BEHAVIORAL OUTCOMES OF AN EDUCATIONAL PROGRAM FOR MALE VETERANS WITH PERIPHERAL ARTERY DISEASE

A DISSERTATION

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To the Dean of the Graduate School:

I am submitting herewith a dissertation written by Sally Vaughn McCoy entitled "Behavioral Outcomes of an Educational Program for Male Veterans with Peripheral Artery Disease." I have examined this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy with a major in Nursing Science.

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ABSTRACT

SALLY VAUGHN MCCOY

BEHAVIORAL OUTCOMES OF AN EDUCATIONAL PROGRAM FOR MALE VETERANS WITH PERIPHEARAL ARTERY DISEASE

DECEMBER 2009

Peripheral artery disease (PAD) affects 8 to 12 million Americans. Untreated PAD results in leg pain, decreased quality of life, and amputation of the legs. Walking has been shown to improve functional impairment and decrease pain among persons with PAD.

This study describes a two-group randomized trial that assesses the effectiveness of an educational program, "Vet Walk," on change in walking distance and health outcomes. The intervention is based on Pender's Health Promotion Model. Fifty male veterans with PAD completed the Health-Promoting Lifestyle Profile II (HPLP II) and 6-Minute Walk test and were randomly assigned to a control group or an intervention group who attended "Vet Walk." Both groups completed testing at 8 weeks post-intervention.

Outcome variables were statistically analyzed for differences between the intervention and control groups. The adjusted mean distance walked in the 6-Minute Walk test for the intervention group increased from 875.5 ft. to 1095.5 ft, while the control group increased its adjusted mean walking distance from 826.7 ft to 848.3. ft at 8 weeks, which was a statistically significant difference.

There were no statistically significant differences in HPLP II total scores and physical activity subscale scores between the intervention and control group. Although pain decreased in the intervention group, the change was not statistically significant.

Among this sample of veterans diagnosed with PAD, the education intervention, "Vet Walk," proved effective in increasing distance walked and, although not statistically significant, decreasing pain experienced over an 8-week period.

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CHAPTER 1

INTRODUCTION

Peripheral artery disease (PAD) affects an estimated 8 to 12 million Americans (Centers for Disease Control [CDC], 2008), including 13-23% of veterans. PAD is caused by partial or complete occlusion of the arteries in the lower extremities. Symptomatic PAD denotes evidence of leg occlusion, and symptoms include intermittent claudication, rest pain, leg ulcers, and gangrene (Collins, Peterson, Suarez-Almazor, & Ashton, 2003). Without treatment, the consequences often include decreased activity (de Vries et al., 2002), decreased quality of life (Eberhardt & Coffman, 2004), and amputation of the legs.

With proper medical management and risk factor control, PAD can remain stable. Specifically, walking has been shown to improve functional impairment and decrease pain among persons with PAD (Gardner et al., 2001). Although the literature endorses the treatment of PAD with exercise (Bulmer & Coombes, 2004; Regensteiner, 2004), information on effective educational programs and behavioral outcomes is lacking.

Problem of the Study

PAD is a strong independent predictor of future cardiovascular events. Persons with PAD are at an increased risk of stroke (Hankey, 2006), and PAD is associated with a twofold increase in myocardial infarction (Eberhardt & Coffman, 2004). Persons with PAD are at an increased risk of death from coronary heart disease compared to persons

without PAD (Mohler, 2003). The mortality rate of persons with PAD is approximately 5% a year, and average life expectancy of persons with PAD is decreased by about ten years (Brevetti & Chiariello, 2004).

Management of PAD includes risk factor modification, walking therapy (Regensteiner & Hiatt, 2002), pharmaceutical therapy (Nehler, McDermott, Treat-Jacobson, Chetter, & Regensteiner, 2003), and surgical or endovascular therapies (de Vries et al., 2002). A primary therapeutic goal is to improve ambulatory function of persons with PAD through exercise (Tsai et al., 2002). Exercise training has been shown to increase walking capacity (by 150% in pain-free walking distance and 200% in maximum walking distance) and to improve quality of life (Kugler & Rudofsky, 2003). Although the literature endorses the treatment of PAD with exercise (Bulmer & Coombes, 2004, McDermott et al., 2004, Regensteiner, 2004), specific instructions as to how the walking exercise is to be completed and outcome data are often lacking.

Rationale and Purpose of the Study

PAD is a leading cause of morbidity among older veterans, as documented by a recent study at a large urban hospital for veterans (Collins et al., 2003). Collins reported that PAD affected 13 to 23% of veterans who attended primary care clinics. Due to the high prevalence of PAD among veterans and the increased risk of life-threatening morbidity, this study measures the effectiveness of an educational intervention designed to improve the functional status of veterans with PAD. The results were evaluated for an increase in walking distance and an increase in health behaviors, as measured by the Health-Promoting Lifestyle Profile (Pender, Murdaugh, & Parsons, 2006).

This study tested the effect of "Vet Walk," a walking program designed for veterans with PAD. "Vet Walk" was designed by this author and pilot tested. Specifically, "Vet Walk" is a researcher-developed education program that consists of 30 minutes of individual instruction with a registered nurse and includes an explanation of the PAD disease process, the positive effects of walking, identifying barriers to walking, safe walking attire, and the use of a pedometer and walking diary. The two-group randomized study design tested the effectiveness of the "Vet Walk" educational program through measuring changes in walking distance and health scores on the Health-Promoting Lifestyle Profile II among veterans with PAD as compared to veterans with PAD who do not participate in "Vet Walk."

Theoretical Framework

Pender's Health Promotion Model (HPM), which provides the conceptual framework for this study, describes the causal mechanisms of health-promoting behavior (Pender et al., 2006). Many studies have utilized HPM to examine changes in physical activity. HPM also has been used to examine health behavior changes, such as smoking cessation, alcohol cessation, diet modification, and exercise in all age groups. Increasing physical activity, exercise self-efficacy, exercise benefits and barriers, and commitment to a plan are key HPM components (Pender et al.). The model is presented in Figure 1.

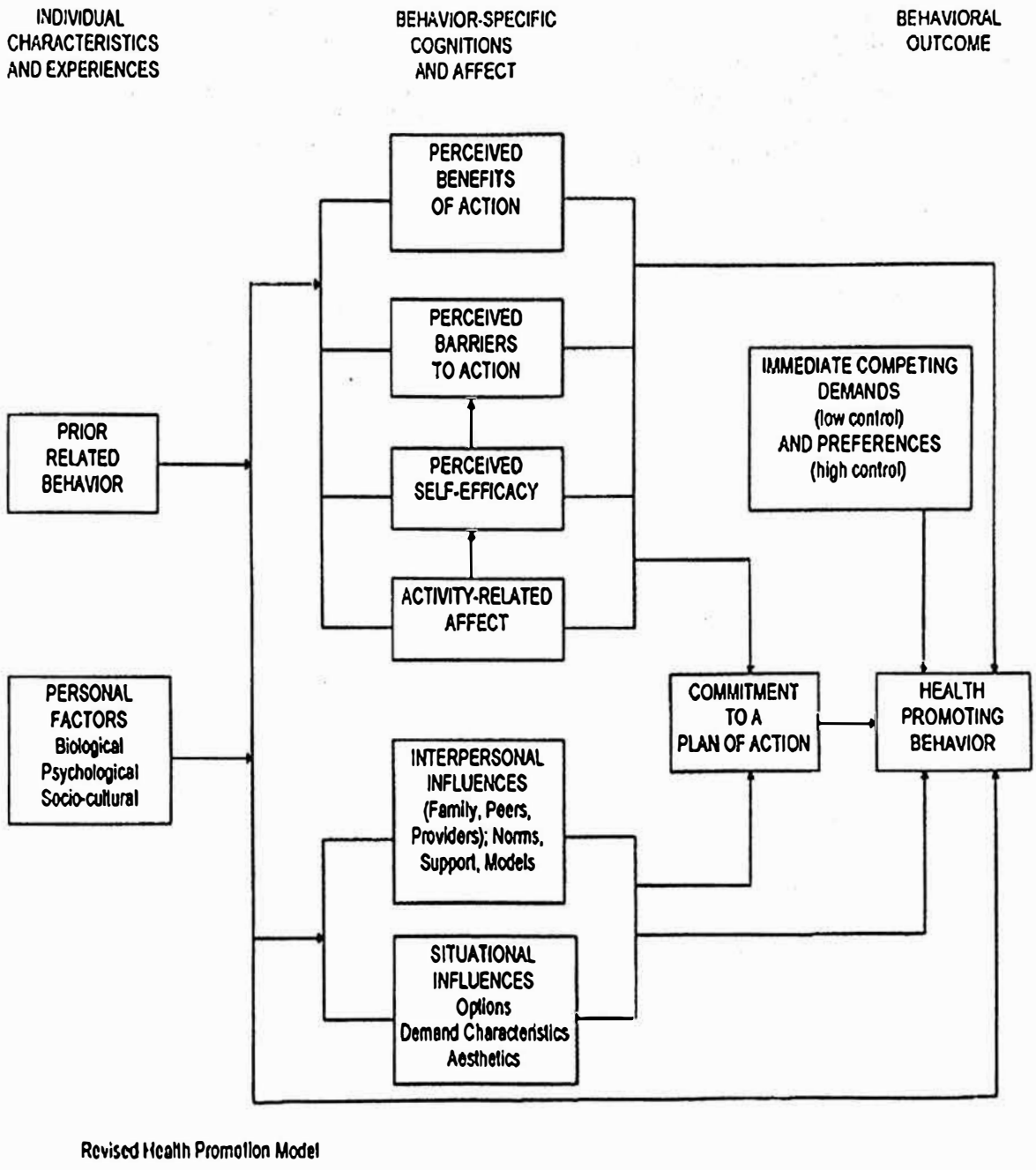

Figure 1. Pender's health promotion model.

Source: Pender, N. J., Murdaugh, C., & Parsons, M. A. (2006). *Health promotion in nursing practice* (5th ed.) Upper Saddle River, NJ: Prentice-Hall Health.

