GERINOTES

SECTION ON GERIATRICS, AMERICAN PHYSICAL THERAPY ASSOCIATION

IN THIS ISSUE

ARTICLES

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Contact Melanie Sponholz, *GeriNotes* Editor
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PRESIDENT'S PERSPECTIVE:
CELEBRATING AT CSM 2011

John O. Barr, PT, PhD

The Combined Sections Meeting (CSM) has always been a capstone celebratory event for the Section on Geriatrics. This year's well-attended preconference & conference programs, platform & poster presentations, saw the addition of *Technoplazooa*, which featured interactive virtual reality and gaming devices, many of which can be incorporated into skilled interventions that are applicable to older adults for enhancing mobility and fitness, and improving balance. Profound thanks are extended to Program Co-chairs Jill Heitzman, PT, DPT, GCS, and Sue Wenker, PT, GCS, for overseeing all aspects of high-quality programming, and to Tsega Mehreteab, PT, MS, DPT, for serving as our representative to *Technoplazooa.*

During our two Board of Directors (BOD) meetings, totaling 5 hours of spirited interaction, we took action on a number of important matters that included: approving the Health Promotion & Wellness Special Interest Group (SIG) as our "point group" for interacting with the International Council on Active Aging; streamlining our awards nomination process; enhancing the administration of and advertising for our regional CE courses; funding a strategic planning meeting for the *Journal of Geriatric Physical Therapy* (JGPT); approving APTA's use of our Web site's consumer content on its MoveForwardPT Consumer Portal; approved wording changes in the standing rules of the Bone Health SIG (to be voted on by SIG members at CSM 2012); giving final approval to our Partner's Program, which will allow individuals not otherwise eligible for SOG membership (eg, non-PT faculty colleagues or international PTs) to enjoy select benefits; restructuring the Advanced Clinical Practice Committee, now as the Practice Committee; taking steps to enhance collaboration with other Sections of the APTA. Our BOD member, Cathy Ciolek, PT, DPT, GCS, reported on the status of APTA's governance review process. Cathy will be chairing the related Subgroup on Sections, of which I have the honor of also being a member.

Over 200 individuals attended our Members Meeting and Awards Ceremony on Friday, February 11th. After dinner, Marilyn Moffat, PT, PhD, DPT, and Karen Kemmis, PT, DPT, CDE, reported on the on-going success of our Certified Exercise Experts for Aging Adults series, and announced upcoming course sites. Ellen Miller, PT, PhD, provided a summary report on our Exercise and Physical Activity in Aging Conference conducted in July at the University of Indianapolis. The conference course will be available through APTA's Learning Center, with some proceedings to be published in the JGPT. Updates on recent SIG activities were given by Judy Daniel, PT, MS, GCS (Balance & Falls), David Morris, PT, PhD (Health Promotion & Wellness), and Nancy Abodeely, PT (Bone Health). A wide range of volunteer opportunities were described, including the need for: editorial board members for *GeriNotes* (by Carol Schunk, PT, PsycD) and the *JGPT* (by Michelle Lusardi, PT, PhD); personnel and sites for regional courses (by Danille Parker, PT, DPT, GCS); members of the Public Relations and Awards committees (by Mary Thompson, PT, PhD, GCS); 40 individuals to serve as state advocates, representing the SOG at the grassroots level across the U.S. (by Bob Thomas, PT, MSPT); and members of the Clinical Practice Committee (by Greg Hartley, PT, MS, GCS).

Greg also reported on the PTA Career Pathways Taskforce and the Description of Advance Proficiency for PTAs. It was my pleasure to report that our Geriatric Fund with the Foundation for Physical Therapy had supported two aging-related research project grants and had contributed $91,000 to the Moffat Fund in 2010. During 2011, the SOG will be matching further contributions to our Geriatric Fund, up to the total of $50,000. Donations, even for the Foundation's split-ticket raffle, should specifically note the "Geriatric Fund."

Members meeting round-table discussions focused on innovative means of addressing the 5 goals of our Strategic Plan: (1) promote and support autonomous PT practice with the aging population; (2) facilitate use of best PT practice for optimal aging; (3) advocate for the health, wellness, fitness, and physical function needs of the aging adult; (4) promote PTs as practitioners of choice for optimizing physical function with aging adults; and (5) recruit and retain members. Member feedback will be used to further guide related BOD initiatives.

Relative to goal #5, it should be noted that our current total membership of 5355 has continually increased since 2006. From 2009 to 2010, we experienced increases of 3.04% in PT and 5.23% in PTA members; however, student memberships declined 3.8% to 152. While admittedly an improvement over the 6.5% decrease noted in 2009, it should be recalled that we had a 45% increase in Student members in 2007. Although recruitment and retention of Student members is a primary interest to our Membership Committee this year, all PT and PTA members are encouraged to continue mentoring students to be involved as Section members. The fact that we had over 120 entrants to our Student Brochure Contest this year would seem to be an encouraging sign of such mentorship in action. The SOG plans to again host a booth and will resume presenting a "clinical session" at the 2011 National Student Conclave, and will revise its annual Student Forum plan for CSM 2012.

Dr. Barr is a Professor in the Physical Therapy Department at St. Ambrose University, Davenport, IA. He also serves on the Editorial Board for the *Journal of Geriatric Physical Therapy.*

EDITOR'S DITTY

Carol Schunk, PT, PsyD

I started as *GeriNotes* Editor in 2003
Had minimal concept of what the job would be

A steep learning curve to get it right
I worried about every issue, day and night

Got my editorial board together, I listen to what they say
GeriNotes improved, became great, got awards from APTA

The focus was good clinical articles that professionally lead
Most important to me is content that you all want to read

Deadlines for authors…"when will I get the article?"… Is the key
My job was to bug people, always saying…. "I need it ASAP!"

Sharon Klinski the Publishing Editor would keep track
When my organizational skills got way out of whack

We increased the number of focus issues, they were fun
For creativity I really liked the risk management one

We morphed and expanded the focus issues to allow for CEUs
Promoting professional development and additional benefits for your dues

Student authors are excited, their articles I like to include
They take such pride and publishing initiates a professional mood

Every issue a "will anyone ever read this" editorial message I penned
Ramblings about life and therapy and older adults; now this is the end

Being involved with older people is such a joy; they are so dear
I hope *GeriNotes* has contributed positively to your professional career

Editor, Carol kayaking off into the sunset.

EVIDENCE-BASED MANAGEMENT OF CHRONIC HEART FAILURE: MORE THAN EXERCISE

Ken Miller, PT, DPT

INTRODUCTION

Heart disease (HD) is the leading cause of death in the United States, and is the most widespread and costly health problem.[1] Around 5.8 million people in the US have heart failure (HF) and 670,000 people are newly diagnosed each year.[1] In 2010, heart failure will cost the United States $39.2 billion. Hospital discharges with a primary diagnosis of HF have increased from 399,000 in 1979 to 1,099,000 in 2004, an increase of 175%.[2]

The most common causes of HF are coronary artery disease, high blood pressure, and diabetes.[1] Heart failure represents the final common pathway of many risk factors and cardiovascular disease. Many of these diseases can be prevented by implementation of aggressive lifestyle and pharmacological interventions.[3] Blair et al have reported that body weight increases are predictive of worsening HF and re-hospitalization.[4] Also, within 6 months of hospital discharge, almost half the patients are readmitted and about a quarter die.[5]

Current American Heart Association (AHA) guidelines include self-care in persons with heart failure. According to Riegel et al, "self-care maintenance requires following the advice of providers to take medications, eat a low-sodium diet, exercise, engage in preventative behaviors, and actively monitor themselves for signs and symptoms.[6] Exercise has been shown to improve VO_2max, ventilatory response, heart rate variability, and blood flow. Exercise has also been shown to increase coronary blood flow in patients with coronary artery disease, and improve quality of life and reduce mortality and hospitalizations. The AHA guidelines for exercise also state that there is no universal prescription for a particular exercise regimen for HF patients.[6]

PURPOSE

Effective management of chronic heart failure (CHF) is multifaceted, requiring a multidisciplinary approach to achieve the goals of maximizing quality of life, reducing hospitalization rates and minimizing co-morbidities by treating the underlying cause, reduce heart failure symptoms, and stop disease progression.

The multidisciplinary team includes the physicians, nurses, physical and occupational therapists, dieticians, and social workers involved in the patient's care. Each discipline brings a unique perspective to the care and management of HF. Most importantly though in the management of CHF is the patient's compliance in diet, medications, activity level, and monitoring.

The purpose of this paper is to describe the physical therapist's role in the management of CHF in order to reinforce patient management principles and practices as provided by others in the interdisciplinary team. Effective management of CHF must address: diet, fluid intake, medications, activity level/exercise, and patient education leading to increased compliance and self-care.

PATIENT EDUCATION

Patient education is the cornerstone in self-care management of CHF and it should begin when the patient enters the medical treatment system, either in a physicians' office or the emergency department of a hospital. The assessment process is one of gathering information from the patient and providing information to the patient. The primary goal of patient education is for self-care management of CHF. Riegel et al define self care as a "naturalistic decision-making process that patients use in the choice of behaviors that maintain physiology stability (symptom monitoring and treatment adherence) and the response to symptoms when they occur."[6]

In a scientific statement from 2007, the American Heart Association/American Association of Cardiovascular and Pulmonary Rehabilitation (AHA/AACVPR) identified core components of cardiac/secondary prevention programs including: patient assessment, nutritional counseling, weight management, blood pressure management, lipid management, diabetes management, tobacco cessation, psychosocial management, and physical activity counseling.[7] Each of the core components included patient education. See Table 1 AHA/AACVPR Core Components.

The Joint Commission/CMS has recommended providing written instructions (addressing activity level, diet, discharge medications, follow-up appointments, weight monitoring, and what to do if symptoms worsen) to patients during their hospital stay or upon discharge from a hospital admission.[8,9] Bonow et al have reported that the education of heart failure patients is critical and that failure of these patients to comply with the physician's and other health care providers' instructions is sometimes a cause of HF exacerbation.[9] Bonow et al also concluded that a significant cause of patient's failure to comply is a lack of understanding, which makes it crucial for health care professionals to be certain that patients and their families have an understanding of the causes of heart failure, prognosis, therapy, dietary restrictions, activity, importance of compliance, and the signs and symptoms of recurrent heart failure.[9]

SELF CARE BEHAVIORS

For self-care to be effective, the patient must be properly educated in several self-care behaviors. Self-care behaviors must incorporate medication adherence, symptom monitoring, dietary adherence, fluid restriction, alcohol restriction, weight loss, exercise, smoking cessation, preventative behaviors, and care with nonprescription medications.[6] See Table 2 Self-care Behaviors.

There are several factors that may hinder self-care in the patient with CHF and lead to noncompliance or poor-compliance. The main underlying

Table 1. AHA/AACVPR Core Components of a Cardiac Rehabilitation/Secondary Prevention Program[7]

Core Component	Patient Education
Patient Assessment	Communicate the treatment and follow-up plans. Ensure that the patient is taking appropriate medication, dose, & frequency.
Nutritional Counseling	Prescribe speficic dietary modifications aiming to at least attain the saturated fat and cholesterol content limits of the therapeutic lifestyle chang diet. Educate and counsel patient on dietary goals and how to attain them. Incorporate behavior change models and compliance strategies into counseling sessions.
Weight Management	Instruct patient in a combined diet, physical activity/exercise, and behavioral program designed to reduce total caloric intake, maintain appropriate intake of nutrients and fiber, and increase energy expenditure. Adherence to diet and physical activity/exercise program.
Blood Pressure Management	Provide lifestyle modifications, including regular physical activity/exercise, weight management, moderate sodium restriction and increased consumption of fresh fruits, vegetables, and low-fat dairy products, alcohol moderation; and smoking cessation. Provide drug therapy.
Lipid Management	Provide interventions directed toward management of triglycerides.
Diabetes Management	Educate patient for Signs/symptoms of hypoglycemia or hyperglycemia. Identify meds and extent of compliance. Diet and compliance. Blood sugar monitoring.
Tobacco Cessation	Individual education and counseling. Smoking cessation.
Psychosocial Management	Individual and/or small group education and counseling on adjustment to heart disease, stress management, and health-related lifestyle change. Teach and support self-help strategies. Compliance with psychotropic medications.
Physical Activity Counseling	Patient understands safety issues during exercise, including warning signs/symptoms. Patient achieves reduced global cardiovascular risk and mortality resulting from an overall program of cardiac rehabilitation/secondary prevention that includes exercise training.

reasons for poor self-care compliance in CHF self-management is either a knowledge deficit or depression. Being aware of these two potential barriers, the physical therapist may be able to look for and identify these issues more quickly due to having more contact time with the patient. In general, therapy sessions occur more frequently (2-3x per week) than MD appointments (perhaps 1x a month) and the duration of the sessions are generally longer than the MD appointment. By being able to identify these factors, the therapist can offer interventions when appropriate or refer to others on the interdisciplinary team when indicated. The physical therapist has the potential to play a powerful role in improving self-care compliance due to this exposure to the patient. The overlap of education to the patient between disciplines is also a mechanism of improving patient knowledge regarding CHF management.

