patient education and goal-based physical activity program for older adults with diabetes. **Number of Subjects:** Six senior adult patients, from a diabetes clinic, volunteered to participate in the pilot program. The mean age of the participants was 61 plus or minus 3 yrs and their mean BMI was 40.4 plus or minus 2.9. **Materials/Methods:** The pilot program, developed by the investigators, was 12 weeks in duration comprising of (a) two weekly group meetings and (b) daily physical activity using a pedometer for self-monitoring of activity level. Group meetings consisted of patient education and supervised exercise. Active methods of teaching were used in patient education. Supervised exercise included aerobic dance performed in sitting and/or standing and resistance training. The participants completed assessments

of their quality of life (QoL), knowledge about diabetes, knowledge about exercising with diabetes, and level of physical activity (PA) before and after the program. QoL was assessed using the Diabetes-39. Knowledge was assessed using the Diabetes Knowledge Test and a test on exercising with diabetes developed by the investigators. To assess pre and post-intervention level of PA (defined as steps/day) participants wore a pedometer over three consecutive days during their waking hours and recorded their steps per day on a calendar. Participants also used pedometers and calendars during the program for self-monitoring of PA. Participants were instructed to increase their PA by 100 steps/day each week. Analysis of outcome data for the pilot program was limited to visual analysis of the descriptive statistics. **Results:** DS-39 pre and post intervention scores were: 180.5 plus or minus 20.6 and 164.6 plus or minus 18.9, respectively. A lower score on the DS-39 is indicative of improved QoL. Diabetes Knowledge Test scores before and after the program were: $80\% \pm 3.1\%$ and $93.5\% \pm 2.5\%$, respectively. Scores on the test on diabetes and exercise were $68.1\% \pm 4.0\%$ and $93.5\% \pm 2.5\%$. At baseline the mean PA was 4309 (± 682) steps/day and had increased to 5669 (± 715) steps/day after the program. **Conclusions:** The data suggests that the pilot intervention improved QoL indices related to diabetes control, social burden, and energy and mobility. Prior to the intervention the participants had a good understanding of diabetes and principles of exercise. However, they were less knowledgeable about insulin use and considerations for exercising with diabetes. Their knowledge of these topics improved following the intervention. Mean PA of the participants increased from sedentary to low-active. All participants, except one individual with severe osteoarthritis, met or exceeded their weekly PA goal. **Clinical Relevance:** Outcome measures and comments made by the participants suggest that the program improved their knowledge of exercising with diabetes and provided a social network in which older adults with diabetes were encouraged to be more active.

A CORRELATION ANALYSIS OF THE COMPONENTS OF THE SENIOR FITNESS TEST AND THE PHYSICAL ACTIVITY QUESTIONNAIRE. Click Fenter, P., Bellew, J., Program in Physical Therapy, Louisiana State University Health Sciences Center, Shreveport, LA.

Purpose/Hypothesis: Use of questionnaires on physical activity and physical capacity evaluations for older adults are common in clinical settings. The Senior Fitness Test (SFT) is an objective, economic battery of tests designed to assess physical performance across a wide range of senior age groups and ability levels. Components include: chair stand, arm curl, six-minute walk, 2-minute step, chair-sit-and-reach, back scratch and eight-foot-up-and-go. The Physical Activity Questionnaire (PAQ) is a 10 item subjective survey of self-perceived physical activity level. The purpose of this study is to examine the degree to which individual components of the SFT are related and the degree to which the objective SFT correlates with the subjective PAQ in older adults. **Number of Subjects:** Eighteen females (74 to 91 years) with no history of falls completed both assessments. **Materials/Methods:** Women from an independent living facility volunteered to participate. All components of the SFT were administered in random order. The PAQ was also administered. Pearson Product Moment and Spearman rho correlations were completed for parametric and non-parametric parameters. **Results:** None of the individual components of the Senior Fitness Test were significantly correlated with another. Furthermore, the six-minute walk was the only component of the SFT significantly correlated ($p = .005$) ($r = .634$) with the PAQ. **Conclusions:** Because there was no correlation found within individual components of the SFT, these findings suggest that each component of the SFT is unique and assesses a specific domain of

elderly physical fitness in its own respective manner. Additionally, the lack of correlation between self perceived physical activity level and performance on the SFT suggests that the subjects perception of physical activity level is not reflected in their functional capacity. **Clinical Relevance:** Use of questionnaires on physical activity and physical capacity evaluations for older adults are methods commonly used in clinical settings. Understanding the properties of the tools one uses is important for the geriatric physical therapist to be aware of thus providing an improved ability to choose appropriate tools.

THE RELATIONSHIP OF VARIETY AND TOTAL AMOUNT OF ACTIVITY TO PERFORMANCE ON MEASURES OF PHYSICAL AND COGNITIVE FUNCTION IN OLDER ADULTS: A PILOT STUDY. Shubert, T., Berry, C., Nichols, J., Nunes, M., Overman, J., Giuliani, C., Curriculum in Human Movement Science, University of North Carolina, Chapel Hill, NC, Division of Physical Therapy, University of North Carolina, Chapel Hill, NC, Institute on Aging, University of North Carolina, Chapel Hill, NC.