According to Pender, there are several explanations for participation in behaviors that affect health outcomes, and self-efficacy is a central component of the model (Pender et al., 2006). Self-efficacy acknowledges the human capacity for self-regulation and the development of competencies in specific behavioral domains. Perceived self-efficacy is not a measure of the skills that one has but rather a belief about what one can do under different sets of conditions with whatever skills one possesses (Bandura, 1977).

Perceived barriers are often negatively related and perceived benefits positively related to exercise adherence (Robbins, Pender, Ronis, Kazanis, & Pis, 2004). HPM proposes that commitment to a plan of action such as regular exercise is determined by the individual's beliefs concerning his or her self-efficacy, outcomes, or benefits as well as perceived barriers to action.

Pender, Bar-Or, Wilk, and Mitchell (2002) presented an overview of the results of 38 explanatory or predictive studies that tested HPM. The variables in HPM that were significant in predicting health-promoting behaviors in over 60% of the reviewed studies were perceived self-efficacy (86%), perceived barriers (79%), prior behavior (75%), and perceived benefits (61%). Studies utilizing HPM have found that self-efficacy (Pender et al., 2002; Pullen, Walker, & Fiandt, 2001; Robbins et al., 2004), perceived barriers (Farhrenwald, Atwood, Walker, Johnson, & Berg, 2004; Robbins, Gretebeck, Kazanis, & Pender, 2006; Shin, Hur, Pender, Jang, & Kim, 2006), and perceived benefits (Gillis & Perry, 1999; Shin et al.) are correlated with a successful program for walking as exercise. Self-efficacy and perceived benefits of action have been demonstrated to be a central influence on health behavior, specifically exercise (Gillis & Perry; Shin et al.). Further,

health locus of control directly influences participation in health-promoting activities (Pender et al., 2006).

The Health-Promoting Lifestyle Profile II (HPLP II) measures health-promoting behaviors, based on concepts identified by HPM as behavior-specific cognitions affecting behavioral outcomes (Pender et al., 2006). The variable examined in this study, the walking education program, "Vet Walk," is an activity-related effect that will have an impact on walking distance, identified as a health-promoting behavior in HPM.

In Pender's HPM, health promotion and disease prevention are essential to the provision of healthcare. When focusing on increasing physical activity, exercise self-efficacy, exercise benefits and barriers, and commitment to the plan are important HPM components. No nursing research has been conducted on the effect of Pender's model on activity changes in persons with PAD.

This study examines the behavior-specific cognitions and effects related to an education program that focuses on walking as a treatment for PAD. The effect of health behaviors, specifically walking, as well as health locus of control, self-efficacy, and perceived benefits of action on increasing walking distance, following an 8-week period, were determined. The "Vet Walk" program components, as they relate to the concepts of HPM, are presented in Table 1. As seen in the table, the specific components of self-efficacy, perceived benefits of walking, and health locus of control are reflected in the "Vet Walk" 30-minute curriculum.

Table 1

"Vet Walk" Model Components

Objective	Content	Concept of Health Promotion Model	Time Frame	Teaching/Learning Strategies
1. Describe PAD	1. Verbal and written information on disease process, symptoms and treatment, specifically walking.	Perceived benefits	10 min.	1. Power Point presentation
2. Identify perceived benefits of walking as a treatment for PAD.	2. Program to increase strength in leg muscles and to walk farther without pain.	Perceived benefits	5 min.	2. Video: Peripheral Arterial Disease: A Disease You Should Know About, by Healthology
3. Increase self-efficacy by identifying two potential barriers to walking and a solution to each barrier.	3. Participant to identify two potential barriers to walking. Assist participant to identify a solution to each barrier.	Self-efficacy/ Health locus of control	5 min.	3. Written material: What is Peripheral Artery Disease? A Walking Program for Peripheral Artery Disease (PAD) by Krames Education (available on CPRS in hospital)
4. Discuss safe walking habits.	4. Safely issues: attire, walking locations, when to stop.	Self-efficacy	5 min.	4. Written material: A Walking Program for Peripheral Artery Disease (PAD)
5. Increase health locus of control by discussion of use of pedometer and walking diary.	5. a. Demonstration of use of pedometer and walking diary. b. Return demonstration.	Health locus of control	5 min.	5.a. Pedometer: Oregon Scientific Digital Pedometer Model wa101 b. Walking diary

Assumptions

The use of HPM is based on the following assumptions:

1. Persons seek to create conditions of living through which they can express their unique human health potential.

2. Persons have the capacity for reflective self-awareness, including assessment of their own competencies.

3. Persons value growth in directions viewed as positive and attempt to achieve a personally acceptable balance between change and stability.

4. Individuals seek to actively regulate their own behavior.

5. Individuals, in all their biopsychosocial complexity, interact with the environment, progressively transforming the environment and being transformed over time.

6. Health professionals constitute a part of the interpersonal environment, which exerts influence on persons throughout their lifespan.

7. Self-initiated reconfiguration of person-environment interactive patterns is essential to behavior change (Pender et al., 2006).

These assumptions reflect both the nursing and behavioral science perspectives used in this study.

Research Hypotheses

This research tested two hypotheses:

H1: Male veterans, ages 50 and older with PAD, who attend a vascular clinic at an urban Veterans Administration hospital and who complete "Vet Walk," an

investigator-developed 8-week walking exercise program, will walk farther during a 6-minute walking test following the program, as compared to male veterans who do not participate in the "Vet Walk" program.

H2: Male veterans, ages 50 and older with PAD, who attend a vascular clinic at an urban Veterans Administration hospital and who complete "Vet Walk," an investigator-developed 8-week walking exercise program, will score higher on the HPLP II, as compared to male veterans who do not participate in the "Vet Walk" program.

Definition of Terms

Behavioral outcomes are action outcomes that result in improved health, enhanced functional ability, and better quality of life (Pender et al., 2006). For the purpose of this study, behavioral outcomes will be operationalized as a singular numerical value as measured on the Health-Promoting Lifestyle Profile II (HPLP II).

Health-Promoting Lifestyle Profile II (HPLP II) is a 52-item scale with six subscales: health responsibility, physical activity, nutrition, spiritual growth, interpersonal support, and stress management. For the purpose of this study, the items are summed and reported as a numerical value.

Peripheral artery disease (PAD) is a medical diagnosis of atherosclerosis in arteries of the legs (Collins et al., 2003). For the purpose of this study, PAD is operationalized as an Ankle-Brachial Index (ABI) of < .90 (Fahey, 2004).

Six-minute walk test (SMWT) measures the distance walked on a flat, measured surface in a timed six-minute period, used as a measure of endurance, fatigability, and

cardiovascular fitness (Dobkin, 2006). For the purpose of this study, the SMWT will be reported as distance walked in feet.

Vet Walk is a 30-minute investigator-designed education program for the purpose of educating veterans with PAD on walking. The program is based on HPM, as was presented in Table 1.

Limitations

This study reflects only the outcomes of the participating veterans with PAD from one urban veterans administration hospital. The study is not generalizable to the general population of veterans with PAD; however, the study provides a basis for further study of veterans with PAD.

Summary

The morbidity of PAD in the general population and in veteran males includes increasing pain, decreased activity, gangrene toes, and often amputation of legs. With proper nursing management and risk factor control, PAD may remain stable. Walking has been shown to improve functional impairment and decrease pain in persons with PAD. Although the literature endorses the treatment of PAD with exercise, specific instructions and follow-up are often lacking. This research will measure the effectiveness of an education program, "Vet Walk," to increase walking distance and health promotion scores for veterans with PAD.

CHAPTER 2

REVIEW OF THE LITERATURE

PAD affects an estimated 8 to 12 million Americans and is associated with an increased risk for cardiovascular morbidity, including pain, amputation, and mortality (CDC, 2008). Further, 13-23% of veterans have PAD, which is often undertreated. With proper medical treatment and risk factor management, PAD can remain stable. Without treatment, consequences often include increasing pain, decreased activity, gangrene toes, and possible amputation. Walking has been shown to improve functional impairment and to decrease pain in persons with PAD (McDermott et al., 2006; Stewart, Hiatt, Regensteiner, & Hirsch, 2002). Low-intensity exercise, such as walking, in persons with PAD, is associated with a decrease in claudication pain (Menard et al., 2004) and an increase in walking distance (McDermott et al.; Stewart et al.).

Search Method

An integrative literature review was conducted online utilizing Medline, CINAHL, PsycINFO, and ERIC databases. The search was conducted between January 2007 and December 2008 using the MeSH terms: intermittent claudication, peripheral vascular disease/PAD, exercise/walking treatment outcomes, and health promotion. The most successful searches resulted in combining walking and peripheral vascular disease.

Search options included the use of Boolean operators, grouping terms together, and guided searches, such as by identified authors, and limitations of articles published in the past five years. The search utilized the limitations of English-language and studies involving human subjects. Further references were identified by checking article references lists, identifying frequent authors, and using "related article" links to provide an extensive list of references. Articles were obtained via full-text articles on the Internet and hard copies acquired in a library, and some articles were obtained from inter-library loan services.

After the relevant literature was identified, the articles were organized on the basis of PAD treatment, type of intervention, study design, study concepts, study population, outcome measures, and significant findings. The following sections of this chapter focus on appropriate studies on the topics of PAD, exercise/walking interventions for PAD, use of Pender's HPM, and assessment tools for educational interventions, such as the walking proposed for this research. This chapter concludes with a summary, including gaps in the literature that led to the creation of this study.

Peripheral Artery Disease

PAD affects an estimated 8 to 10 million Americans. This chronic, disabling disease is associated with a high risk of cardiovascular morbidity, including pain and amputation, as well as high mortality. The cause of PAD is atherosclerosis in the arteries of the lower extremities, and PAD is a strong predictor of future cardiovascular events. Cardiovascular disease is the number one cause of death in adult men and women, and hospital discharges with PAD as the first-listed diagnosis were 93,000 in 2002 in the

United States (CDC, 2008). Average life expectancy of PAD patients is decreased by about ten years (Brevetti & Chiariello, 2004). In the early stages of the disease, a significant proportion of the population is asymptomatic. Risk factors for PAD include age, male gender, hypertension, hyperlipidemia, smoking, and diabetes.