Depression is a barrier to engaging in HF self-care behaviors, as it is related to impaired cognition that decreases the patients' ability to learn self-help behaviors. Depression also has adverse affects on functional status, limits physical activity and the ability to act on worsening symptoms.[6]

Medication Adherence

Self-care management may be made difficult by other comorbid conditions. Patients with comorbidities are often prescribed multiple medications and commonly have a knowledge deficit regarding the purpose for the different medications. For example, they may be unaware of why they are taking furosemide or any of their meds. Medication counseling by the proper health care professionals is essential for improved compliance. The physician prescribing the medications, the pharmacist dispensing the medications, the nurse reviewing the medications, the dietician with food and medication interactions, and the physical therapist monitoring medication effects on physiological response to physical activity all have an important role in explaining to the patient what the purpose is for the medications, side effects, and adverse effects that the patient needs to monitor. The interdisciplinary team is important in improving compliance in self-management of CHF, due to the fact that the patient will receive patient education from varying perspectives. A physical therapist's perspective on the patient's medication regime focuses on the potential effects the medications may have on physical activity. As an example, a patient on a beta blocker is instructed that the heart rate response to physical activity may be blunted. As a result of this possibility, patients are taught to monitor their activity tolerance with HR in addition to the Borg's rate of perceived exertion scale (RPE).[10,11]

Daily Weights/Symptom Monitoring

Any self-care management program requires daily weights to be taken by the patient. In a recent study by Blair et al it was found that increases in body weight after a hospitalization increases the likelihood of worsening heart failure and re-hospitalization.[12] Physical therapists have the unique role of improving compliance with daily weights and self-care by focusing on improving the ability for the patient to weigh him/herself. Incorporating ambulation to the bathroom, stepping on the scale, balancing while on the scale, and stepping off the scale are all components of physical activity that can easily be added to a home program. This activity alone is a reinforcement of patient education that may have been given by the physician or nursing staff. Practicing the actual task with therapy and monitoring the daily weight of the patient is a key factor in CHF management, either by the patient directly or

Table 2. Self-care Behaviors for CHF Management[6]

Self-Care Behavior	Characteristics
Medication Adherence	Expressed as the percentage of prescribed doses that are actually taken or taken on time. Depression is an important contributor to poor medication adherence. Other factors for poor adherence: cost, attitudes about taking medications, and the effects of the medications on sexual functioning.
Symptom Monitoring	Daily weights, and symptom monitoring for dyspnea and edema by the patients is difficult for some patients which has led to remote monitoring through telemedicine programs.
Dietary Adherence	Excessive sodium intake is a precipitating factor for acute hospitalization. Sodium restriction recommendations are inconsistent but published guidelines have recommended 2 to 3 g of sodium per day.
Fluid Restriction	Recently, an RCT demonstrated that it is safe and beneficial to recommend a liberal fluid prescription based on body weight in stable HF patients.
Alcohol Restriction	Limit alcohol to 1 or 2 glasses of wine per day for men and 1 glass for women per day.
Weight Loss	Dieting is potentially dangerous. But, it was recommended for BMI > 40kg/m^2 that weight loss should be encouraged.
Exercise	Routine exercise is a potent way to improve oxygen delivery and decrease inflammation. Exercise increases anaerobic threshold, peak oxygen uptake with HF and increases coronary flow reserve in patients with coronary artery disease. Even patients with severe, symptomatic, left ventricular dysfunction can benefit from an individually tailored exercise program.
Smoking Cessation	This is one of the joint commission's national quality measures for HF. Smoking cessation has been shown to reduce adverse outcomes and decrease mortality in HF.
Preventative Behaviors	Routine hand washing, dental health, and maintenance of scheduled immunizations may limit inflammation and infections, which have the potential to cause tissue ischemia in persons with HF.
Nonprescription Medications	A self-care behavior many people engage in is the taking of nonprescription medications such as herbal remedies, alternative medicine and over the counter drugs. Patients taking these medications along with prescribed medications are unaware of the drug interactions. NSAID medications, in particular, have been found to increase the risk of renal insufficiency and hospitalization.

by the intervening professional staff. The mean body weight increase of those re-hospitalized in the EVEREST Trial at 60, 120, and 180 days was 1.96 kg (4.32 lbs), 2.07 kg (4.56 lbs), and 1.96 kg (4.32 lbs) respectively.[12] Patients should be educated to weigh self daily and contact their physician for sudden weight gain of 3 pounds.[6] Others have recommended physician contact for gains of > 2 pounds or more over a week may be indicative of worsening cardiac function or poor pharmacologic compliance.[13]

Symptom monitoring refers to assessment of clinical symptoms of volume overload. Patients must be educated to monitor their dyspnea, orthopnea status.[9] Valid and reliable dyspnea scales should be used for monitoring of dyspnea (shortness of breath). The Borg Scale (rate of perceived exertion), ventilatory response index, or dyspnea index are 3 such measures that are easily used by the patients for self-care monitoring of dyspnea. Orthopnea is defined as uncomfortable breathing in a recumbent position that is resolved with more erect sitting or standing position and is a symptom of fluid retention in HF.[13] Elrod has recommended that patients should monitor for: chest pain, shortness of breath, increased heart rate, tired/fatigue, dizziness, upper extremity pain, and fainting.[14]

Dietary Adherence

Sodium restricted diets have been recommended for patients with CHF; however, the amount recommended is inconsistent. The upper limit recommended by both the US Dept of Agriculture and the American Heart Association is 2.3 g of sodium daily for healthy adults. Riegel et al have recommended the same amount in the absence of evidence from appropriately designed trials.[6] When a patient is given a low sodium diet by the physician, getting the nurse and possibly the dietician involved in patient education regarding food labeling and the need to avoid foods high in salt, such as frozen dinners, canned soups, and prepared foods (take out) is key. Often patients will say, "I do not add any salt to my food, not knowing the sodium content inside the food itself. A physical therapist's role in this area is to reinforce the need to follow physician recommendations. When a physical therapist assesses a patient and notices that the patient's peripheral edema is worsening, a poignant question to ask the patient is what they have recently eaten and reinforce the need to follow the sodium diet they were given by the physician.

Fluid Restriction

Historically, patients with CHF have been told to limit fluids to < 2.0 L/d; however, a recently published randomized, controlled trial of fluid intake in HF patients has demonstrated that it is safe and beneficial to recommend a liberal fluid intake based on body weight in patients with stable HF. Fluids should be restricted to 1.5 to 2.0 L/d in patients with severe symptoms and hyponatremia.[6]

Alcohol Restriction

Current guidelines recommend limiting intake of alcohol to 1 to 2 glasses of wine per day for men and 1 glass for women. But patients with alcoholic cardiomyopathy should not drink any alcohol. The actual amount allowed, if any, should be determined by the physician, as alcohol has potential interactions with the patient's medication regime.

Smoking Cessation

Smoking has been linked in numerous studies to have adverse health effects throughout the body. Smoking cessation and counseling is one of the Joint Commission's national quality measures for HF. The reason for smoking cessation in HF is because of the vasoconstrictor and pro-inflammatory effects from the nicotine.[6,15]

Exercise/Activity Level

Use of exercise training and increasing physical activity in patients with CHF is well documented to have beneficial effects

on psychological and physical health.[16] Riegel et al have recommended exercise, even for patients with severe, symptomatic left ventricular dysfunction based on the results of formal exercise testing. Exercise training reduced all-cause mortality and all-cause hospitalization.[6]

The effects of aerobic exercise and resistive training have been studied and have been found to improve VO_2 peak in compliant patients and when combined have been shown to be more effective in improving muscle strength and endurance. Quality of life results have also demonstrated improvements with aerobic exercise.[17] In the study by Mandic et al, the aerobic exercise group performed lower limb exercise on a treadmill (15 minutes) and a cycle ergometer (15 minutes) at a moderate intensity (50-70% of HRR; Borg scale 11-14/20). The combined aerobic group performed a similar aerobic program, and in addition performed 6 resistance exercise, chest press, shoulder press, vertical row, bicep curl, triceps extension, and leg extension using weight machines. Patients performed 1-2 sets of 10-15 reps of each exercise at 50%-70% of one-repetition maximum.[17] Mandic et al concluded that both aerobic and combined aerobic and resistance training are effective interventions to improve exercise tolerance in compliant heart failure patients and that combined aerobic and resistance training is more effective in improving muscular strength, while aerobic training may be more effective in improving quality of life in heart failure patients.[17]

Since the late 1990s several studies have looked at the use of resistance training in patients with CHF. The results demonstrate that resistance training is well tolerated and that improvements in maximum exercise time and peak VO_2 have improved between 10% and 18%.[18] In a review by Cahalin et al significant improvements were reported in muscle strength and endurance, peak oxygen consumption, left ventricular function, and quality of life with very few complications from resistance training.[19]

Adherence with physical activity/exercise programs is typically low. Hwang et al[20] studied home-based training and concluded that home-based exercise is beneficial to patients with CHF suggesting that home-based programs may offer an alternative to conventional center-based training or as a means of maintaining physical fitness after graduating from the center-based training.

CONCLUSION

Chronic heart failure is a major public health concern and self-care is recommended by the American Heart Association looking to provide effective interventions as soon as possible to the patient with CHF. Evidence has shown that a person with CHF who is adherent to dietary recommendations, medication prescription, exercise/physical activity prescription, and self-care monitoring has a reduced risk of re-hospitalization and mortality, and an improved quality of life. It is incumbent for the physical therapist to address the various aspects of self-care and reinforce patient education from the other interdisciplinary team members. The overlap of patient education assists with reducing knowledge deficiencies and should improve compliance and adherence to the recommendations presented by the interdisciplinary team.

ACKNOWLEDGEMENT

The author would like to acknowledge and thank Veronica Southard, PT, DHSc, who collaborated with the introduction section of the article.

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SEXUALITY AND AGING: THE ROLE OF PHYSICAL THERAPY

Pam Wenndt, PT, GCS

The year was 1979. I had been working for only one year at my first job in a Cardiopulmonary unit at a major teaching hospital. I was working with a 65-year-old male patient, s/p CABG who was being discharged in the next few days. Finishing his exercise program and cool down, I asked the patient if he had any questions regarding his upcoming discharge. He turned to me with a question I will never forget, "What are your instructions and information for my wife and I to resume sexual relations?" I was slightly shocked; this question had never come up before and certainly had not been covered in my physical therapy training. I quickly assured this patient that I would return later that day with information and teaching materials. So with this one question began my quest for clinical based information to provide to my patients on the subject of sexuality. Fast forward 30 years, and I am a board certified geriatric specialist with an emphasis in pelvic floor dysfunction. What I have learned over time is that the role of the physical therapist in education and information regarding sexual function really is a part of our professional skill set for not only the geriatric patient but all clients with disability and impairments.

PERCEPTIONS AND MYTHS

Many beliefs about the sexuality of older adults are based on stereotypes or myths of aging, rather than the topic of sexuality itself. Sexuality encompasses more than just a physical act and is a key component of the physical, mental social, and biological processes that are integral to aging successfully.[1]

Myth #1: Older Adults are not interested in sex and are unable to engage in sex. Sexual desire does not decrease as fast as popular belief states; age 75 is when most older adults report diminished desire.[2] Most older adults are interested in sex, have active sex lives, and enjoy sexual activity with 48% of women and 55% of men over the age of 70 describing themselves as still sexually active.[3] As for ability, the major factors prohibiting sexual activity are poor health and the lack of a partner.[2,4]

"What I have learned over time is that the role of the physical therapist in education and information regarding sexual function really is a part of our professional skill set for not only the geriatric patient but all clients with disability and impairments."

Myth #2: Older Adults do not have to worry about HIV/AIDS. Unfortunately, also not true. Almost 25% of HIV/AIDS patients in the U.S. are over age 50.[7] In the last 10 years, AIDS cases in women over 50 has tripled![8] Older adults often are not concerned about pregnancy and may view preventative measures such as condom use, as a non-issue. A recent study by Hoffer, et al showed that 2/3 of seniors had never participated in formal sex education during school years and had minimal knowledge of STDs/HIV and protective measures.