Purpose: Physical activity is associated with reduced cognitive and physical decline in older adults. Recent findings suggest engaging in a variety of activities may provide greater protection against cognitive decline than total activity levels. It is unknown if this association is true for physical decline. The purpose of this cross sectional study was to pilot a survey tool assessing both variety of activities and total weekly activity levels, and to determine associations among variety of activity, total activity level and performance on physical and cognitive measures in older adults. **Description:** We assessed 50 community dwelling older adults (mean age 77 ± 8.2 years, 60% female). A 10 question survey assessing weekly participation in social, physical, and exercise activities was administered to each subject. Questions asked if the subject participated in the activity (yes/no), and if yes, how many times and for how long. Two scores were generated from the survey: 1) Variety of activity (VA) was scored by summing the total number of different activities participated in (range 0-10); 2) Total activity (TA) was scored by categorizing each activity into social, physical or exercise, and assigning a numerical value to each category (0-5) depending on the intensity of activity and frequency of participation (total activity range 0-23). The Physical Performance Test (PPT) assessed physical function, and the Trails B and Symbol Digit Modalities Test (SDMT) assessed cognitive processes of attention and processing speed. Pearson correlation analyses demonstrated that VA and TA are strongly and significantly ($p \leq .01$) associated with performance of the PPT, SDMT, and Trails B. Associations between VA and all performance measures were stronger than TA, with the greatest differences on the PPT ($r = 0.685$ VA, $r = 0.480$ TA) and smaller differences on SDMT ($r = 0.549$ VA, $r = 0.459$ TA) and Trails B ($r = 0.419$ VA, $r = 0.340$ TA). Multiple regression analysis controlling for age demonstrated that VA was the only variable independently associated with the PPT ($p \leq .01$), SDMT ($p \leq .01$), and Trails B ($p \leq .05$). Age, VA and TA accounted for 51% of the variance in PPT, 42% of the variance in the SDMT, and 28% of the variance in the Trails B scores. **Summary of Use:** These results suggest engaging in several different activities (social, physical and exercise) may be important for physical and cognitive performance for older adults. Our initial pilot of this survey indicates that assessing variety and total amount of activity are important indicators of physical function; however, the survey is limited to only a few questions and focuses on physical activities. Future work will expand the social and exercise categories, and also include a category of cognitive activities. **Importance to Members:** Remaining active is a key factor for healthy aging, however when working with an older adult it may be important to assess both variety of activity and total activity level to develop effective interventions.

TREATMENT OF A LATERAL ANKLE SPRAIN USING PHOTOTHERAPY: A CASE STUDY. Bulkow, B., Johnson, S., Progressive Step Rehab, Milwaukee, WI.

Background & Purpose: Phototherapy is gaining popularity in the practice of physical therapy to address the pain symptoms and limited mobility following a musculoskeletal injury. The investigators desired to study the effects of the application of Superluminescent Diodes (SLDS) to a lateral ankle sprain to decrease pain complaints and increase the functional mobility of the patient. **Case Description:** A 77 year old female experienced a left lateral ankle sprain on May 25, 2005, requiring hospitalization. Patient was hospitalized from May 25th through June 8th for medical management of numerous secondary conditions as well as pain control for the ankle. The patient received an orthopedic consult as well as physical therapy in the hospital, but was limited due to excessive pain and inability to bear weight through the involved left lower extremity. The orthopedic consult recommended conservative treatment, immobilized the ankle in a walking boot, and the patient was referred to a long term care facility. Upon PT evaluation on June 9th, the patient reported 6 out of 10 pain rating in the ankle and was only able to ambulate 3 feet with a walker and moderate assist of one and notable difficulty with weight bearing through the left lower extremity. **Outcomes:** Phototherapy treatment was initiated on day one in addition to a standard physical therapy plan of care to treat the ankle. Which consisted of gait and transfer training, open chained therapeutic exercise, and range of motion to the ankle. A MedX unit was used to deliver infrared light (870nm) at 2 Joules/min through the SLDS to the left lateral ankle structures. Immediately following the treatment on day one, the patient reported decrease in pain rating to 4 out of 10 for 2 to 3 hours following the treatment. On day 2, the patient reported 5 out of 10 pain at the beginning of treatment and 4 out of 10 again upon completion. The phototherapy protocol was continued 5x/week for 2 weeks. The patient's mobility status increased from ambulation of 3 feet with a walker and moderate assistance on day one, to 12 feet with stand by assistance on day 2 and 100 feet with stand by assistance by day 3. Upon completion of the 2 week course of phototherapy treatment, the patient reported 2 out of 10 pain to the left ankle and was ambulating up to 100 feet with a walker and stand by assistance. In addition to the mobility gains the patient was able tolerate standard shoes, and weight bearing was equal bilaterally. **Discussion:** This patient had made limited progress during her hospital course and was referred to a long term care facility vs. returning to her home due to limited mobility and increased dependence. The addition of phototherapy appears to have had a significant effect in decreasing the patients pain. This allowed for a rapid increase in weight bearing tolerance and overall mobility. Although case studies lack the scientific controls to draw conclusions, it appears that phototherapy was a contributing factor in the positive outcome for this patient and warrants further investigation.