The predominantly male, aging veteran population also has a high incidence of PAD. The veteran population has perhaps an even higher incidence than the general population. Specifically, 13-23% of veterans have PAD and most are not aware of their diagnosis (Collins, Petersen, & Suarez-Almazor, 2005).

Diagnosis of PAD is often made by presenting symptoms. The chief symptom of persons with PAD is intermittent claudication. Claudication, derived from the Latin verb, "to limp," is defined as cramping muscle pain that occurs predictably each time a given distance is walked and is relieved after a period of rest (Fahey, 2004). Claudication is a result of arterial stenosis (usually due to atherosclerotic plaque) in the aortic, iliac, femoral, or popliteal arteries.

A diagnosis of PAD is most comprehensively made through a subjective history of symptoms as well as objective exam of pulses in the lower extremities and diagnostic testing, such as the ankle-brachial index (ABI). ABI is a non-invasive technique that compares systolic blood pressure in the arm and ankle, resulting in a ratio (Fahey, 2004). One (1.0) is normal, while < 0.9 is considered indicative of PAD; symptoms are usually present below 0.7 (Fahey; McDermott et al., 2004). ABIs are often not accurate in diabetics due to arterial calcification. Arteriography provides an accurate picture of

arteries but is an invasive exam requiring the injection of a dye, as x-rays are taken of the legs. This is the gold standard prior to surgical intervention for PAD.

PAD causes significant disability due to decreased functional capacity. If untreated, PAD can progress to severe rest pain in the calves and feet, gangrene in the toes and feet, and finally amputation, which occurs in 3-8% of PAD patients every year (Hirsch, Treat-Jacobson, Lando, & Hatsukami, 1997).

PAD Treatment

Multiple treatment options are available for PAD. Current treatment options include surgical (Regensteiner & Hiatt, 2002) and medical therapy (Thompson et al., 2003). Walking has been shown to improve functional impairment and decrease pain in patients with PAD. With proper medical treatment and risk factor management, PAD can remain stable, while without treatment, consequences are often increasing pain, decreased activity, gangrene toes, and amputation.

The surgical treatment of PAD varies based on the site and extent of the arterial stenosis. Short segments of stenosis may be treated by angioplasty and/or stenting. More extensive stenosis or complete occlusions are treated with bypass procedures. Revascularization is often performed when conservative measures fail. Cost-effectiveness of surgical procedures was demonstrated in patients with severe PAD, while treatment with exercise was more cost-effective in patients with mild disease (de Vries et al., 2002).

Medical treatment of PAD also includes aggressive treatment of diabetes, hypertension, and hyperlipidemia. Antiplatelet drugs, such as aspirin and clopidogrel (Plavix), are utilized to reduce the incidence of vascular events (Youssef, Gupta,

Mikhailidis, & Hamilton, 2005). Pharmacologic management of PAD has increased by primary providers, but it is minimally effective in reducing claudication pain (Hirsch et al, 1997). Lifestyle modifications, such as smoking cessation and exercise, are effective, especially in mild PAD (Stewart et al., 2002: Thompson et al., 2003).

Low-intensity exercise, such as walking, among persons with PAD, is associated with improvement in claudication pain and maximal walking distance. "This improvement is a result of peripheral factors such as changes in local oxygen utilization, increased capillary density, changes in hemoglobin oxygen affinity, normalization of plasma viscosity, and economization of walking." (Ernst & Matrai, 1987, p. 1112).

Walking has been shown to improve functional impairment and decrease pain in persons with PAD. A primary therapeutic goal is to improve ambulatory function through exercise (Tsai et al., 2002). In a descriptive study of older adults with PAD, Oka, Altman, Giacomini, Szuba, and Cooke (2004) reported that only 49.5% of individuals participated in walking, despite previous instruction by their provider. Regensteiner (2004) noted that the benefits of exercise are often outweighed by the fact that exercise counseling is not reimbursed.

Exercise and Walking Interventions to Reduce Consequences of PAD

Although many treatment options for persons with PAD exist, exercise, especially walking, is an effective and low-cost means of improving functional ability and quality of life. Stewart et al. (2002) documented the extensive benefits of exercise training in the treatment of claudication. Progressive physical activity is an effective treatment for improving walking distance in patients with PAD and exercise-induced claudication. A

pilot exercise intervention to improve lower extremity functioning in persons with asymptomatic PAD showed an improved functional status after a physical therapy-based exercise program (McDermott et al., 2004). In another study, McDermott et al. (2006) reported significantly less functional decline among persons who performed self-directed walking three times a week when followed up at 36 months.

Exercise training alone has been found to increase time to onset of claudication pain by 179% and the time to maximal claudication pain by 122% (Gardner & Poehlman, 1995). Although there are few direct comparisons of therapeutic exercise programs versus pharmacological or surgical interventions, increases in walking distance are greater than those reported for most widely used agents for claudication (Thompson et al., 2003). Bulmer and Coombes (2004) noted that combining different treatments such as surgery or pharmacotherapy with exercise provide additional benefits to patients over the use of individual therapies. Two major problems exist with exercise programs, however; they are often non-billable, and long-term compliance is poor.

The benefits of walking are associated with improving cardiovascular function and have been shown to increase function, decrease claudication pain, and improve quality of life in patients with PAD (Killewich, 2006, Nehler, McDermott, Treat-Jacobson, Chetter, & Regensteiner, 2003). Bulmer and Coombes (2004) and Gardner et al. (2000) described significant improvement in functional status in patients who participate in an exercise program, as documented by measures of maximal walking distance and metabolic equivalents. Gardner et al. examined independent elderly, including veterans. A study with veterans, using functional measures of PAD, found a

significant correlation between claudication and self-reported quality of life (Izquierdo-Porrera et al., 2005).

Tan, de Cossart, and Edwards (2000) studied a 3-month unsupervised exercise program, demonstrating an 82% increase in maximal walking time, although there were no significant changes in arterial flow, plasma viscosity, LDL, triglycerides, or resting heart rate. In a community-based program, Bendermacher et al. (2007) reported increased walking distances at 3 and 6 months following a supervised exercise therapy.

Albright and Thompson (2006) summarized studies examining the effects of walking on the prevention of cardiovascular disease and treatment of risk factors in women. Walking was shown to modify risk factors such as obesity, blood pressure, cholesterol, and diabetes. The research did not determine optimal frequency, intensity, or duration of walking needed, however.

Multiple studies have shown that quality of life is improved with exercise, as documented by SF-36 scores (Gardner et al., 2001, Menard et al., 2004, Oka, Altman, Giacomini, Szuba, & Cooke, 2005; Stuifbergen, Seraphine, & Roberts, 2000). Hamilton and Haennel (2000) also found significant correlations between the SMWT and SF-36 scores.

Types of exercise training instruction vary from non-supervised exercise at home to fully supervised training at a hospital or gymnasium. Duncan et al. (1998) examined a home-based exercise program provided by a physical therapist. The experimental group had no increase in functional performance over the control group, as measured by the

Barthel Index ADL. Sample size was 10 participants in each group in this 8-week program.

Recommendations for successful exercise programs by the American College of Sports Medicine include 30 minutes or more of moderate exercise on most days of the week for adults age 65 and older as well as adults with chronic conditions or physical functional limitations that affect movement ability or physical fitness (American College of Sports Medicine, 2007). Eden, Orleans, Mulrow, Pender, and Teutsch (2002) performed a review of eight controlled trials involving 9,054 adults that concerned the effects of counseling on physical activity. Six of the trials were considered fair quality, while two were rated as good quality for internal validity. The most common flaw was lack of consistency in counseling and lack of follow-up evaluation. The amount of time spent counseling was reflected in an increase in self-reported physical activity in all studies. Tan et al. (2000) noted an inconclusive effectiveness of counseling in increasing physical activity.

Counseling alone showed an inconclusive effectiveness in increasing physical activity (Tan et al., 2000; Ubels, Links, Sluiter, Reitsma, & Smit, 1999). Counseling in specific populations, however, such as young adults (Robbins et al., 2006, Woods, Mutrie, & Scott, 2002), women (Peterson, Yates, Atwood, & Hertzog, 2005, Pullen et al., 2001, Stuifberger, Becker, Blozis, Timmerman, & Kullberg, 2003), and older adults (Fletcher, Gulanick, & Braun, 2005) can successfully change exercise habits. Beginning to exercise at any age can be beneficial.

Supervised treadmill programs in asymptomatic disease improved activity (Gardner et al., 2001; McDermott et al., 2004); however, the research on these programs did not measure long-term effects. Duncan et al. (1998) examined patients with symptomatic PAD in a home-based exercise program provided by a physical therapist. The experimental group had an increase in functional performance over the control group, but it was not statistically significant. Stuifbergen et al. (2000) and Eden et al. (2002) conducted research on counseling concerning a wide variety of health issues, finding self-reported improvement in physical activity.

Interventions Appropriate to PAD

The Counseling and Behavioral Interventions Group of the United States Preventive Services Task Force (Whitlock, Orleans, Pender, & Allan, 2002) endorses counseling for effectively addressing health-related behaviors and emphasizes long-term follow-up to improve health outcomes. Behavioral/educational counseling has been shown to improve health behaviors (Woods et al., 2002) when specific topics are presented and follow-up is maintained. Counseling concerning cardiovascular lifestyle interventions, such as smoking cessation, exercise, and eating a heart-healthy diet can be effective in a nurse-managed program (Haskell, 2003). A health-promoting lifestyle (as measured by the HPLP II) was positively related to quality of life in a correlation study of older subjects, including veterans (Mowad, 2004).

A study performed in The Netherlands demonstrated increases in painless walking distance in patients with PAD after a nurse-instructed walking program (Spronk, Dolman, Boelhouwer, Veen, & Den Hoed, 2003). Distances increased 65% by 8 weeks post-

intervention, measured by a "walking corridor assessment," which was not, however, described.