Myth #3: Although older men may be interested in sex, older women are not. Age alone does not appear to be the primary factor in sexual desire.[8] The reasons women do not report similar levels of sexual activity as compared to men are varied. First, women tend to live longer than men and are less likely to be in a marital or intimate relationship, a difference that increases dramatically with age.[1] Second, deterioration in economic status induces high levels of stress, which tends to affect sexual function in women.[9] And third, both men and women report illness as major contributing factors in decreased sexual activity.[4]

Myth #4: Sexual problems that accompany aging are normal, irreversible, and essentially trivial. Sexual dysfunction is often related to chronic diseases that affect sexual performance through physical changes or indirectly through adverse effects of drug therapy.[8] The most prevalent sexual problems with men involve erectile difficulties while women report problems with vaginal lubrication.[1] These areas are appropriately addressed by the patient's physician, gynecologist, or urologist. A strong secondary complaint is pain and discomfort due to chronic disease, arthritis, and soft tissue. These are areas that physical therapists can provide appropriate information and education. As stated previously, a satisfying intimate relationship is closely associated with good health, having a partner, and attitudes toward sexual behavior.[5,6]

Myth #5: Sexual success in aging must include intercourse. The proper definition of sexual success is whatever gives you erotic sensual pleasure either with an intimate partner or yourself and deepens your relationship in a way that is satisfying, nurturing, and/or growth promoting.[9] Sex does not have to include intercourse, masturbation, orgasm, or even a partner. Touching, stroking, holding, caressing, and verbal communication may be included as components of successful sexual behavior.

DEVELOPING THE TEAM

In addressing these concerns, there are many areas that need to be addressed and the physical therapist is only part of the team. Team members may include: family physicians, urologists, gynecologists, psychologists, nursing, social services, physical therapy, and occupational therapy. It is important for the health care team to identify and communicate their individual skills and treatment protocols so that all team members can speak appropriately with patients about options available. These professionals caring for older adults need to confront ageism and recognize that people are sexual from birth until death while work-

ing together for education and proper professional treatment for patients and other professionals.

BRINGING UP "THE TOPIC"

Many elderly are uncomfortable discussing their sexual health with any health professional as cited in a study by AARP in 2004; this study revealed that only 38% of men and 22% of women had discussed sex, including the sexual affects of their health condition, with a doctor since they turned 50.[9] As health professionals, physical therapists and the rest of the health care team need to be better prepared to initiate conversation and education with our patients. If the patient is referred with a direct diagnosis and request for pelvic floor treatment, the topic of sexual function can be initiated on the initial evaluation. For the client referred with orthopedic pain and neurological diagnoses, it may not be appropriate for this topic or evaluation until 2-3 visits and a rapport level has been reached.

I am often asked if I have a second professional in the room with me during this discussion and or treatment. I recommend introducing the topic to the client but adding the qualifier that further discussion will be occurring and offering that a second party, ie, another therapist or aide or family member of the client, may be present for education and communication. I do recommend a second party be present whenever there is treatment of the pelvic floor involving touch or teaching. Proper documentation of patient's understanding and agreement for treatment along with those present should always be included in the medical record. Policies and procedures involving this area of therapy intervention may be recommended for clinics to consider.

EXERCISE AND AGE-RELATED SEXUAL PROBLEMS

Exercise can give your patient energy, relieve stress, trigger the release of mood-boosting endorphins, help them reconnect with their body and improve health conditions that can interfere with sexual activity. In general the exercise prescription that includes aerobic, strengthening and flexibility, or manual therapy components will counteract many sexual complaints.

Specific complaints are listed in the patient's general medical record and problem list with other identified objective and subjective areas of impairment. A skilled plan of care using physical therapy intervention with measurable data is completed and treatment begun. Other health care professionals are consulted and their recommendations and orders added to the medical record.

MYTHS OF AGING AND SEXUALITY

1. Older Adults are not interested in sex and are unable to engage in sex.
2. Older Adults do not have to worry about HIV/AIDS.
3. Although older men may be interested in sex, older women are not.
4. Sexual problems that accompany aging are normal, irreversible, and essentially trivial.
5. Sexual success in aging must include intercourse.

Strong clinical skills in evaluation of the spine, pelvis, sacrum, and pelvic floor will assist therapists in treatment of these patient problems. In educating all clinic therapists in screening and evaluation, the problems are then identified and the patient can be referred to a therapist with specific pelvic floor training if needed or the treatment plan is shared. Case studies presented in this article summarize musculoskeletal impairments affecting sexual function in geriatric patients. Training by physical therapists and occupational therapists for energy conversation is equally important that we acknowledge the impairments resulting from other disease entities including: cardiovascular disease, peripheral vascular disease, diabetes, cancer, stroke, acute and chronic pulmonary disease, and any other diseases that may require skilled teaching and training for energy conservation, positioning, or pain relief. I have found that many physicians and medical centers have specific guidelines for particular impairments such as postmyocardial infarction and postcardiac surgery or transplant. Check with your particular health care team or physician for their guidelines. You may check medical organizations such as the American Heart Association or American Arthritis Association for their recommendations and educational materials.

Key muscles and regions that must have acceptable (within total joint replacement guidelines) range of motion, muscle tone, and strength for pain free sexual function to occur include:

1. hip abduction: equal bilateral strength, flexibility, and muscle tone;
2. hip adduction: equal bilateral strength, flexibility, and muscle tone;
3. hip internal/external rotation: equal bilateral strength, flexibility, and muscle tone; and
4. pubococcygeus: equal bilateral strength, flexibility, and tone.

Abnormalities in any combination or a single occurrence in any of these groups can cause an extreme affect on pelvic floor function and sexual dysfunction as described in the following case studies.

CASE STUDIES

Case 1

Mary Jo was a 69-year-old female referred to physical therapy with complaint of chronic hip pain that had developed following a MVA and pelvic fracture 2 years prior. Examination showed inominate rotation and weakness in both hip abductors/adductors with marked spasm and restriction in the right adductors. Pelvic fracture at the time of the accident had been at the right pubic rami. Point tenderness was present at the pubic rami at time of exam with decreased mobility at the ligamentous connection. Mary Jo did not mention a concern with pain with sexual activity at evaluation. Following several sessions and good rapport, I informed her that her injury could indirectly affect sexual function. Clinical information including the role of the insertion of the adductor fibers into the levator ani muscles and resulting spasm and pain were discussed with the client. She readily agreed that this described her pain and symptoms. Physician notification of additional goals and change of treatment plan of care and patient agreement to treatment for additional specific treatment including instruction in self vaginal wall massage was obtained. She was extremely thankful for the information and shared that her sexual activity had stopped after the accident and that she thought she would just have to "live this way." Following manual orthopedic therapy to correct

the alignment and joint mobility, ultrasound to the restricted adductor muscle, and instruction in self internal massage, the patient was able to return to her prior level of function with resolution of the hip pain and restoration of prior sexual activity. Her comment: "I can't believe it was this simple!" Total visits: 6

Case 2

George was a 73-year-old male s/p colostomy reversal after a 6-month period. He was referred by his local physician who was aware of our specialty in pelvic floor dysfunction. His complaint was "lack of bowel control… it just runs out!" but with a qualifier that due to this condition, he no longer participated in sexual activity with his spouse. It was explained to George that his normal system for opening and closing his rectum had been "on vacation" for 6 months and it had forgotten how to work! Initial evaluation included extensive education with his spouse present and evaluation of his pelvic floor muscles with external electromyography (EMG). Findings showed poor isolation of the pelvic floor and strength at less than 50% of normal. He was treated with neuro-muscular re-education with EMG for strengthening and function of the pelvic floor and given specific home instructions. Due to "looser stools," the family physician was also brought in on the team and prescribed a gentle bulking agent to slow the colon. George was very motivated and within 5 sessions was at normal strength and able to perform type I (strength) and II (quick) contractions to appropriately decrease the urge or prevent leaking. With further education regarding when to use the kegal exercises and how to advance to using this control for daily activity and with sexual activity, George was discharged to a home program. Follow-up reports indicated George was able to correct his pelvic floor dysfunction and control bowel movements, and with this reversal, he was able to resume prior sexual activity. Like many patients prior to therapy, George thought he had to "live with this because I am older." Total visits: 8

Case 3

Helen was a 78-year-old "blushing bride!" Widowed for more than 20 years, she had found true love again and was referred to physical therapy following a visit to her gynecologist with a request to become sexually active again. This was a case of team communication and coordination working with her gynecologist addressing the area of vaginal lubrication and the physical therapist addressing the musculoskeletal impairments. Helen's evaluation presented with findings of restricted hip motions and moderate hip and knee osteoarthritis. Evaluation of the pelvic floor muscles with surface EMG and internal vaginal exam were completed with patient agreement and second party in the treatment room. This evaluation showed low tone and muscle weakness at 50% of normal levels reflected with surface EMG. Helen's plan of care included PROM with home program for daily flexibility stretching, active strengthening of hip and pelvic rotator cuff muscles, and active pelvic floor strengthening with correct "kegal" exercises. She was also instructed in self internal massage at the vaginal opening for stretching and to stimulate blood flow and sensory response. Helen complied with all instructions including her physicians' instructions for use of vaginal lubricant. At discharge she was able to report that "all goals were met." Total visits: 5

CONCLUSION

Sexuality is an individual matter. It is defined by thoughts, desires, longings, personal experience, societal influences, upbringing, and many other factors. However, there exists a persistent belief that sex is not for the old.[8] Unfortunately, the scientific literature that studies sexuality after age 70 often looks at physical functioning that can be obscured by disease and illness. Current research that looks at sexuality as a combination of biological, societal, and psychological factors is quick to point out that most individuals are indeed sexual beings well into their 70s and 80s. Indeed, research indicates that sexual activity is diminished due to factors associated with aging (disease or lack of a partner) rather than the aging process itself. These are the areas that physical therapists and a health care team can appropriately evaluate, treat, and provide education to reach patient goals! Not every physical therapist may encounter questions from patients regarding sexual function during the skilled therapy clinic visits. However, faced with the enormity of the "Age Wave" as baby boomers reach older years, I do believe we need to be prepared as a profession to professionally educate, treat, and refer these patients.

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SEXUALITY RESOURCE GUIDE

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Slack publishers and the speakers who donated their honorarium to the Section and Foundation and authors who donated their books.

(Evidence-based Management of Chronic Heart Failure continued from page 8)

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THANKS TO SECTION MEMBERS WHO VOLUNTEERED THEIR TIME IN THE SOG BOOTH. YOU ARE THE BEST!

Ruth Burgess
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Joe Meyer
Nancy Smith
Beth Ward

SOG Volunteers Manning the Section Booth

TRANSITION OF GERINOTES CONVERSATION BETWEEN EDITORS

Carol Schunk, PT, PsyD
Melanie Sponholz, MSPT, GCS

This issue of GeriNotes will serve as a transition in Editors. After 8 years and over 45 issues, I have resigned as Editor and would like to introduce Melanie Sponholz who will take the helm with the May issue. Melanie and I have been collaborating since her selection and have had the opportunity to chat about being an editor and the evolution of GeriNotes. Below is a conversation between editors. cs

CS: When I was selected as editor of *GeriNotes* 8 years ago, my qualifications were having published around 30 articles in various PT publications and chapters in books. I had also served as editor for the Private Practice Section newsletter and was a member of the Editorial Boards of *PT Magazine* and *Topics in Geriatric Rehabilitation*. Given that, I still did not know what I was getting into. It took several issues; actually it was a continual evolution in the ins and outs of being an editor. Melanie, your background is very unique especially in relation to the responsibilities of an editor.

MS: Actually, my first career was in publishing. I took an internship at Random House the summer before my senior year of college and ended up staying there as an editorial assistant and finishing my undergraduate degree at night at NYU. I edited travel guides for Fodor's for 4 years, before taking a job as the Managing Editor for The Princeton Review. Along the way, I did a bunch of freelance travel writing and co-authored a book on surviving your freshman year of college. So my editorial experience is much more towards the popular than the academic.

CS: I have found one of the trials and tribulations of being editor is getting authors to commit and to meet the deadlines; that must have been something with free spirited travel authors.

MS: It was definitely crazy sometimes. When I was working on books like the Nepal, Tibet, and Bhutan guide, I'd have 8 different writers in time zones that made communication difficult, and they were moving from place-to-place constantly with no consistent contact numbers. Of course, I'd also get random snippets of text coming in scribbled on cocktail napkins, which is probably not a problem I'll have at *GeriNotes*! How did you come to choose physical therapy as a profession?