Summary

The literature concerning treatment of PAD indicates that an educational walking program has a strong, positive influence on PAD management. Although education is beneficial, instructions on walking, including the use of cues to action, such as pedometers and walking diaries, are also effective. Additionally, follow-up is essential, and few of the studies reported results past six weeks. Moreover, little research has been done on activity changes in specific disease groups, such as veterans with PAD. No studies have tested the influence of a walking education program for a veteran population with PAD.

CHAPTER 3

COLLECTION AND TREATMENT OF THE DATA

This study utilized a two-group randomized control design to determine outcomes following an 8-week intervention. Because the effects were measured before and after the intervention and compared to the control group, the pretest-posttest design enabled the testing of the hypothesis. Walking distance was measured with the SMWT, and health promotion was measured with the HPLP II.

The independent variable is the researcher-developed education program, "Vet Walk," and the dependent variables are the distance walked in 6 minutes and the score on the HPLP II. With one independent variable in two groups, measured two times, this design is appropriate for this study.

Setting

The setting of the study was the vascular clinic at a large urban veterans administration hospital and clinic system. The clinic sees 15 to 20 patients with PAD per week. Current medical treatment includes verbal and written instruction on walking and the use of a walking diary.

Population and Sample

The population is veterans, ages 50 or older, who have been diagnosed with PAD, as noted in their medical record. An inclusion criteria of an ABI between .90 and .50 was

indicated, as less than .90 is diagnostic for PAD and the lower limit of .50 indicates severe disease. Fewer than 40% of study participants with an ABI of less than .40 are able to walk continuously for 6 minutes (McDermott, 2002).

Inclusion criteria for this study were male veterans ages 50 or older, symptomatic of PAD, as noted in their medical records and as verified by the participant as ambulation-induced leg pain as well as an ABI of < 0.90 and > 0.50, as documented in their medical records. The participant had to be English-speaking and literate.

Exclusion criteria for this study were active cardiovascular disease (angina, CVA or MI < 6 months prior), medical conditions that limit ambulation, including arthritis and COPD, foot or leg ulcers, the use of assistive devices (i.e., cane, walker) needed for ambulation, foot or leg amputation, or a diagnosis of altered mental status or Alzheimer's disease. Inclusion and exclusion criteria were assessed through review of the medical record and verified with the subject by the investigator.

The literature review revealed no similar studies from which to calculate sample size. Randomized control trial studies utilizing walking as an outcome are summarized in Table 2. These studies demonstrated an increase in walking after interventions, ranging from 8 weeks to 6 months and a sample size of 29 to 61. Interventions were individualized and described as written instructions for home exercise, supervised exercise, and supervised treadmill programs. All the relatively small sample studies resulted in increase in walking outcomes.

Table 2

Walking Outcome Studies

Study/Design	Study Variables	Participants	Intervention	Outcome
Collins et al. (2007) RCT	Measured walking distance	50 Veterans with PAD	Education via tailored handout on physical activity	Self-reported 12 weeks post-intervention. 1. No significant difference in mean walking distance. 2. Increased stair-climbing ability.
McDermott et al. (2004) RCT	Six-Minute walking test	32 adults with PAD	12-week supervised treadmill	Increase in Six-Minute walk test. $p = .03$.
Regensteiner et al. (1996) RCT	Measured walking distance	29 adult men	12-week treadmill training	Increased walking. Decreased pain with walking.
Gardner et al. (2001) RCT	Measured walking distance	61 adults with PAD, including veterans	6-month supervised treadmill 3 days/week	Increased distance walked to onset of claudication by 134%, $p < .001$.

Due to the small sample size available at the institutional setting, this research is considered exploratory and included 25 participants per group for a total of 50 participants. Participants were assigned to the intervention or control group using a table of random numbers.

Protection of Human Participants

Approval for the study was obtained from the Baylor College of Medicine, Michael E. DeBakey (Appendix A), VAMC Research & Development Committee, (Appendix B) and the Institutional Review Board (IRB) of Texas Woman's University. The three institutions previously approved the pilot study. Participants also signed an informed consent form (Appendix C).

Instrumentation

Two assessment instruments were used in this study, the Health-Promoting Lifestyle Profile II (HPLP II; Appendix D) and the Six-Minute Walk Test (SMWT; Appendix E), in addition to demographic and health information (Appendix F). Both measures have been extensively used in research studies. The Health-Promoting Lifestyle Profile (HPLP) was developed in 1982 to measure health-promoting behaviors (Pender, Walker, Sechrist, & Stromborg, 1988; Walker, Sechrist, & Pender, 1987) and later revised to more accurately measure the concepts of Pender's HPM, such as behavior-specific cognitions affecting behavioral outcomes. The HPLP has been extensively used to measure functional status. This measurement tool has been validated and is generally accepted to provide meaningful information. The HPLP II has been used in multiple studies based on Pender's HPM.

The HPLP II contains 52 items in six subscales: self-actualization, health responsibility, exercise, nutrition, interpersonal support, and stress management. The HPLP items are scored on a 4-point Likert-style scale, ranging from 1 (never) to 4

(routinely). The internal consistency is .92, and Cronbach's alpha coefficients for the subscales are .70 to .90 (Walker et al., 1987). This study utilized the HPLP II total score.

The SMWT is a measure of cardiovascular fitness. It has been demonstrated to yield reliable measurements of functional status in multiple medical conditions. The SMWT measures the distance walked on a flat, measured surface in a timed 6-minute period. This tool has been validated and is generally accepted to provide meaningful information.

Demers, McKelvie, Negassa, and Yusuf (2001) examined the reliability, validity, and responsiveness of the SMWT in patients with heart failure. Test-retest reliabilities were very good: baseline, .90; 18 weeks, .88; and 43 weeks, .91. The SMWT was shown to be highly reproducible, and construct validity corresponded to patients' baseline New York Heart Association functional class (NYHA-FC). Hamilton and Haennel (2000) also found significant correlations between the SMWT, NYHA class, and SF-36 scores. The benefits of utilizing the SMWT include convenience, low cost, and no need for special equipment; the SMWT also approximates ADLs (Gibbons, Fruchter, Sloan & Levy, 2001; Sanderson & Bittner, 2006; Wu, Sanderson, & Bittner, 2003).

This educational intervention designed for persons with PAD is hypothesized to improve functional status as defined by walking distance. This study examined the behavior-specific cognitions and effects related to an education program that focused on walking as a treatment for PAD and are linked to the HPM. The effect of health behaviors, specifically walking, as well as health locus of control, self-efficacy, and perceived benefits of action on increasing walking distance, following an 8-week period,

were determined. The "Vet Walk" program components, as they relate to the concepts of the HPM, were presented in Table 1.

Internal Validity

Threats to internal validity were controlled for by the experimental design. History was controlled, as concurrent external events affect both the intervention and control groups. Selection bias was avoided by random assignment into groups after pretest data had been collected. Maturation also occurred in both groups, independent of the treatment variable. Testing threat concerns the issue of posttest performance as affected by taking the pretest. This was controlled for by use of standardized tests, and both groups would be affected equally. Instrumentation was controlled for, as both groups were tested with the same instruments. Experimental mortality was the biggest threat, as control group participants could have dropped out of the study had they learned that the experimental group was attending a special class.

External Validity

External validity threats are controlled for by the sample characteristics. Characteristics of the sample may be the biggest concern because the participants were from one urban location and thus generalization can be made only to that population. The target population was male veterans over the age of 50 who had been diagnosed with PAD, and the randomly assigned sample can be assumed to have the same characteristics as the population. This study compared the mean results of the dependent variables for the two groups. The expectancy or Hawthorne effect was an important threat to external validity in this study. The knowledge that participants are in a study concerning walking

may have affected their exercise habits; however, the experimental design should have controlled for this effect. Threats to the external validity of the study also included a novelty effect; participants in the study group may have altered their behavior as a novelty rather than due to an intervention. However, this was controlled for by comparison to the control group. Experimenter effect was controlled by the minimal interaction of the researcher and participants. The interaction of history and treatment effect were controlled for by comparison to the control group, as external events also would have affected them. Measurement effect or the attention-giving aspect of data collection was minimized by the time period; both groups were given a pretest and posttest 8 weeks apart.

Intervention

This study tested the effect of "Vet Walk," a walking program designed for veterans with PAD. "Vet Walk" is a researcher-developed educational program that consists of 30 minutes of individual instruction with a registered nurse and includes explanation of the PAD disease process, the beneficial effects of walking, identifying barriers to walking, goal setting, safe walking attire, and the use of a pedometer and walking diary. Participants in the intervention group recorded the number of steps per pedometer daily in the walking diary. The pedometer and walking diary were utilized to motivate walking but were not measured as an outcome.

This study examined the behavior-specific cognitions and effects related to an education program that focuses on walking as a treatment for PAD. The effects of health behaviors, specifically walking, as well as health locus of control, self-efficacy, and

perceived benefits of action on increasing walking distance, following an 8-week period, were determined. The "Vet Walk" program components, as they relate to the concepts of HPM, were presented in Table 1. As seen in the table, the specific components of self-efficacy, perceived benefits of walking, and health locus of control are reflected in the "Vet Walk" 30-minute curriculum.

Pilot Study

A pilot study was conducted to test the feasibility and effect of a walking education program designed for veterans with PAD. The pilot study utilized a two-group randomized control design with repeated measures at 4, 8, and 12 weeks. An intervention and control group was utilized for comparison purpose. Six participants were recruited and randomly assigned to one of the two groups. Four participants completed the program, one participant dropped out after he was diagnosed with a malignant melanoma, and the other participant dropped out due to transportation problems. The pilot study results are presented in Tables 3 and 4.

Table 3

Mean Distance in Feet at Baseline and 4, 8, and 12 Weeks and Increase from Baseline

Group	Baseline	4 Weeks	8 Weeks	12 Weeks	Increase: Baseline-12 Weeks
Intervention ($n = 4$)	132	130	140	141	9 (6.8%)
Control ($n = 2$)	128	131	130	130	2 (1.6%)

Table 4

Means and Standard Deviations for HPLP II at Baseline and 12 Weeks and Increase from Baseline

Group	Baseline *M (SD)*	12 Weeks *M (SD)*	Increase: Baseline-12 Weeks
Intervention ($n = 4$)	138 (17)	142 (20)	4 (17.6%)
Control ($n = 2$)	133 (18)	135 (19)	2 (5.6%)

The pilot study identified multiple problems involved in the implementation of the research. Several persons, similar to the population, reviewed the questionnaire and the SMWT, and several problem areas were identified, including the too-small font size of the questionnaire and the need to have a "script" for the SMWT, noting that, if talk between the participant and the researcher were not controlled, participants often stopped to talk, requiring a restarting of the assessment.

The pilot study also revealed problems in the area of the recruitment of participants. Reasons for declining participation included distance and multiple visits,

scheduling for surgical procedures, severity of disease, and lack of incentives. An additional identified problem was another research nurse also recruiting persons with PAD, which limited recruitment for the present study. To increase recruitment for the present study, the research instituted the following procedures. Posters regarding the study were placed in the clinic area. Clinic staff was informed of the research and was asked to refer patients to the information on the posters.

Data Collection

Male veterans attending a vascular surgery clinic, ages 50 or older, with a diagnosis of PAD were identified through Computerized Patient Medical Records. The researcher approached the participants, discussed the 8-week program, checked inclusion/exclusion criteria and, if criteria were met, invited the individual to participate. Participation involved two sessions, eight weeks apart, and participants completed a written survey and walked for 6 minutes (to measure distance) to complete the SMWT. Each session took approximately 30 minutes. Participants were randomly assigned to the intervention or control group. The intervention group attended an education session and received a pedometer. At the completion of the first session, all participants received a $10 VA canteen coupon booklet. Both groups were asked to complete a walking diary for 8 weeks and to return for repeat written and walking tests. At the completion of the second session, participants were given a $15 VA canteen coupon booklet. Participants in the control group were invited to attend "Vet Walk" and to receive a pedometer.

CHAPTER 4

ANALYSIS OF THE DATA

PAD affects an estimated 8 to 12 million Americans and is a leading cause of morbidity among older veterans (Collins et al., 2003). Walking has been shown to improve functional impairment and decrease pain. Few studies have examined the effects of walking education for persons with PAD. This study examined the effects of "Vet Walk," a 30-minute researcher-designed education program for male veterans with PAD. A total of 50 subjects were randomly assigned to a control group and received usual care, or to the intervention group, who attended "Vet Walk." Outcomes were measured with the HPLP II and the SMWT. ANOVA was used to test for differences between the groups for outcome measures at 8 weeks and differences between 8 weeks and baseline.

Description of the Sample

In this study, 288 male veterans with PAD who attended a vascular surgery clinic at a large urban federal hospital during the months of April through June 2009 were identified as potential subjects. Potential subjects were evaluated using inclusion and exclusion criteria. Fifty subjects agreed to participate, signed informed consents, and then completed the HPLP II and SMWT. Subjects were randomly assigned to the intervention or control group, and 48 completed the 8-week program (Figure 2).

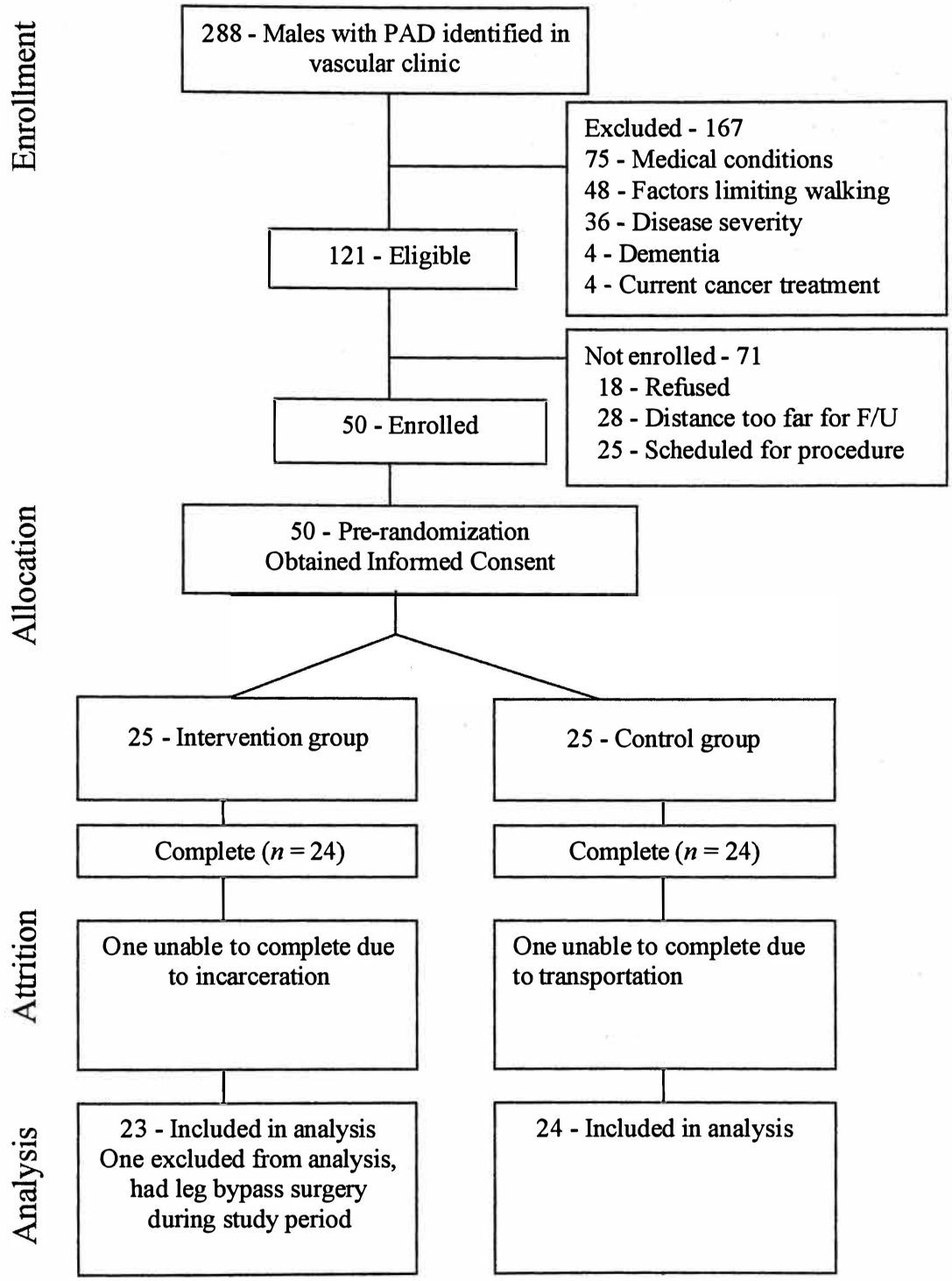

Figure 2. Flow chart.

One subject could not complete the study due to incarceration, one subject could not return for completion testing due to transportation problems, and one subject completed the study but was removed from the analysis because he had leg bypass surgery at another hospital during testing period. Descriptive statistics were used to summarize the characteristics of the sample. Demographic and clinical characteristics for the entire sample, control group, and intervention group are presented in Table 5. No significant differences were noted between the groups, except for the number of times walked at baseline.

Table 5

Demographic and Clinical Characteristics at Baseline, Overall, and by Intervention versus Control[1]

Characteristic	Overall ($n = 47$)		Intervention ($n = 24$)		Control ($n = 23$)		Statistic*	*p*-value
	n	%	n	%	n	%		
Age group							$\chi^2_2 = 1.95$	.3781
50-60	13	27.7	7	29.2	6	26.1		
61-65	18	38.3	11	45.8	7	30.4		
Over 65	16	34.0	6	25.0	10	43.5		
Race/ethnicity							$\chi^2_2 = 2.14$	.3423
Caucasian	22	46.8	10	41.7	12	52.2		
African American	19	40.4	12	50.0	7	30.4		
Hispanic/Other	6	12.8	2	8.3	4	17.4		
Education							$\chi^2_2 = 1.88$	.3912
Some high school	10	21.3	7	29.2	3	13.0		
High school graduate	16	34.0	7	29.2	9	39.1		
Some college/ college graduate	21	44.7	10	41.7	11	47.8		
Previously instructed to walk							$\chi^2_1 = .01$	.9319
Yes	35	74.5	18	75.0	17	73.9		
No	12	25.5	6	25.0	6	26.1		

(Table continues)

Table 5 (continued)

Characteristic	Overall ($n = 47$)		Intervention ($n = 24$)		Control ($n = 23$)		Statistic*	p-value
	n	%	n	%	n	%		
Times per week patient walks							$\chi^2_3 = 8.25$	.0411
Never	15	31.9	7	29.2	8	34.8		
1-2 days/week	12	25.5	10	41.7	2	8.7		
3-4 days/week	11	23.4	5	20.8	6	26.1		
5-7 days/week	9	19.2	2	8.3	7	30.4		
Smoking history							$\chi^2_1 = 1.07$	.3017
Previous	25	53.2	11	45.8	14	60.9		
Current	22	46.8	13	54.2	9	39.1		
Hypertension							$\chi^2_1 = .67$	.4130
Yes	41	87.2	20	83.3	21	91.3		
No	6	12.8	4	16.7	2	8.7		
Heart disease							$\chi^2_1 = 1.04$	.3074
Yes	17	36.2	7	29.2	10	43.5		
No	30	63.8	17	70.8	13	56.5		
Diabetes							$\chi^2_1 = 1.39$	.2376
Yes	14	29.8	9	37.5	5	21.7		
No	33	70.2	15	62.5	18	78.3		
High cholesterol							$\chi^2_1 = .56$	.4537
Yes	26	55.3	12	50.0	14	60.9		
No	21	44.7	12	50.0	9	39.1		

(Table continues)

Table 5 (continued)

Characteristic	Overall ($n = 47$)		Intervention ($n = 24$)		Control ($n = 23$)		Statistic*	p-value
	n	%	n	%	n	%		
Previous stroke or TIA							$\chi^2_1 = .71$	.3995
Yes	8	17.0	3	12.5	5	21.7		
No	39	83.0	21	87.5	18	78.3		
	n		n		n			
	M		M		M			
Age	(Range)	SD	(Range)	SD	(Range)	SD	Statistic*	p-value
	47		24		23			
	64.1	6.4	62.8	6.1	65.4	6.6	$Z = 1.29$	.1967
	(52-78)		(52-78)		(53-78)			

Note. 1. Based on the 47 patients who were considered study completers.
2. Overall $n = 22$ current smokers, $n = 13$ intervention current smokers, and $n = 9$ control current smokers.
* Pearson's chi-square test was used to test whether the intervention and control groups differed on the categorical variables. The normal approximation for the non-parametric Wilcoxon two-sample test was used to test whether the intervention and control groups differed on the continuous variables.