CS: My path to physical therapy was pretty straight forward, after getting a "C" in quantitative analysis in my freshman year of college, I was forced to reassess my plan to go to medical school. My father, being very pragmatic, gave me one month to choose a career and physical therapy came to the top of the list. At that time, Oregon was without a PT school so I transferred to the University of Colorado, packed a trunk, and sight unseen ended up in Boulder. I still remember coming over that last hill approaching Boulder and seeing the Rockies and the Flat Irons, I was blown away and loved my one year there. During my senior year, PT students transferred to Denver for the 12-month curriculum at the CU medical school.

MS: PT kind of snuck up on me. While working in publishing in Manhattan, I started volunteering at a hospital. I loved the interactions with the patients. Time there flew by in a way it never did sitting behind my desk at work. I did some soul searching and decided to go back to school to become a health care professional. I initially thought about med school as well, but I couldn't justify the financial impact of 6 years of school, including the science prerequisites I needed to apply to graduate school. I shadowed physician assistants, physical therapists, and occupational therapists, and PT won hands-down. One of the best decisions I've ever made.

CS: I think between the two of us we have covered the spectrum of clinical settings. Physical therapy is an amazing field, allowing therapists to have a dynamic spectrum of opportunities during one's career. I started out in acute rehab, specializing in spinal cord injuries, then I moved to academia for 8 years which was a delight, then acute care, rehab agencies, and management positions for contracting companies and with a physical therapist owned multi-site private practice group. In that position I was able to co-edit a text of treatment guidelines and develop a national outcomes system. The past decade has been skilled nursing and home health and hospice, lecturing, and *GeriNotes*. Fox is a large company, so I assume you also have the opportunity to work in a variety of clinical settings, with many therapists, it is truly a unique profession.

MS: I agree. My current position is Director of Quality Assurance and Professional Development for Fox Rehabilitation. We're a private practice of over 400 physical, occupational, and speech therapists who specialize in geriatrics. My staff and I are in place to give all of our clinicians the support and tools they need to grow professionally and deliver excellent care to our clients. I feel very lucky, because I am given the opportunity to think creatively to initiate things like our PACE Program (Professional, Academic, and Clinical Excellence) and a leadership development series. I've worked as a therapist in many different settings---rehab hospital, acute care, skilled nursing facilities, home care, outpatient, sports ortho--which has been really helpful, since I can relate to clinicians with different backgrounds. It was also very helpful when I was taking the GCS exam, because none of the clinical scenarios seemed foreign to me.

MS: I think one of the reasons *GeriNotes* has always appealed to me is that it is less academic. I know I spend a lot of time

Carol and daughter, Morgan at the New Orleans Jazz Festival.

at work reading journal articles and doing research, and there's something really appealing about picking up *GeriNotes* and finding articles with a more personal or anecdotal perspective. I think it's easy to relate to many of the writers and topics in the magazine and a good way to keep up with what the members of the Geriatric Section are doing and thinking about.

CS: Sometimes I am not sure what to call *GeriNotes*, at one time it was more of a newsletter but with the continued progression of content, that did not seem to fit. The SOG has the *Journal of Geriatric Physical Therapy*, which is our contribution to evidence-based practice in a peer reviewed publication. I have never been a fan of reading committee reports or business stuff that is conveyed in other venues, so by not including that in *GeriNotes* it moved out of the newsletter category. Now I view *GeriNotes* as a Clinical Magazine. What do you think?

MS: I like Clinical Magazine. I think *GeriNotes* is a nice way to share clinical and evidence-based ideas in a less formal way. I've always liked magazines for a quick take on topics--practical how-to's or this-is-what's-worked-for-me pieces. I've always got a folder full of pages torn from here or there that are launching boards to try something new or search for more information. And I think *GeriNotes* is a good source for ideas and inspiration.

CS: That is great, as editor you do not get a lot of feedback from readers so I am always pleased when I hear that the publication is helpful in practice. My goal has always been to produce a publication that is reader friendly, clinically applicable, and attractive. I want readers to be excited when they see *GeriNotes* in their mailbox, identify articles that are of interest to them, and actually read them. To me a publication should be continually evolving; we started with focus issues, and then progressed to allowing CEUs in response to the SOG strategic plan for affordable options for professional development. The look has changed from the type of paper to the cover design to the side banners to including an index. Everything is geared to prevent *GeriNotes* from ending up never opened in a pile on floor.

Melanie and her girls.

MS: I think "clinically applicable" is a key there. I know my colleagues at work really appreciate the "news you can use" aspect of *GeriNotes*. For instance, the Parkinson disease issue was great for us, because we're always looking for new insight that will help as we're treating those patients. Similarly, I know a few of us really connected with John Barr's thoughts on leadership development in the January issue and talked about how to frame the goals he discussed in our practice.

CS: You are really going to enjoy the interaction with the SOG Board of Directors. Although the *GeriNotes* Editor is not an official member of the Board, you will attend meetings as often *GeriNotes* is part of the strategic plan like including articles about Autonomous Practice. You will be so impressed with the leadership of the Section. I want members to get to know them even if they are not able to attend meetings through "Meet the Leaders" articles. The purpose of the articles is two-fold, getting to know those who work so hard for the Section, their professional thoughts and careers, and also the personal side of life. In addition I always hope that somewhere a therapist will read the article and think, I could be a leader and begin the path of participation. I believe your interaction with leaders led you to consider applying to be the editor.

MS: I've been lucky in my current position to attend many conferences and events where I've gotten to meet some of the leaders of the Geriatric Section, and I know that inspired me to get more involved. John Barr has been generous with his time as a sounding board for my work on a Professional Development Program for Fox. And I had some great conversations with Bill Staples at ExPAAC this summer, about becoming a GCS and how to contribute to the Section. And I remember reading the "Meet the Leaders" feature on Alice Bell, who facilitated a group discussion that I was in at ExPAAC and was just fantastic!

CS: With technology and budget considerations, the topic of making *GeriNote*s available electronically has been discussed. My chapter in Oregon has gone to an electronic only newsletter. When the OPTA Board discussed the endorsement of an only electronic publication, opinions seemed to fall along generational lines. You and I are different generations, what do you think?

MS: We may be from different generations, but on this topic I am old school. I know the world is moving towards the iPad, the Kindle, and e-newsletters, but I still think there's something irreplaceable about paper. I like to dog-ear, highlight, and curl up in bed with my reading materials. I think something is lost when you take away the tactile element of reading.

CS: I just got a Kindle reader so I think I am being progressive but must admit that my reading is still half electronic and half print. Speaking of reading, which I consider favorite pastime, I always think it is good for readers to know that being active professionally does not eliminate having a personal life.

MS: There has to be a balance, I think it's interesting that so many of my colleagues and I have similar personal interests. There's something about health care professionals and cooking…maybe if you like to heal people, you also like to feed them? I love to cook…and eat! When I worked at Random House, I collected a huge number of cookbooks,

Carol Schunk and Melanie Sponholz.

so I'm always experimenting. Luckily, I like to exercise, too. In 2008 I ran the Philadelphia Marathon, but I've switched from running to Bikram Yoga recently to save my knees! When I attended ExPAAC in July, it really inspired me to fire up my own workouts. How can we, as physical therapists, have credibility in recommending a healthy lifestyle, if we don't follow our own advice?

CS: You are so right! Having a doctoral degree in psychology, I truly believe that our physical health is vital for positive well being. I love activity, be it hiking, tennis, skiing, kayaking, playing my flute, or dancing. My other passion is traveling; I have had wonderful experiences in other cultures. My first major venture after I had been a therapist for 2 years and finally had some money was a trip to Europe for 4 months with my backpack and an OT friend. My adult daughter is one of the best traveling buddies, whether it's going to the New Orleans Jazz Festival, or South Africa, or Guatemala.

CS: I guess you could compare traveling to being Editor of *GeriNotes*, it is the adventure of meeting new people/authors, a continual progression of learning, professional development, and personal growth. All I can say is to have fun and enjoy the experience.

COMBINED SECTION MEETING 2011 ANOTHER RECORD BREAKING YEAR

Jill Heitzman, PT, DPT, GCS, CWS, CEEAA, FACCWS
SOG Programming Co-Chair

While the latest snowmageden swept through the US, over 9000 physical therapists were welcomed to the Big Easy of New Orleans. Preconferences and volunteer work for Habitat for Humanity of New Orleans greeted the early arrivals. Education courses demonstrated the cutting edge research and technology used for improving patient outcomes. A new event, the technopalooza, proved so popular that companies are already signing up to be part of this in 2012. Hands on sessions in this exhibit area allowed therapists to learn about technology for the classroom, the clinic, and the home. A big thank you to Tsega Mehreteab who represented the Section on Geriatrics on the committee that developed this first annual event. We are looking forward to the expansion of this in 2012. Jessie Van Swearigan and her committee again had an amazing group of poster and platform presenters showing us how to use evidence-based interventions. Social events were abundant as therapists met with former classmates, coworkers, and mentors. Sara Knox (awards) and Tamara Gravano (membership) and their committees provided opportunities for Section members to socialize and find out about the Section leaders and activities. New graduates and students had many sessions to help them begin their career development tract.

The Section on Geriatrics Program Committee did a great job in choosing sessions of relevance. A big thank you to our new Program Commiittee Co-chair, Sue Wenker. She was thrust into the exciting activity at full throttle and hit the ground running. The committee members present at CSM who helped all the sessions run smoothly include: Reenie Euhardy, Celinda Evitt, Helen Cornely, Missy Criss, Nancy Abodooley, Priscilla Raasch-Mason, Paula Click, Alice Bell, and Becky Crocker. This committee is an important component to CSM and also includes others that work behind the scenes but cannot always attend CSM. As CSM 2011 comes to a close, plans are already being made for CSM 2012 in Chicago. Work is being done to improve the more timely ability to get to sessions, have greater access to the exhibit hall, and present sessions that can be immediately put into practice in whatever setting that attendees work. We are always looking for volunteers to help the programming, awards, membership, and research committees to advance the profession in the care of the aging adult.

Congratulations to our newly certified and recertified geriatric specialists and our newly credentialed geriatric residency program who were recognized at CSM 2011. With over 1000 geriatric certified specialists, 6 credentialed geriatric residency programs, and 300 Certified Exercise Experts for the Aging Adults, the Section on Geriatrics is leading the way to show that physical therapy is the expert professionals to care for the ever growing aging adult population. Join us in this quest for excellence. Mark your calendars NOW to attend CSM 2012. You won't want to miss the fun.

SOG Programming Co-chair, Jill Heitzman and physical therapist son, Michael attending his first CSM.

2011 CSM: NEW ORLEANS, LA

President Barr and Attendees at the Welcome Breakfast

Past Joan Mills Award Recipients Gather with 2011 Winner, Jill Heitzman

Ohio State PT Students at SOG Member Meeting

SOG Officers, Rubye Kendrick, John Barr, Alice Bell, Ann Coffman

SOG Prime Time Members

Member Meeting Participants

Installation of Elected Officers

SOG Board of Directors Meeting

Standing Room Only at Welcome Breakfast

SOG Members in Exhibit Hall

Discussion at Board of Directors Meeting

GAIT SPEED IN OLDER ADULTS: A CRITICAL REVIEW OF THE LITERATURE

George Harry Q. Ramos, PT

INTRODUCTION

Clinicians have not widely adopted the use of performance-based measures to evaluate the functional status of older persons, possibly owing to the perception that these require substantial space or special equipment or are unduly time consuming.[1] Of the available physical performance measures, usual gait speed may represent the one that is most suitable to be implemented in the standard clinical evaluation of older persons.[1] Geriatricians, health care epidemiologists, and physical therapists increasingly recommend walking speed (also referred to as "gait" speed) as a clinically important indicator for community-dwelling elderly adults.[2] Gait-speed assessment is pragmatic because it takes less than 5 minutes, can be completed by trained nonclinicians, uses inexpensive equipment, and is reliable over repeated measurements.[2]

According to Espy et al, gait speed becomes slower and step lengths shorter, with age.[3] It is not clear whether these changes result from the aging process or from a fear of falling, or both. The evidence is contradictory as to whether either gait modification is in fact safer or more stable. Slower gaits have been shown to be directly associated with an increased fall risk, and are correlated with lower scores on clinical balance scales. Several lines of research have proposed that a more quickly moving center of mass (COM), due to faster gait, may travel forward more effectively to "catch up" with the slipping base of support (BOS). Cham et al[4] further explains that young and older adults spontaneously shorten their step lengths in response to a known slippery floor, and longer steps have been associated with a greater slip probability. Findings indicate that shorter steps should be more stable because the COM is closer to the moving BOS.[4] However, Menz et al suggested that step length shortening may be maladaptive.[5]

As a performance-based measure of physical functioning, gait speed may be a good surrogate for more comprehensive and time-consuming assessments of health-related quality of life. Its use has been recommended as a vital sign for the outpatient assessment of older adults. Gait speed alone is comparable with more extensive functional assessments for clinical screening as well as outcomes in clinical trials; however, its utility in different clinical settings and populations is still being discussed.[2]

The purpose of this study is to determine the outcomes affected by gait speed training through critical review of literatures.