The mean age of the sample was 64.1 years (range 52-78), 46.8% was Caucasian, and 44.7% had attended or graduated from college. Additionally, 74.5% reported having been previously instructed to walk; however, 31.0% never walked, 25.5% walked 1-2 days per week, 23.4% walked 3-4 days per week, and 19.2% walked 5-7 days per week. Utilizing Pearson's chi-square test, there were no significant differences between the group's medical conditions of hypertension, heart disease, diabetes, high cholesterol, or previous stroke. Additionally, 53.2% were previous smokers, 46.8% were current smokers, and no subjects reported never smoking.

Findings

The HPLP II was used to evaluate changes in health behaviors (Pender et al., 2006) and the SMWT to measure walking distance. All subjects completed both tests at baseline and at the conclusion of the study.

Two primary outcome variables were used to address the study's two hypotheses. They included the overall HPLP II score and the distance walked during the SMWT. In addition, the physical activity subscale of the HPLP II and the pain rating were examined. The overall HPLP II score was calculated for each patient as the mean of the individual's responses to all 52 items of the HPLP II questionnaire. The physical activity subscale, one of six HPLP II subscales, was used in the study and was calculated as the mean of the responses to eight items (items 4, 10, 16, 22, 28, 34, 40, and 46). The possible range for the overall score and the physical activity subscale was from 1 to 4. For the SMWT, the distance walked is the total number of feet the participant walked in the 6 minutes. Pain rating ranged from 0, representing no pain, to 10, representing the worst pain possible.

Statistical analyses were conducted using the Statistical Analysis System software, SAS, Version 9.2. The intervention and control groups were compared on their baseline demographic and clinical characteristics using Pearson's chi-square test for the categorical variables and the normal approximation Z-statistic for the non-parametric Wilcoxon two-sample test for continuous variables. The non-parametric test was used for the baseline age because the test for normality for some of the continuous variables indicated that the distribution was not normal. The non-parametric test is based on the ranks of the variables and can be used when sample sizes are small or variables are not

normally distributed. When the data are normally distributed, the results from the non-parametric test will be similar to the results from a *t*-test. Finally, *p*-values of $\leq .05$ were considered significant for all statistical tests.

The mean and standard deviation were calculated for the outcome variables at baseline and 8 weeks for the intervention and control groups. Differences between the veterans receiving the "Vet Walk" intervention and those receiving usual care were compared using two approaches.

First, ANCOVA was used for each outcome to determine whether the outcome at 8 weeks differed significantly between the two groups. Because the number of times the patients walked per week at baseline differed between the intervention and usual care groups, this variable was included in the model to account for these differences. No other variables differed at baseline and were not included in the ANCOVA model. A value of $p \leq .05$ for the F statistic for the treatment effect in the ANCOVA was considered significant, indicating that the intervention and control groups differed on the given outcome measure, after adjusting for the difference in the number of times per week the patients walked at baseline. Following the recommendation of the CONSORT group (Altman et al., 2001), both unadjusted and adjusted means are presented.

Second, a change score, representing the difference between the 8-week values and the baseline values, was also calculated for each patient for each of the primary outcomes. The assumption in a randomized trial is that mean values of the outcomes are not different at baseline between the intervention and control groups. However, the differences between the two time points are presented in the Tables 6 and 7 to allow

visualization of the changes between the two groups over the 8 weeks. This difference was then used in an ANCOVA to test for significant differences in the change score between the two groups for the number of times the subject walked at baseline.

Table 6

Unadjusted and Adjusted[1] Means for the Outcome Variables: Intervention Group (n = 24)[2]

Outcome Variable	Baseline	8 Weeks	Change: Baseline to 8 Weeks[4]
	M (SD)	*M (SD)*	*M (SD)*
HPLP Total Score[3]			
Unadjusted	2.44 (0.43)	2.52 (0.42)	0.08 (0.28)
Adjusted	2.41 (0.70)	2.48 (0.71)	0.07 (0.39)
HPLP Physical Activity Subscale[3]			
Unadjusted	1.82 (0.75)	2.09 (0.65)	0.27 (0.63)
Adjusted	1.89 (0.99)	2.14 (0.92)	0.25 (0.86)
SMWT Distance Walked[3]			
Unadjusted	834.6 (248.4)	1031.6 (255.8)	197.0 (164.5)
Adjusted	875.5 (346.1)	1095.5 (327.5)	220.0 (184.4)
Pain Rating[3]			
Unadjusted	5.08 (2.41)	4.33 (2.85)	-0.75 (2.36)
Adjusted	4.89 (4.40)	4.18 (4.82)	-0.70 (4.09)

Note. 1. Based on the 24 patients randomly assigned to the intervention group who were considered study completers.
2. Means are adjusted for the number of times per week the patients walked at baseline.
3. For HPLP II total score and the physical activity subscale, higher values indicate a better lifestyle. For the SMWT, higher values indicate a farther distance walked. For the pain rating, lower values indicate less pain.
4. Change is the value at 8 weeks minus the value at baseline. For HPLP II total score and physical activity subscale, a positive value for the mean change indicates a better lifestyle at 8 weeks. For the SMWT, a positive value for the mean change indicates an improvement in the distance walked at 8 weeks. For the pain rating, a negative value for the mean change indicates less pain at 8 weeks.

Table 7

Unadjusted and Adjusted[1] Means for the Outcome Variables: Control Group (n = 23)[2]

Outcome Variable	Baseline	8 Weeks	Change: Baseline to 8 Weeks[4]
	M (SD)	*M (SD)*	*M (SD)*
HPLP Total Score[3]			
Unadjusted	2.50 (0.69)	2.59 (0.70)	0.08 (0.38)
Adjusted			
HPLP Physical Activity Subscale[3]	1.94 (0.71)	2.25 (0.75)	0.31 (0.48)
Unadjusted	1.98 (0.98)	2.30 (0.91)	0.32 (0.85)
Adjusted			
SMWT Distance Walked[3]	840.0 (289.2)	871.7 (279.9)	31.7 (73.2)
Unadjusted	826.7 (341.9)	848.3 (323.5)	21.6 (182.1)
Adjusted			
Pain Rating[3]	3.87 (3.39)	4.78 (3.55)	0.91 (3.12)
Unadjusted	3.86 (4.35)	4.72 (4.76)	0.85 (4.04)

Note. 1. Based on the 24 patients randomly assigned to the intervention group who were considered study completers.
2. Means are adjusted for the number of times per week the patients walked at baseline.
3. For HPLP II total score and the physical activity subscale, higher values indicate a better lifestyle. For the SMWT, higher values indicate a farther distance walked. For the pain rating, lower values indicate less pain.
4. Change is the value at 8 weeks minus the value at baseline. For HPLP II total score and physical activity subscale, a positive value for the mean change indicates a better lifestyle at 8 weeks. For the SMWT, a positive value for the mean change indicates an improvement in the distance walked at 8 weeks. For the pain rating, a negative value for the mean change indicates less pain at 8 weeks.

Outcome variables were measured as mean HPLP II scores, physical activity subscale scores, distance in the SMWT, and pain scores. Scores are reported for the control and intervention groups at baseline and at 8 weeks. There were no statistically significant differences in HPLP II total scores or physical activity subscale between

groups. The adjusted mean walking distance for the intervention group increased from 875.5 ft. to 1095.5 ft., while control group increased its adjusted mean walking distance from 826.7 ft. to 848.3. ft. at 8 weeks. The intervention group reported decreased adjusted pain scores after walking, 4.89 at baseline and 4.18 at 8 weeks, and the control group reported increased adjusted pain scores at 8 weeks from 3.86 at baseline to 4.72 at 8 weeks.

Outcome variables measures were examined for statistically significant differences between intervention and control groups. Table 8 shows the F statistic and the associated p-value for the four outcomes. The p-values for the HPLP II, the physical activity subscale, and pain scores were not significantly different, indicating no difference between "Vet Walk" and the usual care for either the 8-week score or the change from baseline to 8 weeks. For the SMWT, the p-value indicates a significant difference in the distance walked between intervention and control groups for both the 8-week and the change from baseline to 8 weeks. There were no significant differences in the pain rating.

Table 8

Differences between Intervention and Control Groups on Outcome Variables

Outcome Variable	F_{df}	p-value
HPLP II Total Score		
8-week score	$F_{1,42} = 0.49$	.4861
Change from baseline to 8 weeks	$F_{1,42} = 0.02$	.8799
HPLP II Physical Activity Subscale		
8-week score	$F_{1,42} = 0.60$	.4434
Change from baseline to 8 weeks	$F_{1,42} = 0.14$	.7083
SMWT		
8-week score	$F_{1,42} = 12.28$	.0011
Change from baseline to 8 weeks	$F_{1,42} = 24.95$	$<.0001$
Pain Rating		
8-week score	$F_{1,42} = 0.27$	.6074
Change from baseline to 8 weeks	$F_{1,42} = 3.11$	.0852

Summary of the Findings

Fifty male veterans over the age of 50 with PAD participated in this study. Of the total, 48 completed the study and the data were analyzed for 47. The study showed no significant change in total HPLP II or physical activity subscale scores post intervention, or self-reported pain scores. There was, however, a significant increase in walking distance as well as a decrease in the self-reported pain score in the intervention group, who had attended "Vet Walk."

CHAPTER 5

SUMMARY OF THE STUDY

PAD is a leading cause of morbidity among older veterans. Due to the high prevalence of PAD among veterans and the increased risk of life-threatening morbidity, this study measured the effectiveness of an educational intervention designed to improve the functional status of veterans with PAD. The results were evaluated for a change in walking distance, measured by the SMWT, and a change in health behaviors as measured by the HPLP II.

This study tested two hypotheses:

H1: Male veterans, ages 50 and older with PAD, who attend a vascular clinic at an urban Veterans Administration hospital and who complete "Vet Walk," an investigator-developed 8-week walking exercise program, will walk farther during a 6-minute walking test following the program, as compared to male veterans who do not participate in the "Vet Walk" program.

H2: Male veterans, ages 50 and older with PAD, who attend a vascular clinic at an urban Veterans Administration hospital and who complete "Vet Walk," an investigator-developed 8-week walking exercise program, will score higher on the HPLP II, as compared to male veterans who do not participate in the "Vet Walk" program.

The HPLP II measures health-promoting behaviors, based on concepts identified by HPM as behavior-specific cognitions affecting behavioral outcomes (Pender et al, 2006). The variable examined in this study, the walking education program, "Vet Walk," has an activity-related effect that may have an impact on walking distance and was identified as a health-promoting behavior in HPM. The "Vet Walk" program components, as they relate to the concepts of HPM, are specific components of self-efficacy, and the perceived benefits of walking and health locus of control are reflected in the "Vet Walk" 30-minute curriculum.

Summary

This study tested the effect of "Vet Walk," a walking program designed for veterans with PAD. "Vet Walk" was designed by this author and pilot tested. "Vet Walk" is a researcher-developed education program that consists of 30 minutes of individual instruction with a registered nurse as well as an explanation of the PAD disease process, the positive effects of walking, identifying barriers to walking, safe walking attire, and the use of a pedometer and walking diary. The two-group randomized study design tested the effectiveness of the "Vet Walk" educational program through measuring changes in walking distance and health scores on the HPLP II among veterans with PAD as compared to veterans with PAD who do not participate in "Vet Walk."

Discussion of the Findings

Pender's HPM provided the conceptual framework for this study and describes the causal mechanisms of health-promoting behavior. Many studies have utilized HPM to examine change in physical activity. HPM also has been used to examine health behavior

changes, such as smoking cessation, alcohol cessation, diet modification, and exercise in all age groups. Increasing physical activity, exercise self-efficacy, exercise benefits and barriers, and commitment to a plan are key HPM components (Pender et al., 2006).

Eden et al. (2002) conducted a review of eight controlled trials involving 9,054 adults that concerned the effects of counseling on physical activity. Six of the trials were considered fair quality, while two were rated as good quality for internal validity. The most common flaw was lack of consistency in counseling and lack of follow-up evaluation. This study utilized a standardized form of counseling to provide consistency.

In a related study, Collins, Johnson, and Souchek (2007) examined several populations including veterans. Collins found no significant difference in walking distance 12 weeks after a tailored education and risk factor modification program. Collin's study had several similarities to this study, including sample size of 50 subjects who were veterans with PAD and who were randomly assigned to an intervention or a control group. Self-reported walking distances of 43.2 meters at baseline increased to 62.3 meters at 12-weeks post-intervention. Collins reported no significant difference in mean walking distance at 12 weeks ($p = .18$), in comparison to this study, which found increased mean walking distance from 834.6 ft. to 1031.6 ft., while the control group increased their walking from 840.0 ft. to 871.7 ft. at 8 weeks (Table 6). Two studies with similar studied outcomes are compared to this study in Table 9.

Table 9

Comparison to Previous Walking Outcome Studies

Study/Design	Study Variable	Outcome
McDermott et al. (2004) (RCT)	SMWT	1135 ft. at baseline 1266 ft. at 12 weeks
Gardner et al. (2001) (RCT)	SMWT	388 ft. at baseline 433 ft. at 6 months
McCoy (2009) (RCT)	SMWT	834 ft. at baseline 1031 ft. at 8 weeks

Similar to this study, Regensteiner (1996) reported an increase in self-reported walking distance ($p = .07$) after a 12-week supervised treadmill training for 29 adults with PAD. No studies were found that measured changes in pain after exercise interventions. This study demonstrated decreased pain after walking, with mean pain at 4.89 at baseline to 4.18 at 8 weeks. (Table 7).

Conclusions and Implications

The morbidity of PAD in the general population and in veteran males includes increasing pain, decreased activity, gangrene toes, and often amputation of legs. With proper nursing management and risk factor control, PAD may remain stable. Walking has been shown to improve functional impairment and decrease pain in persons with PAD. Although the literature endorses the treatment of PAD with exercise, specific instructions and follow-up are often lacking. This research evaluated the effectiveness of an education program, "Vet Walk," which significantly increased walking distance. The program did not, however, increase health promotion scores for veterans with PAD.

Sample size and population resulted in limitations for the study. This study reflected the outcomes only of the participating veterans with PAD from one urban veterans administration hospital. The study is not generalizable to the general population of veterans with PAD; however, the study will provide a basis for further study of veterans, as well as similar populations with PAD.

Recommendations

This study advanced understanding of the efficacy of a structured walking education program for male veterans with PAD. Based on this study, several recommendations are warranted.

1. This study should be replicated using a larger, more diverse sample.

2. Education programs for patients with PAD should emphasize the role of exercise to increase walking distances with less pain. The American College of Sports Medicine provides guidelines for education.

3. Clinicians providing education to persons with PAD should utilize Pender's HPM.

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APPENDIX A

Baylor Institutional IRB Approval

May 19, 2009

BCM
Baylor College of Medicine

SALLY MCCOY
BAYLOR COLLEGE OF MEDICINE
SURGERY: VASCULAR SURGERY DIV.

Baylor College of Medicine
Office of Research
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Houston, Texas 77030
Phone: (713) 798-6970
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H-24919 - BEHAVIORAL OUTCOMES OF AN EDUCATIONAL PROGRAM FOR MALE VETERAN WITH PERIPHERAL ARTERY DISEASE

APPROVAL VALID FROM 5/19/2009 TO 4/20/2010

Dear Dr. MCCOY

The Institutional Review Board for Human Subject Research for Baylor College of Medicine and Affiliated Hospitals (BCM IRB) is pleased to inform you that the research protocol and consent form(s) named above were approved.

The study may not continue after the approval period without additional IRB review and approval for continuation. You will receive an email renewal reminder notice prior to study expiration; however, it is your responsibility to assure that this study is not conducted beyond the expiration date.

Please be aware that only IRB-approved informed consent forms may be used when written informed consent is required.

Any changes in study or informed consent procedure must receive review and approval prior to implementation unless the change is necessary for the safety of subjects. In addition, you must inform the IRB of adverse events encountered during the study or of any new and significant information that may impact a research participants' safety or willingness to continue in your study.

The BCM IRB is organized, operates, and is registered with the United States Office for Human Research Protections according to the regulations codified in the United States Code of Federal Regulations at 45 CFR 46 and 21 CFR 56. The BCM IRB operates under the BCM Federal Wide Assurance No. 00000286, as well as those of hospitals and institutions affiliated with the College.

Sincerely yours,

Julie Katkin, MD

JULIE PAMELA KATKIN, M.D.

Institutional Review Board for Baylor College of Medicine and Affiliated Hospitals

APPENDIX B

VAMC Institutional IRB Approval

MICHAEL E. DeBAKEY VETERANS AFFAIRS MEDICAL CENTER

Memorandum

Date: May 14, 2009

From: Chair, Research & Development (R&D) Committee (580/151)

Subj: Title: Behavioral Outcomes of an Educational Program for Male Veterans with Peripheral Artery Disease

VA ID Number: 09D10.H	Please use this number to identify the protocol when communicating with the VA Research Office.

To: Sally V. McCoy, MS

At the April 23, 2009 Research and Development Committee meeting, the above referenced project was approved with conditions. Those conditions have since been met; the protocol is **APPROVED IN FULL** and you may begin the research.

PLEASE MAKE NOTE OF THE FOLLOWING STIPULATIONS

1. **Documenting patient enrollment**
   When enrolling patients in this project you do NOT need to use the "Research Protocol Entry Note" title in order to flag this patient in CPRS as being enrolled in an interventional research study. However, research notes should be entered in CPRS.

2. **Pharmacy Service**
   If the research involves an investigational drug, please send a copy of the complete protocol, prepared for or by the study sponsor, to Nancy Hewitt or Tai Dinh Vu in Pharmacy Service (mail code 119). **There is a charge for the use of Pharmacy Service. See the VA Research Webpage for details.**

3. **Reporting adverse events, deviations and exceptions**
   All adverse events, deviations from protocol, and exceptions to the human studies protocol must be reported to the IRB through BRAIN. Death or substantive events should also be reported directly to the VA Research Office.

4. **People working on this project must be trained and credentialed.**
   All individuals involved in human research, whatever their role, must have annual training in human research (IRB) and Good Clinical Practice. The PI is responsible for verifying that all members of the research team are able to perform their assigned duties.

5. **National Clinical Trials Registry**
   Please ensure that your clinical trail project is registered with the National Library of Medicine's Clinical Trials Registry BEFORE the first patient is enrolled into the study. Remember, if you do not register your study, you risk not having the ability to publish your results in certain journals Registry information and guidelines are found at website: *http://www1.va.gov/resdew/resources/ORD_Admin/clinical_trials/default.cfm.*

6. **To keep this project active**
   Renew it on an annual basis by completing the project information sheets when these are sent to you. You are also responsible for renewing the human studies and animal protocols through BRAIN on an annual basis. Conducting human research without IRB approval will affect your standing in the VA.