METHODS

Literature searches were conducted using CINAHL Plus Full Text, PubMed database, and Medline with Full Text. Search key words used were "gait speed," "gait velocity," "walking speed," and "outcomes." These returned hundreds of studies that were trimmed down with use of limiters such as "full text only," "randomized controlled trial," and search period between 1995 and 2010. The initial search conducted from PubMed returned 30 articles, where studies about gait speed predicting outcomes were selected. The same process was used for Medline with Full Text and CINAHL Plus Full Text. From citations used within the chosen articles, more studies were found for cross-referencing. Articles were excluded if gait speed was not used as the functional test to determine better outcome.

CRITICAL REVIEWS

Purser

Purser et al[2] conducted a cohort study to determine whether or not walking speed predicts health status and hospital costs for frail elderly males. The study included 1,388 patients, age 74.2 ± 5.7 who were followed for 1 year. Participants were enrolled in a Department of Veterans Affairs (VA) multicenter clinical trial on the effect of Geriatric Evaluation and Management (GEM) programs. The inclusion criteria consisted of English speaking medical or surgical patients who were older than 65, who met study screening criteria for frailty, and were likely to be hospitalized within 48 hours. Patients were designated as frail if presence of two or more indicators were present. Frailty indicators previously were reported. Those with previous GEM hospitalization, current nursing home residence, participation in a clinical trial, severe dementia or disability, a terminal diagnosis, or inability to participate in follow-up were excluded. Participants included in this study were randomized to inpatient GEM or usual care, followed by corresponding outpatient service.

Outcomes assessments were administered at participant admission, at discharge, and 12 months post study. These consisted of Reuben's Physical Performance Test (PPT) that rates timed performance on 7 function items with scores ranging from 0 to 28, Self-Reported Disability and Health Status 36-item short form (SF-36). Higher scores indicate better functioning.

The study initially evaluated concurrent validity of gait speed and clinical indicators of health at baseline by correlating each baseline clinical indicator with baseline gait speed. Spearman's Correlation Coefficients was used to report association. Further examination of concurrent association was performed using multiple regression and adjusting for age, gender, race, education, and number of prescription and medical co-morbidity. Regression on hospital costs and use and disability on (1) baseline gait speed and (2) gait speed change per year were performed. Beta coefficients and 95% confidence intervals were also presented.

At baseline, PPT data were available for all 1,388 patients. Seventy-four

	Walking Speed Predicts Health Status and Hospital Costs for Frail Elderly Male	Effect of Therapeutic Exercise on Gait Speed in Community-Dwelling Elderly People	Improvement in Usual Gait Speed Predicts Better Survival in Older Adults	Gait Speed Predicts Decline in Attention and Psychomotor Speed in Older Adults: The Health Aging and Body Composition Study
Author	Purser, et al. (2005)	Lopopolo, et al. (2006)	Hardy, et al. (2007)	Inzitari, et al. (2007)
Methodology	Cohort Study	Meta-analysis	Cohort Study	Secondary Analysis of Randomized Controlled Trial
Inclusion	Frail elderly male, age 70-80	60 y/o and older, community-dwelling or living independently, free of impairments that limit walking.	65 and older in a common US metro area. Able to walk for 4 meters with gait speed between 0.2m/s and 1.3m/s	Non-disabled 70-79 y/o
Number of subjects	1,388	2,054	439	2,276
Results	0.10 m/s increase in baseline in gait speed was associated with 2 fewer inpatient rehab visits, 3 fewer inpatient med-surg visits and lower costs during hospitalization of $1,334 less per each 0.10 m/s gain gait speed	High intensity, high dosage combination of functional and strength training resulted to habitual gait speed improvement. No improvement seen in fast gait speed	Among all tests performed, only gait speed at 1 year showed significant association with mortality. Results projected to 8-years and adjusted for confounders but yielded consistent outcome.	Difference in gait speed of 0.3m/s within 5 years was associated with two-fold increased risk of declining in attention and psychomotor speed.
Limitations	Baseline gait speed of equal to/lower than 0.17m/s was tagged as speed of 0.17m/s.	Dosage of exercise was calculated as minutes spent exercising instead of number of weeks in the program.	Ceiling Effect limited participation to all tests.	General cut-off has never been set to determine clinically significant decline in DSST.

percent had gait speeds below 0.17m/s, where 57% showed improvement at discharge, and 50% at 12 month postdischarge. Patients who took longer than 90 s to complete the 50 ft walking test were assigned the baseline minimum walking speed of 0.17m/s; 48% of which improved to a measurable walking speed at follow-up. Fifty-two percent had no improvement, but remained stable until 12 month postdischarge (68%). The remaining had missing final observation due to death.

Baseline correlation at initial hospitalization between gait speed and PPT were the largest (r = 0.64), compared to BADL disabilities, SF-36, inpatient rehab visits, and number of frailty items and length of hospital stay. The magnitude and pattern of these associations did not differ substantially when the analysis was restricted to the subsample of patients who walked faster than 0.17 m/s at baseline. Authors indicated that prospective associations with gait shows that 0.10 m/s increase in baseline in gait speed was associated with two fewer inpatient rehab visits and about 3 fewer inpatient medical-surgical visits. Faster walking speed at hospitalization was also associated with lower costs during hospitalization of $1,334 less per each 0.10 m/s gains in baseline gait speed.

The results found have important implications for functional assessment of hospitalized older adults. As previously established, gait speed at hospitalization identifies important differences in health status and function among acutely ill and is associated with health use and cost. The results also accounted for inverse association between fast walkers and health status change at baseline who have negative changes and increase in number of disabilities during the 12 months posthospitalization. Authors expressed this finding to be a usual phenomenon as adverse effects of hospitalizations are consistent with health status decline, in response to acute event and secondary effects of debility. Frequency of assessment in this population was also discussed. Monthly rates of change that were estimated were very small and question whether monthly assessments with only small increments would be clinically meaningful. One-year absolute changes in walking speed with mean value of 0.12 m/s/yr translates to 0.01 m/s/mo. Authors, however, cautioned that rates of change can certainly differ in different populations.

Several limitations were discussed by the authors. The methodology of assigning minimal gait speed of 0.17 m/s to participants ambulating with that speed and below was not sensitive to document declines within this group. The authors believed, however, that slower speeds than 0.17 m/s may be irrelevant because they do not appear to be functional. It was suggested that future studies may document actual gait speeds where times are recorded for acutely ill adults or too sick to complete the walking test. Results may also vary with females or participants under settings other than the VA system, which may have different guidelines to health service and costs. Height, with potential to confound the estimates, was also not controlled nor adjusted. While this has been shown to partially determine speed of walking, authors expressed that precision in gait speed assessment could have been improved.

Ultimately, authors concluded that gait speed is useful in predicting overall health status, monetary expenditures in acutely ill, hospitalized, older adults by number of medical-surgical and rehabilitation visits. Clinically, this functional measure will help identify patients requiring additional time and service early on and provide vital information for care and financial planning.

Lopopolo

Lopopolo et al[6] conducted a meta-analysis to examine the effect of therapeutic exercise on changing gait speed in community-dwelling older adults and the effect of type, intensity, and exercise dosage on gait speed. One hundred seventeen potential abstracts were collated between 1995 and 2003. Inclusion criteria consisted of 60 years of age and older, community-dwelling or living independently in retirement community, free of specific impairment that

limits walking and specific measure of gait speed or enough information to perform gait speed calculation. Of the 117 studies, 33 met all inclusion criteria after independent review of full text. Twenty-four studies with habitual gait speed (n = 1,302) and 18 studies with fast gait speed (n = 752). Based on the purpose of the study, the authors provided 3 hypotheses: (1) therapeutic exercise will have significant positive effect on habitual walking speed in community-dwelling elderly people, (2) therapeutic exercise will have significant positive effect on fast walking speed in community-dwelling elderly people, and (3) high intensity exercise and high-dosage exercise will have significantly greater effect on walking speed than exercise performed at low intensity or low dosage.

Gait speed was measured in variety of ways across the studies. To ensure consistency of data used in the meta-analysis, all values were converted to meters per second. Habitual gait speed was defined as comfortable, self-selected or preferred, normal walking speed. Fast speed was defined as either walking as fast as possible or walking faster than normal, but safe. Age-referenced values to verify speed assignment was used for studies with undefined gait speed.

Most of the therapeutic sessions took place in a facility-based setting, with 5 studies performing the interventions at home and two in both settings. Because multiple exercise regimens were used, interventions were categorized into two groups. The first group only used strength training while the second did not use pure aerobic training and used aerobic, stretching or flexibility, balance, relaxation, and Tai Chi. This group was called combination training. Warm-up and cool down was not included in this study as authors stated almost every study performed this as a standard. To identify exercise intensity of each study, the authors used 70% to 85% of HRR as high intensity, 50% to 69% for moderate intensity, and 50% and lower for low intensity. Exercise dosage was decided based on American College of Sports Medicine guidelines. One hundred eighty minutes per week (60 minutes times 3 times per week) is considered high dosage and anything below was low dosage.

A total of 1,302 subjects were included in the 24 studies measuring habitual speed. After determining no significant heterogeneity of effect sizes, results supported hypothesis one that therapeutic exercise has a significant positive effect on habitual walking speed that showed 57% success rate. Fail-safe analysis indicated that 109 studies with no significant findings will be needed for P value to no longer be significant. Fifty six percent success rate was stated for just strength training to improve habitual gait speed with fail-safe analysis of 8; 58% for combination training with fail-safe analysis of 40. Combined data from 10 studies (N = 349) using high intensity training resulted in 59% success rate and fail-safe of 32, supporting hypothesis three. Fourteen studies that used high-dosage exercise also supported hypothesis three. Success rate was 58% with fail-safe number of 42. Eighteen studies (N = 752) included analysis for fast gait speed were found to be homogenous and therefore data were combined. The combination of the effect sizes yielded insignificant effect size and hence did not support hypothesis two. No further analysis was performed on fast gait speed.

The results of the study show that therapeutic exercise, in general, improves habitual gait speed in community-dwelling elderly people. Authors indicated that with fail-safe number of 109, it is unlikely that there are 109 unpublished studies with nonsignificant findings. The gait speed change for both strength and combination therapies were small but showed improvement. With fail-safe number of 8 for strength training compared to 40 for combination, authors expressed more confidence in the latter results. Authors attributed this to specificity of training. Further to the findings, authors found that only high intensity, high dosage exercises produced significant effect on habitual speed. Since for the most part the subjects lived in the community, the authors hypothesized that exercise or lower than high may have been insufficient to produce a substantial change. Lastly, results of the meta-analysis did not support a relationship between therapeutic exercise and changes in fast gait speed. This is a prospective study that authors were not able to address in the course of the meta-analysis.

Several limitations of this study merit discussion. The dosage of exercise was calculated as minutes of training per week, not accounting for the total weeks of training. It has been established that a minimum of 6 to 8 weeks is required to produce substantial therapeutic effects. Number of weeks, especially for low dosage therapies may have affected results, as the authors stated. In addition, findings from the study regarding exercise intensity may be limited by the method used to categorize this variable. Finally, combination therapy was not defined across the board. This therapy category included several components that may have prevented the authors to capture subtle differences in the results based on the program.

Ultimately, this study lacked new important clinical takeaways. The conclusions made were general findings previously proven and established. For community-dwelling elderly people, only high intensity high dosage exercise regimen yielded substantial effects on habitual gait speed. Based on the principle of Stress-Strain curve, intensities lower than basic baseline function will not cause substantial change.

Hardy

Hardy et al[7] conducted a prospective cohort study to estimate relationship in improvement of gait speed and 8-year survival, over one-year. Measures of health and function have consistently shown strong prediction of mortality in older adults. Of the 6 measures used to benchmark health and performance, only improved gait speed was associated with 8-year survival. While further research is needed to determine whether interventions to improve gait speed affect survival, this serves as (1) a clinical springboard for future research and treatment and (2) positively affect current regimen to potentially include gait speed training in plan of care.

From two primary care clinics, subjects were recruited aged 65 and older serving a common geographic region in major US metropolitan area (N = 439). The inclusion criteria consisted of intact cognition with Mini-Mental State Examination (MMSE) of $\geq$ 24 or with mild cognition impairment (MMSE of 16-23, but with a caregiver and were able to walk for 4 m and had a gait speed between 0.2 m/s and 1.3 m/s). Participants who used an assistive device were also included. Several participants were excluded in some

of the measures after scoring near ceiling thereby rendering their improvement undetectable. A phenomenon they call a "Ceiling Effect." Co-morbidities, recent orthopedic and neurologic disorder poses threat to ability to obtain true baseline data. These participants, however, were still included in the study with post hoc analyses showing significant association between gait speed and survival.

Physical performance, health status, and self-reported functional status were assessed in 3, 6, 9, and 12 months. These health categories were benchmarked using two functional measure tools. Physical Performance using 12-point Short Physical Performance Battery (SPPB) and usual gait speed over a 4 m course, health status using EuroQol and Medical Outcomes Study 36-item Short Form Health Survey (SF-36), and Functional status thru 16-item, 32-point basic and instrumental activity of daily living (ADL) and the 100-point physical function index (PFI). Inter-rater and test-retest reliability for each measure were found to be excellent including an intra-class correlation (ICC) generally greater than 0.9. A meaningful change in the 6 main measures of health and function was defined based on literature and clinical experience. Using these predefined numbers, participants were grouped into 3 categories: (1) one-year improvers – improved at one-year visit; (2) transient improvers – improved at 3, 6, or 9 months, but not one year; (3) never improvers – no meaningful improvement at any point. The 1-year point was selected for data analysis and interpretation as many health maintenance examinations were done annually.

Mortality rates of those who showed and not showed significant improvement in the 6 main measures of function and health were compared. Kaplan-Meier product survival curves were used to depict survival graphically and Cox hazard models were used to estimate hazard ratios, 95% Confidence Intervals, and P-values to compare rates of deaths across groups. After detecting association between gait speed gain and survival, post hoc analyses were performed to better assess phenomenon. Further studies were done to strengthen association by using different definitions of speed gain. Potential confounders, sensitivity analysis for participants with missing data and within important subgroups were formed by stratifying based on clinically significant values. The analysis was repeated using participants with no change in gait speed as control group to confirm results were due to less mortality due to improvers, and not the other way.

Out of the 572 individuals initially screened, 492 (86%) commenced the study and 439 (92.6% of survivors) were followed over the course of the research. Mean age was 74 and 44.4% was female. As a number of participants obtained near the ceiling of a measure and could not detect an improvement, they were not categorized and hence were not included in any of the 6 measures they scored well. This way, only true improvers, transient or nonimprovers are being included as part of the statistical trials. Of the 6 health measures used, only improvement in gait speed at 1 year was significantly associated with subsequent mortality. For this health measure, the mortality rate was 31.6% in 1-year improvers, 41.2% in transient improvers, and 49.3% for never improvers. It is important to note that during baseline, the to-be one-year improvers had the slowest gait speed with only 0.81 $\pm$ 0.24 m/s compared to 0.85 m/s and above for transient and never improvers. Across the board, the one-year improvers scored significant survival than transient and never improvers. Exclusion of the 25 participants who used an assistive device at baseline did not alter results, although data were not shown. The improvement over the baseline year spread out to 8 years, when plotted onto a survival curve. One year improvement in the 4 self-report measures of health and function demonstrated no statistically significant survival, but power was limited because of the sample size caused by exclusion of subjects who were the at the ceiling during baseline.

Strong association panning to 8 years out was further assessed in several post hoc analyses. These include estimates for association for adjusted and non-adjusted baseline gait speed, adjusted baseline cognitive function, global health and physical function, and 0.5 m/s meaningful change in gait speed as it was the original value to that definition. The mortality remained significant and of almost consistent magnitude throughout the analyses. In another set of post hoc analyses, the association between improvement and survival was assessed in other potentially significant subgroups, ie, sex, ethnicity, age, education, hospitalization, health care system, and co-morbid burden. Results showed consistency in favor of stronger association, but did not always show significant values.

Based on all the findings, the authors stipulated an increase in gait speed over a one-year period strongly predicts survival through the subsequent 8 years, with a 58% reduction in relative risk and 17.7% reduction in absolute risk of death. The findings were generally in favor with the strong association although other post hoc analyses in potential clinical subgroups showed no statistically significant values. The authors attribute the association to several factors. Our body's innate capacity to improve or recover from a prior stressful event may represent a subclinical indicator or our "physiological reserve." With direct relation, improvement in gait speed may also indicate overall improvement in general health.

The study also has several limitations. The authors mentioned post hoc analysis on several factors including co-morbid status. While authors determined statistically significant association between gait speed and survival regardless of the co-morbid burden, this would've provided more information around how one-year improvers, never improvers, and transient improvers were such. In addition to this, the one-year improvers had the lowest gait speed during baseline. There was no mention why this condition exists, and how a longer base-lining period (several days to weeks) would yield different results. Moreover, the participant's level of physical activity during the course of the study, whether encouraged, offered, or mandated was not discussed in this study. This may answer improvements in gait speed as a result of better overall health. Although authors also stated common use of self-reported measure to co-morbid status, it may be interesting to compare these to actual chart reviews to understand magnitude of difference.

Gait speed has been suggested to be a possible "vital sign" to older adults. This said, further research is needed to determine whether an intervention to improve gait speed will affect survival, as

authors also stated. This will drive a better case to include gait speed not only in evaluation, but in actual planning of care across all settings.

Inzitari

Inzitari et al[8] conducted a secondary analysis of a randomized control trial to determine whether the clinical measure of gait speed predicted decline in Digit Symbol Substitution Test (DSST) over 5 years in well-functioning older community dwellers. Authors also attempted to understand if this decline is independent of cognitive abilities as measured by Modified Mini Mental Exam (3MS). The DSST is a test used to assess attention and psychomotor speed and predicts cardiovascular events, dementia, death, and white matter disease progression. From 3,075 nondisabled men and women aged 70-79 years initially assessed, 2,276 repeated DSST and 3MS were eligible.

Usual gait speed (m/s) over a 6-meter course was measured by centrally trained and certified examiners. The DSST is a task that requires copying symbols corresponding to numbers within 90 seconds. Confounders such as demographics, age, and co-morbidities across quartiles of baseline gait speed were identified and tested for trends. The highest quartile with the fastest gait speed was the reference category. Several tests were done to adjust for confounders, including one analysis for participants with 3MS scores of < 80 that indicated poor cognitive function. Authors stated repeating the analyses using linear regression models, with continuous values of gait speed being independent variable and DSST change over time as the outcome.

After 5 years, 17.1% of participants had declined at least 1 SD (9 points) in the DSST score. The prevalence of DSST decline decreased linearly parallel to increasing baseline quartiles of gait speed. Further adjustments for 3MS 5-year change did not modify the results. Gender stratified analyses showed trends similar to the entire sample. In linear regression models adjusted for confounders and for the 3MS 5-year change, 0.2m/s of gait speed difference yielded 5-year DSST decline of 0.007. Lowest quartile of gait speed had significantly greater risk of experiencing a DSST 5-year decline of >1.5 SD compared to the ones under the highest quartile.

The early detection of a decline in attention and psychomotor speed may represent an important goal for clinical practice. In this cohort study of older adults, a relatively small baseline difference in gait speed, 0.3 m/s, was associated with an almost two-fold increased risk of declining in attention and psychomotor speed. The ability of gait speed to predict the decline was independent of both baseline and 5-year change in global cognitive status measured by 3MS.

The study offers a valuable tool for clinicians as gait speed test is reliable, valid, and can easily be repeated in every clinical setting. Strengths of this study include population-based sample, longitudinal design, and the large number of available co-varieties adjusted for the testing. The well-functioning population allowed the conclusion to be drawn without influence of current ailments. This, however, questions how the functional measure of gait speed can predict outcomes for patients with condition. This is especially important for most clinical settings as patients seek physical rehabilitation due to current condition. Another limitation that deserves discussion was the arbitrary definition of DSST decline. Despite the large use of this tool to the geriatric epidemiology, general cut-off has never been set to determine clinically significant decline. This opens another opportunity for future studies to address as DSST has high sensitivity to changes in high levels of cognition and its relationship to gait speed has been clearly established in this study.

DISCUSSION

The purpose of this paper was to critically evaluate literature regarding outcomes predicted by gait speed. All critically reviewed articles reported strong relationship of baseline gait speed to cognition, general health status, hospitalization, and survival.

The literatures reviewed in this paper showed the functional measure of gait speed to be able to predict different aspects of a patient's health. Most of the reviewed studies mentioned gait speed's relation to overall health and that a lower score reportedly occurs before general health declines. While researchers continue to find evidence on treatments to increase gait speed and its concurrent affect to function, Liu-Ambrose et al[9] reported improved selective attention, conflict resolution, and executive functions yield improvement in gait speed. Furthermore, Lopopolo et al[6] reported strength and combination training with high intensity and dosage had significant effects on habitual gait speed. Interestingly, fast gait speed showed no significant change with similar or lower intensity and dosage exercise, in the same study.

In most articles reviewed, authors followed at least 3 reporting periods during the length of the study. While baselining is critical to serve as a comparison to mid and end-reporting results, there was no mention of adverse events prior to obtaining actual baseline data. This is especially noted in the study conducted by Hardy et al.[7] The study illustrated that the group that significantly improved in gait speed after 1 year was the group with lowest baseline gait speed. No further analysis was done to dispute if this had statistical significance or pure coincidence. Moreover, mid-research activities were not, at all, accounted for or defined, at least. Only Purser et al[2] described that after undergoing the inpatient GEM program, participants continued to outpatient. Whether activities, length of treatment, or dosage of exercise were controlled or monitored, it was not mentioned. These potential confounders may shift assessment data especially because 'blinding' was not done in any of the studies reviewed.

Generally, reviewed literatures presented similar outcomes in different health aspects. Except for the study conducted by Hardy et al,[7] most followed participants more than N = 1,200, a number equally important as other statistical findings. Although older adults with wide range of health and function were included in the study conducted by Hardy et al,[7] power to detect the consequences of improvement in self-reported measure was limited because of ceiling effects. Purser et al[2] had a similar study, but used categories for gait velocities and had a total of 1,388 frail participants. While only older male veterans under a VA program were included in this study, a strong relationship between gait speed and critical outcomes were established. It has been reported that each 0.10 m/s reduction in baseline gait speed resulted in poorer health and physical function, additional

rehabilitation and medical-surgical visits, more disabilities, and even longer hospital stay resulting in higher cost. A finding once concurred by future researches bears significant socio-economic impact.

The studies reviewed not only established strong relationships between gait speed and reported outcomes, but reflected this correlation with well-functioning and frail older adults. This is particularly important as this was the general limitation for most studies reviewed, but was addressed by the other literature. The dissimilarity between the study conducted by Inzitari et al[8] and Purser et al[2] deserve discussion, as well. The former mentioned that after 5 years, increase of minimum 0.3 m/s in gait speed will more likely show decline in attention and psychomotor speed through DSST. According to Purser et al,[2] however, 0.10m/s decrease in gait speed over a one-year period was significant enough to impact health, hospital costs, and survival. While the outcomes being assessed were entirely different, it will be interesting to see how difference in length of study and inclusion criteria will yield results. Needless to say, this is another issue that deserves further research.

As evidence continues to grow supporting gait speed as a key functional predictor, opportunities to further research on effective treatment to improve gait speed remain extensive. With impending studies showing leverage in both patient care and monetary advantages, use gait speed as functional measure to predict general health is clinically rational.

CONCLUSION

Gait speed is increasingly being accepted as an important clinical indicator of health. It is easy and repeatable but more importantly, will not cost as much as an MRI, and may arguably offer the same value. Although on average, health and function decline with age, individual trajectories based on individual conditions differ. Prevention of future ailments through prediction of overall health will not only offer economic advantages, but will, ultimately, provide better quality of life. As studies reviewed represent a good sample of our elderly population, the impact of predicting physical and mental outcomes for future patients will be enormous.

To date, research to prove or disprove treatment to improve gait speed and its parallel prognosis value continues to grow. While this is of equal clinical importance and worth, strong evidence showing gait speed's ability to predict outcomes should support the case that this functional measure be implemented across settings, the soonest.

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PHARMACOLOGY IN CLINICAL DECISION MAKING: INTERVENTIONS FOR INTEGUMENTARY DISRUPTIONS

Denise L. Hayes, MPT

This paper was part of a requirement for the Pharmacology course for the tDPT program at College of St Scholastica. The students were to use the decision making process to develop rationale for a plan of care with reference to how the pharmacology interventions affect and are affected by the PT interventions. This course is taught by Professor, Jill Heitzman.

CASE

An aging male worker 62 years old was injured at work when a cable fell on his arm. The x-ray is negative for fracture. However, he had a large open hematoma with necrotic tissue covering. He is referred to physical therapy for wound management, debridement, and pulsatile lavage. During the initial evaluation, the physical therapist discovers the patient is taking Coumadin.

PRACTICE PATTERN AND DIAGNOSIS

As the workforce encounters a greater number of aging adults still working, the need for the physical therapist to understand the pharmacological issues along with aging changes becomes of utmost importance to plan a successful therapy intervention program. This patient has a large hematoma and contusion on his upper arm. In the *Guide to Physical Therapist Practice*,[1] contusions are listed under practice pattern 7B: impaired integumentary integrity associated with superficial skin involvement. He would likely have a diagnosis in the grouping of 923; contusion of upper limb. This patient could also have treatment diagnoses involving pain, and decreased ROM of his UE. Another practice pattern to be considered for this patient, once the depth of the necrotic tissue was assessed, is 7C: impaired integumentary integrity associated with partial-thickness skin involvement and scar formation. This practice pattern includes hematoma, and would likely cover the decreased sensation, weakness and impaired skin associated with the

"As the workforce encounters a greater number of aging adults still working, the need for the physical therapist to understand the pharmacological issues along with aging changes becomes of utmost importance to plan a successful therapy intervention program."

necrotic tissue. He also has a cardiovascular issue resulting in prescription of Coumadin, but this does not fall within the defined practice patterns of physical therapists. This added prescription, however, does have contraindications for physical therapy intervention that will enter into clinical decision-making for this patient.

MEDICATIONS

This patient suffered a significant trauma to his upper extremity (UE) that is complicated by his prescription of Coumadin. Warfarin (Coumadin) is a clinical anti-coagulant that interferes with synthesis of vitamin K-dependent clotting factors, resulting in depletion of specific coagulation factors II, VII, IX, and X, as well as regulatory factors protein C, S, and Z.[2,3] This medication prevents further extension of a formed existing blood clot as well as formation of new blood clots.[2,4] People taking warfarin as a therapeutic anti-coagulant are at increased risk for bleeding and hemorrhage, especially if their prothrombin time/international normalized ratio (PT/INR) is over 3.0 as might occur when they first begin taking Coumadin.[2-4] This medication will be a contraindication for certain interventions in wound care and debridement due to the increased risk of bleeding. Open wounds, as might be created during wound care, are a contraindication for administration of warfarin.[2]

PATIENT CONSIDERATIONS

This patient has received imaging to rule out a fracture in his arm, however, the x-ray will not provide information about the severity of soft tissue and vascular damage in the limb that produced the large hematoma. Understanding that this patient is currently prescribed Coumadin and has a decreased ability to form blood clots means that this hematoma can be indicative of excessive bleeding. Medical professionals involved in this patient's care need to be monitoring the size, shape, and color of the hematoma to determine if the active bleeding has ceased. If the hematoma continues to change in any of these qualities, the concern would arise that active bleeding was continuing for this patient. If the necrotic tissue is removed, considerable blood loss may be experienced by the patient during this process. A telephone conversation with the referring physician should occur before any debridement is performed to discuss the PT/INR levels; previous size, shape, and color of the hematoma; and to verify that the physician is aware of the patient's prescribed use of Coumadin.

THERAPY INTERVENTIONS

Necrotic tissue has been shown in many studies to inhibit the development of granulation as well as re-epithelialization in a wound bed.[5,6] The presence of necrotic tissue also increases the bacterial burden and risk for infection within the wound bed.[6-8] For this reason, the necrotic tissue generally needs to be removed from a patient's body. There are several different ways for this process of wound care to occur: surgical excision, nonsurgical sharp debridement, mechanical debridement, autolytic debridement, chemical debridement, and biological debridement.

Surgical Excision

Surgical debridement is generally acknowledged as the quickest and most efficient method of debridement.[8]

This method aims to convert a chronic wound to an acute wound through complete excision of the area while the patient is under anesthesia.[9] This method also can surgically debride a necrotic wound down to a level where significant vascular perfusion is achieved.[10] However, this method of debridement is contraindicated with a person receiving anticoagulation therapy.

Nonsurgical Sharp Debridement

This method is a conservative method that frequently leaves a thin border of necrotic tissue within the wound bed to avoid damaging the viable tissue at the base of the wound.[9] Patients who are taking anti-coagulants should have stable clotting prior to sharp debridement.[9] If the patient is at a therapeutic INR, there is increased risk for excessive bleeding, so this option would not be ideal for this patient.

Mechanical Debridement

This method is also known as 'wet-to-dry' dressing, where a wet saline dressing is allowed to dry on the wound, and is removed after the dressing is dry. This wet-to-dry technique can be painful, and associated with increased bleeding.[8,9] This process can be rather painful, and most clinicians performing this technique in an effort to decrease the pain for the patient will moisten the dressing prior to removal. This technique, while more comfortable for the individual, decreased the effectiveness of the tissue removal.[11] Other forms of mechanical debridement include: high pressure irrigation or pulsed lavage, whirlpool and compression therapy.[7] Pulsed lavage assists with cleansing a wound area, and decreasing the infectious agents and debris from the surface of the wound.[12] For this patient, mechanical debridement in the form of a 'wet-to-dry' dressing change would not be ideal due to the increased risk for bleeding; however, pulsed lavage could serve as an intervention for managing the bacterial load inside the wound bed once the eschar is removed.

Autolytic Debridement

This method requires constant moisture to be maintained within the wound that allows the body's natural enzymes to dissolve the necrotic tissue.[8,9] Eschar does not always need to be removed. If the area of eschar is firmly adhered, dry and without inflammation, and without signs of infection, then the tissue can be left in place until there are signs of separation from the underlying skin region.[8] If eschar is maintained in a moist environment, the black eschar will soften and gradually change into stages of brown, yellow, and grey. Eventually, slough will form, and the necrotic tissue is gradually removed in a series of dressing changes.[7] This method is time-consuming for the clinician and patient, but can be ideal for the proper situation and patient.[8] This method is considered to be the safest method for debridement during wound care, as only nonviable tissue is removed.[9] This is also an ideal method of wound care when other methods are not feasible due to bleeding disorders, or other individual patient considerations.[9]

Chemical Debridement

This technique is performed through the use of certain enzymes and other compounds to dissolve necrotic tissue.[8] Silver, honey, and iodine based products can be used to debride and treat infections of the wound.[9] One major disadvantage of this technique is the potential for damage to the surrounding skin. This method is typically contraindicated for clean wounds without signs of infection.[7]

Biological Debridement

This technique is likely the most disturbing for patients and clinicians alike. This technique usess the larvae of Lucilia sericata (greenbottle fly) to consume the necrotic tissue and bacteria in the wound bed. These larvae will not consume the normal healthy tissue at the base of the wound bed.[8] The larvae seek out the slough and necrotic tissue present in the wound area. They are applied in an impregnated dressing that provides a favorable environment for the larvae. The dressing is introduced to the wound and can be left for 3 to 5 days, after which time, the wound is reassessed.[9]

CLINICAL DECISION PROCESS

For this particular patient, the mechanism of debridement is of utmost importance. If the necrotic tissue is removed through sharp debridement, he most likely would experience increased bleeding and a concerning amount of blood loss. Due to this patient's anti-coagulation therapy, several telephone calls would be placed prior to deciding upon the method of debridement. The therapist should call the anti-coagulation clinic to request the most recent INR for this patient. If the INR is very high, there is a greatly increased risk of excessive bleeding during any form of aggressive debridement. The physician's office should also be called to verify that the physician is aware that the patient is on an anticoagulant. While this information is being obtained, the therapist should perform a full assessment of the wound and contemplating methods of debridement. As this patient is taking anti-coagulant medication, he is at an increased risk of bleeding for surgical or sharp debridement. Mechanical debridement could also increase his risk of bleeding. However, this form of debridement (pulsed lavage) may be ideal if the eshcar and necrotic tissue is removed to reveal the wound bed. Autolytic, chemical or biological debridement would appear to be ideal options for debridement with this patient. The final clinical decision for this patient will depend upon the appearance of the wound. If there is no sign of infection, and no drainage, the eschar can remain in place in favor of the safer method of autolytic debridement. Gentle wound cleansing can be performed to decrease the bacterial load on this patient's skin. Patient education should be provided about the importance of proper nutrition for wound healing as well as being vigilant for signs of infection. The patient should be educated about how the appearance of the wound will change before the next dressing change. If there is any appearance of open skin area around the hematoma, or if there is signs of infection, chemical or biological debridement would be indicated for this patient.

CONCLUSION

Clinical decision-making needs to take many attributes of the patient into consideration. In this case study, choosing the wrong method of debridement could pose traumatic consequences for the patient. By understanding the issues of pharmacology, the physical therapist can use decision making to develop patient care interventions to achieve the ideal outcome.

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Denise (Phenicie) Hayes, MPT, has worked in both inpatient and outpatient settings, where she gained experience with neurological, orthopedic, and wound care patients. She currently manages an outpatient clinic in Maple Valley, Washington where she is the Center Coordinator of Clinical Education for Outpatient Physical Therapy. Denise received her MPT from the University of Washington in 2002 and is currently in the transitional DPT program at the College of St. Scholastica in Duluth, MN. She can be contacted at dhayes@outpatientpt.com.

SECTION ON GERITATRICS SPECIAL INTEREST GROUPS
WHAT ARE YOU MISSING?

As a member of the Section on Geriatrics you have the opportunity to join one of the Special Interest Groups (SIG) and network with other members who share a common clinical interest. Joining is a benefit of belonging to the Section, no cost to you but lots of upside. Joining is easy; simply send an E-mail requesting membership to geriatricspt.org.

BALANCE AND FALLS SIG

Judy Daniel, PT, MS, GCS; Chair
Mike Studer, PT, NCS; Vice Chair
Mary Bessette, PT, MPT, GCS; Secretary/Treasurer

The purpose of the Balance and Falls SIG (BFSIG) shall be to provide a forum through which individuals having a common interest in physical therapy for people with balance problems and a risk of falling may meet and promote care/intervention through education, clinical practice, and research. Members of the Section on Geriatrics are eligible to be BFSIG members but APTA members may attend meetings. The BFSIG provides weekly E-mail blasts with Research Abstracts related to fall prevention across practice settings. Program topics on the webinar in 2011 included "Reducing falls in the elderly: focus on medications" presented by Anne Myrka a certified geriatric pharmacist since 2005. The course focused on medications and classes of medications associated with causing falls and the implications for physical therapy. The BFSIG meets at CSM providing an opportunity to network with other PTs who are interested in balance and falls in the elderly.

BONE HEALTH SIG

Sherri Betz, PT, GCS; Chair
Nancy Abodeely, PT, MA, OCS, CLT-LANA; Past Chair
Melissa Peterson, PT, PhD; Secretary
Karen Kemmis, PT, DPT; Nominating Committee Chair

The Bone Health SIG, formerly the Osteoporosis SIG, is dedicated to the promotion of research, consumer education, and quality clinical practice in bone health and the prevention and management of fracture. We share information on our Web site and post regular updates on current research and conferences in newsletters to members. We are especially proud to promote two educational DVDs produced by SIG members, Measurement of Kypholordosis and Stand Tall, at meetings and on the Section Web site. Our members participate in professional meetings and conferences throughout the year and have published numerous articles on research and developments in bone health. We strongly advocate for quality consumer education and are actively developing evidence-based resources on bone health for clinicians and consumers. We have collaborated on programs with the American Bone Health, American Society of Bone and Mineral Research, the National Osteoporosis Foundation, Wed MD, the Bone and Joint Decade, and several universities.

HEALTH PROMOTION AND WELLNESS

David Morris, PT, PhD; Chair
Veronica Southard, PT, PhD; Vice Chair
Scott Gaustad, PT, PhD; Secretary
Lori Schrodt, PT, PhD; Nominating Chair

The purpose of the Health Promotion and Wellness (HPWSIG) is to provide a forum through which individuals having a common interest in providing Physical Therapy services to promote health and wellness among older adults may meet and promote care/intervention through education, clinical practice, and research. Topics addressed by the HPWSIG include all aspects of health (eg, physical, mental, and social) and lifestyle condition interventions (eg, physical activity, nutrition and weight management, smoking cessation). Goals for 2011 include monthly blastcasts addressing current research on HPW-related topics of interest to members, soliciting and organizing HPW-related programming for CSM, soliciting HPW-related articles for Section publications, and coordinating partnership activities with the International Council on Active Aging.

SECTION ON GERIATRICS AWARDS 2011

Joan M. Mills Award for Outstanding Service

As the Section's first president, Joan M. Mills had the vision, determination, and dedication to unite physical therapists, physical therapist assistants, and students in their commitment to excellence in physical therapy care for older adults. Her years of leadership and participation have led to the growth and development of the Section, and of new leaders who continue to promote the mission of the Section. The intent of this award, the highest honor bestowed by the Section on Geriatrics, is to recognize a member who has followed in Joan Mills' footsteps, generously contributing their time, talents, and efforts to the development of the Section on Geriatrics.

Jill Heitzman, PT, DPT, GCS, CWS, CEEAA, FACCWS. Jill has been active in the Section since 2000, serving on the Board of Directors from 2004-2006, and as our incomparable Program Chair since 2003. During her terms on the Board, Jill was always well prepared for Board discussions, contributing meaningfully to Board dialogue. While known for her strong opinion, she has always been encouraging of others' viewpoints. Importantly, Jill had excellent communication with her committee chairs and was able to represent their issues at the Board level. She significantly re-designed the State Advocates program to increase their grass-roots activities.

As Program Chair, Jill worked through many transitions with the APTA, including the process for managing the CSM. Serving on Committee on Chapters and Sections for 3 years, she helped problem-solve many issues with CSM and communicated well with Section Presidents to explain resulting changes. During her tenure on this Committee, she also served as Chair of the Program Chairs, which meant she was the main communication link between APTA and the Program Chairs for all Sections. This required a balance of tact and strength in addressing issues from all Sections' viewpoints, something Jill did extremely well, as evidenced by the many changes made to streamline the management of the CSM.

With specialty interests in the integumentary system, wound care and musculoskeletal changes with age, during the past 10 years Jill has presented at numerous state chapter and national meetings. She was a speaker at our ExPAAC Focus Course and continues to serve as an instructor for the Section's Certified Exercise Experts in Aging Adults course series. Jill has also authored numerous articles for *GeriNotes* and for our Home Study Course series.

Jill clearly has a passion for working with older adults. Those who have served on the Board with her also know her passion for and sense of humor about all things…Iowan! Her contributions to the Section through her Board and concurrent Program Committee Chair service truly embody the spirit of Joan Mills.

The President's Award

The President's Award recognizes individuals who have provided outstanding service to the President of the Section on Geriatrics, while fostering the mission and goals of the Section on Geriatrics.

Ellen Miller, PT, PhD. Since early 2008, Ellen has provided the primary leadership for and has overseen the 14 member steering committee of our Exercise and Physical Activity in Aging Conference: Blending Research and Practice. Conducted July 28-31, 2010, at the University of Indianapolis, the program included a one-day pre-conference, "ExPAAC Focus," and 3 days of plenary sessions conducted by national and international experts in aging, physical activity, and exercise. Ultimately, 350 participants gathered at THE meeting on the cutting edge of geriatric physical therapy research, education, and clinical practice. Proceedings are now available in the APTA Learning Center, and some will be published in our *Journal of Geriatric Physical Therapy*. Throughout this 3-year process, Ellen maintained a calm, supportive, and vigilant focus on producing a high-quality, clinically useful conference that will continue to be a real asset to our profession.

Carol Schunk, PT, PsyD. Since 2003, Carol has been the Editor of *GeriNotes*, our bi-monthly newsletter that has evolved into a news magazine. This award-winning publication regularly embraces Section news, and topics related to best-practice physical therapy, advocacy, political action…and presidential pontificiations. In each of the past two years, continuing education modules have been incorporated into this publication. *GeriNotes* has been noted to be among the most highly rated benefit and services influencing members to continue their involvement in the Section on Geriatrics. Along the way, Carol and her 10-member editorial board have created an up-beat, informative, and professional publication that has nurtured many new authors, including students, as they've shared their ideas and concerns in a professional forum. Carol, this spring, as you phase into your retirement as Editor, I want you to know how much your work has been appreciated by your colleagues in the Section on Geriatrics.

CLINICAL EXCELLENCE

Recognizes a physical therapist for outstanding clinical practice in geriatric health care settings.

Timothy Fox, PT, DPT, GCS. Dr. Fox has been involved in clinical practice in geriatric settings since his graduation from Thomas Jefferson University's Pro-

gram in Physical Therapy in 1995. Dr. Fox went on to earn his tDPT from Jefferson in 2009, received his GCS in 2008, and completed his CCI in 2008. He founded Fox Rehabilitation in 1998 to take care of and advocate for the geriatric population. With an innovative house calls model, Dr. Fox has found a way meet the needs of the frail elderly, who live at home but may not be "home bound." Tim is committed to his vision of providing the best possible care to geriatric clients and sets the bar high for clinical excellence among clinicians. Dr. Fox has created an environment where clinicians are able to follow his lead and make positive contributions in their fields. As a CCI, Dr. Fox works to encourage students and new graduates to enter the field of geriatrics. Tim strives for the best for his geriatric clients every day!

VOLUNTEER IN ACTION

Recognizes exceptional contribution of a physical therapist or physical therapist assistant in community service for older adults.

Charles J. Gulas, PT, PhD, GCS. Dr. Gulas has been involved as a volunteer in the Rehabilitation Technician Training Program (RTTP) in Haiti for the past two years. This program provides training in basic rehabilitation services in Haiti. Dr. Gulas has created and revised curricular documents on skin and wound care, is involved with teaching onsite, and provided much needed support during the recent earthquake. He was able to assess the need of the students for some level of continuity and consistency, and despite working long hours attending victims of the earthquake at the hospital, classes continued for the RTTP students without interruption. He is well-respected and deeply cared for by students, hospital personnel, and patients. His instruction has resulted in well prepared, "thinking" students. Dr. Gulas continues his commitment to the people of Haiti and improvement of health care in the states through fund raisers, lectures on the conditions in Haiti to various schools and organizations in the St. Louis area, and review of potential grants to improve health care in Haiti. Chuck exemplifies the heart of leadership and volunteerism.

DISTINGUISHED EDUCATOR

Recognizes a Section on Geriatrics member for excellence in teaching.

Martha Rammel Hinman, PT, EdD, CEEAA. Dr. Hinman is loved by her students because of the outstanding job she does in organizing, delivering, evaluating, and revamping her courses to make them better and more practical each time she teaches. She utilizes the latest evidence to support her statements, but also includes a welcomed mix of humor and Dr. Seuss images to engage her audience. She challenges the students to achieve their best, to seek knowledge, and apply it to their profession. Dr. Hinman utilizes a variety of teaching techniques in the classroom to draw on the strengths of each student. The students, the consumers of the information, sing high praises for Dr. Hinman's talents in the classroom. Beyond the classroom, Dr. Hinman takes advantage of every opportunity she is presented to talk to community groups or offer continuing competency courses related to topics specifically affecting the geriatric population. Dr. Marty Hinman exemplifies the qualities required of the recipient of the Distinguished Educator Award.

OUTSTANDING PHYSICAL THERAPIST ASSISTANT

Recognizes a physical therapist assistant who has significantly impacted physical therapy care in geriatric practice settings.

Rita Ann Vasquez, PTA. Rita Ann Vasquez has been working with geriatric population for 23 years. In that time, she has proven herself to be an invaluable and integral part of the physical therapy team at her facility. She offers creativity and sincerity to community and family council meetings, quality assurance committees, and specialty clinics. Rita has shown the utmost devotion to her patients; both in the provision of high quality care and offering of great psychological support and understanding. Patients and their families continually comment on Rita's professionalism and compassion. Rita "raises the bar" by consistently advancing her education, always looking for areas in which she can improve, and advocating for the patient's well being.

FELLOWSHIP FOR GERIATRIC RESEARCH

Recognizes physical therapists pursuing research in geriatrics as part of formal academic training or mentorship.

Keith G. Avin, MS, DPT, at the University of Iowa, to support his research study of the impact of executive function on muscle endurance in older adults.

ADOPT-A-DOC AWARD/ SCHOLORSHIP

Recognizes outstanding doctoral students committed to geriatric physical therapy to facilitate completion of the doctoral degree.

Michael John Bade, PT, MPT, COMT, FAAOMPT, a doctoral student at the University of Colorado studying outcomes after total knee arthroplasty in older adults.

David M. Wert, MPT, a doctoral student at the University of Pittsburgh, studying the impact of gait abnormalities and tasks on the energy cost of walking in older adults.

EXCELLENCE IN GERIATRIC RESEARCH AWARD

Honors research published in peer reviewed journals that contributes to the literature of clinical geriatric physical therapy.

David M. Wert, MPT, first author for the published research report: Gait biomechanics, spatial and temporal characteristics and the energy cost of walking in older adults with impaired mobility. *Phys Ther*. 2010;90(7):977-985.

RESEARCH POSTER AWARD

Honors therapist who presents outstanding poster research at CSM that contributes to the practice of geriatric physical therapy

Ross Haley, K. Danks, R. Reisman, C. Ciolek of the University of Delaware, for their research poster presentation,

Development of Evidence-based Treatment Guidelines to Increase Task Repetition in Older Adults.

WCPT: AMSTERDAM UPDATE JUNE 20 – 23, 2011

Jennifer M. Bottomley, PT, MS, PhD
Vice President IPTOP, SOG Liaison

Preconference Course
IPTOP will be a part of the preconference course on Monday, June 20, 2011. Dr. Carole B. Lewis is presenting "Move It! Evidence Based Evaluation and Treatment for Back and Knee Pain in Older Persons" - an orthopaedic-based programme in geriatrics. We will have two time slots – one over lunch and the second at the end of the day. Over the lunch break, a member of the executive board will present IPTOP's purpose, mission, and goals. This will be followed by a round table discussion on active aging amongst course participants. We are in the process of developing talking points for these discussions and will look forward to any suggestions you may have. Bhanu Ramaswamy will access the Toronto Charter for Physical Therapy: A Global Call for Action launched at the 3rd International Congress for Physical Activity and Health. This should provide some questions that will direct the basis of our round table discussions. At the end of the day, IPTOP will summarize the findings from the lunch time sessions.

Scientific Programme
Go to http://www.wcpt.org for review of the wealth of scientific programme beginning on Tuesday, June 21, 2011 to Thursday, June 23, 2011. Focused symposia, discussion panels, platform abstracts, and poster presentations are plentiful and available on the WCPT's Web site.

Satellite Program Education Sessions
Geriatric-based education is plentiful. Details are available at http://www.wcpt.org which is a great place to plan your days. There are so many incredible programs to choose from between Monday June 20, 2011 and Friday June 24, 2011.

Networking Session
An IPTOP networking session has been scheduled on Tuesday, June 21, 2011 from 15:30-17:30. The location is at the Amsterdam RAI Convention Center. Check the WCPT conference programme for specific room location.

General IPTOP Business Meeting
IPTOP's general meeting is scheduled for Wednesday, June 22, 2011 from 16:00-18:00. Check the conference programme for specific location.

Subgroups' Chairs/Presidents Meeting
WCPT has established a chair, Laetitia Dekker Bakker, to head the meeting of subgroup chairs and presidents. This meeting has been scheduled for Wednesday, June 22, 2011 from 13:45-15:45 in the Exhibitor Seminar Room (G108). Check the conference programme on your arrival to ensure the location has not been changed. It would be nice if you could visit the IPTOP stand to let us know if you will be attending.

Joint Subgroup Reception – Social Night
A reception is being planned for the subgroups and will occur at the Novotel Hotel. Specifics are noted elsewhere in this newsletter. Olwen Finley has been working with the Dutch Charter to determine location and venue. Social "Party Night" for WCPT attendees is scheduled for Wednesday, June 22, 2011 from 20:00 to Midnight.

Shared Exhibition Space
WCPT will provide more detail regarding the incorporation of WCPT regions and subgroups into a shared exhibition booth. Check the WCPT Web site for details.

Opening Ceremony and Reception
WCPT's opening ceremony is scheduled for Monday, June 20, 2011 from 18:30 – 20:00, with a reception following from 20:00 – 22:00.

Closing Ceremony and Awards
WCPT's closing ceremony is scheduled for Thursday, June 23, 2011 from 16:00 – 17:30.

Note: Locations should be confirmed on the WCPT Web site or in Conference Programme Book or come and visit the IPTOP stand when you register at the Conference.

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The art of living

lies in a fine mingling of letting go and holding on.

- Henry Ellis

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