7. **To make changes to the protocol**
   Changes to this protocol that involve humans, animals, biohazard materials, or radioactive materials must be approved before they are implemented. Changes in animal or human research should be submitted as an amendment to the relevant protocol through BRAIN. Changes in biohazard and/or radiation should be noted on the appropriate update application form and submitted to the Research Office, Bldg. 110, room 306.

8. **Acknowledging VA Research Support and VA employment**
   Publications, presentations, media interviews, and similar activities must acknowledge the support of the Department of Veterans Affairs in this research. Acknowledgement is expected not only for direct research funding from the VA, but also for indirect support such as use of VA resources (patients, laboratories, and/or clinical facilities), and the investigator's full-time, part-time, or without compensation (WOC) appointment.

9. **You are responsible for any ethical breaches in the conduct of this research and these may affect your ability to do research with the VA in the future.**

MARK B. KUNIK, M.D.

The Michael E. DeBakey VA Medical Center Research & Development Program is accredited by the National Committee for Quality Assurance for the development and maintenance of an effective Human Research Protection Program.

APPENDIX C

Informed Consent

Department of Veterans Affairs **VA RESEARCH CONSENT FORM** HIPAA Compliant

Subject Name: _____ **Date:** _____

Subject Initials: _____

Principal Investigator: SALLY MCCOY **VAMC:** _____

H-24919 - BEHAVIORAL OUTCOMES OF AN EDUCATIONAL PROGRAM FOR MALE VETERAN WITH PERIPHERAL ARTERY DISEASE

Background

You are invited to take part in a research study. Please read this information and feel free to ask any questions before you agree to take part in the study.

Purpose

To evaluate the efficacy of an education program concerning walking for veterans with peripheral artery disease.

Procedures

The research will be conducted at the following location(s): Baylor College of Medicine, Michael E. DeBakey Veterans Affairs Medical Center.

Male Veterans seen in the vascular clinic and identified with peripheral artery disease will be pre-screened for study criteria per computarized medical record. The study will be discussed with identified subjects. The study will include a questionnaire and completion of a six-minute walk test. Subjects will then be randomized to control group, who will receive standard instructions on PAD or to study group who will attend "Vet Walk", a 30 minute instruction session, which includes a pedometer. All subjects will return in eight weeks to repeat written questionnare and the six-minute walk test. On completion of the study, participants will keep pedometers (control group will be offered the instruction and pedometer).

Potential Risks and Discomforts

There may be lag discomfort presnt with walking, an advance procatica nurse will be present during all testing.

Study staff will update you in a timely way on any new information that may affect your decision to stay in the study.

Potential Benefits

The benefits of participating in this study may be: an increase in walking distance. However, you may receive no benefit from participating.

Alternatives

You may choose to not participate in this study.

VA RESEARCH CONSENT FORM

HIPAA Compliant

Subject Name: _____ **Date:** _____

Subject Initials: _____

Principal Investigator: SALLY MCCOY **VAMC:** _____

H-24919 - BEHAVIORAL OUTCOMES OF AN EDUCATIONAL PROGRAM FOR MALE VETERAN WITH PERIPHERAL ARTERY DISEASE

Subject Costs and Payments

You will not be asked to pay any costs related to this research.

At the completion of day 1 (consent, written testing and walking test and attendance of education program if randomized to intervention group), participant will be given $10.00 VA canteen coupon book and sign receipt. At the completion of day 2 (written testing and walking test), participants will be given $15.00 VA canteen coupon book and sign receipt.

Research personnel will try to reduce, control, and treat any complications from this research. If you are injured because of this study, you will receive medical care that you or your insurance will have to pay for just like any other medical care.

Subject's Rights

Your signature on this consent form means that you have received the information about this study and that you agree to volunteer for this research study.

You will be given a copy of this signed form to keep. You are not giving up any of your rights by signing this form. Even after you have signed this form, you may change your mind at any time. Please contact the study staff if you decide to stop taking part in this study.

If you choose not to take part in the research or if you decide to stop taking part later, your benefits and services will stay the same as before this study was discussed with you. You will not lose these benefits, services, or rights.

Your Health Information

We may be collecting health information that could be linked to you (protected health information). This protected health information might have your name, address, social security number or something else that identifies you attached to it. Federal law wants us to get your permission to use your protected health information for this study. Your signature on this form means that you give us permission to use your protected health information for this research study.

If you decide to take part in the study, your protected health information will not be given out except as allowed by law or as described in this form. Everyone working with your protected health information will work to keep this information private. The results of the data from the study may be published. However, you will not be identified by name.

Subject Name: _____ **Date:** _____

Subject Initials: _____

Principal Investigator: SALLY MCCOY **VAMC:** _____

H-24919 - BEHAVIORAL OUTCOMES OF AN EDUCATIONAL PROGRAM FOR MALE VETERAN WITH PERIPHERAL ARTERY DISEASE

People who give medical care and ensure quality from the institutions where the research is being done, the sponsor(s) listed in the sections above, representatives of the sponsor, and regulatory agencies such as the U.S. Department of Health and Human Services will be allowed to look at sections of your medical and research records related to this study. Because of the need for the investigator and study staff to release information to these parties, complete privacy cannot be guaranteed.

The people listed above will be able to access your information for as long as they need to, even after the study is completed.

If you decide to stop taking part in the study or if you are removed from the study, you may decide that you no longer allow protected health information that identifies you to be used in this research study. Contact the study staff to tell them of this decision, and they will give you an address so that you can inform the investigator in writing. The investigator will honor your decision unless not being able to use your identifiable health information would affect the safety or quality of the research study.

The investigator, SALLY MCCOY, and/or someone he/she appoints in his/her place will try to answer all of your questions. If you have questions or concerns at any time, or if you need to report an injury related to the research, you may speak with a member of the study staff: SALLY MCCOY at 713-794-7263 or 713-794-7892 during the day and (Sally McCoy) at (713-841-4647) after hours.

Members of the Institutional Review Board for Baylor College of Medicine and Affiliated Hospitals (IRB) can also answer your questions and concerns about your rights as a research subject. The IRB office number is (713) 798-6970. Call the IRB office if you would like to speak to a person independent of the investigator and research staff for complaints about the research, if you cannot reach the research staff, or if you wish to talk to someone other than the research staff.

You may withdraw from this study at any time without penalty or loss of VA or other benefits to which you are entitled. Your participation will not affect the way you now pay for medical care at the VAMC. If you would like to verify the validity of the study and authorized contacts, you may speak with a member of the Michael E. DeBakey Veterans Affairs Medical Center research staff at 713-794-7918 or 713-794-7566.

Department of Veterans Affairs **VA RESEARCH CONSENT FORM** HIPAA Compliant

Subject Name: _____ **Date:** _____

Subject Initials: _____

Principal Investigator: SALLY MCCOY **VAMC:** _____

H-24919 - BEHAVIORAL OUTCOMES OF AN EDUCATIONAL PROGRAM FOR MALE VETERAN WITH PERIPHERAL ARTERY DISEASE

Signing this consent form indicates that you have read this consent form (or have had it read to you), that your questions have been answered to your satisfaction, and that you voluntarily agree to participate in this research study. You will receive a copy of this signed consent form.

Subject	Date
Investigator or Designee Obtaining Consent	Date
Witness	Date

APPENDIX D

Health-Promoting Lifestyle Profile II and Permission

Participant No. _____

LIFESTYLE PROFILE II

DIRECTIONS: This questionnaire contains statements about your *present* way of life or personal habits. Please respond to each item as accurately as possible, and try not to skip any item. Indicate the frequency with which you engage in each behavior by circling:

N for never, **S** for sometimes, **O** for often, or **R** for routinely

		NEVER	SOMETIMES	OFTEN	ROUTINELY
	Discuss my problems and concerns with people close to me.	N	S	O	R
2.	Choose a diet low in fat, saturated fat, and cholesterol.	N	S	O	R
3.	Report any unusual signs or symptoms to a physician or other health professional.	N	S	O	R
4.		N	S	O	R
5.	Get enough sleep.	N	S	O	R
6.		N	S	O	R
7.	Praise other people easily for their achievements.	N	S	O	R
8.	Limit use of sugars and food containing sugar (sweets).	N	S	O	R
9.	Read or watch TV programs about improving health.	N	S	O	R
10.	Exercise vigorously for 20 or more minutes at least three times a week (such as brisk walking, bicycling, aerobic dancing, using a stair climber).	N	S	O	R
11.	Take some time for relaxation each day.	N	S	O	R
12.	Believe that my life has purpose.	N	S	O	R
13.	Maintain meaningful and fulfilling relationships with others.	N	S	O	R
14.	Eat 6-11 servings of bread, cereal, rice and pasta each day.	N	S	O	R
15.	Question health professionals in order to understand their instructions.	N	S	O	R
16.	Take part in light to moderate physical activity (such as sustained walking 30-40 minutes 5 or more times a week).	N	S	O	R
17.	Accept those things in my life which I can not change.	N	S	O	R
18.	Look forward to the future.	N	S	O	R
19.	Spend time with close friends.	N	S	O	R
20.	Eat 2-4 servings of fruit each day.	N	S	O	R
21.	Get a second opinion when I question my health care provider's advice.	N	S	O	R
22.	Take part in leisure-time (recreational) physical activities (such as swimming, dancing, bicycling).	N	S	O	R
23.	Concentrate on pleasant thoughts at bedtime.	N	S	O	R
24.	Feel content and at peace with myself.	N	S	O	R
25.	Find it easy to show concern, love and warmth to others.	N	S	O	R
26.	Eat 3-5 servings of vegetables each day.	N	S	O	R

Participant No. _____

	NEVI	SOMETIMES	OFTEN	ROUTINELY
27. Discuss my health concerns with health professionals.	N	S	O	R
28. Do stretching exercises at least 3 times per week.	N	S	O	R
29. Use specific methods to control my stress.	N	S	O	R
30. Work toward long-term goals in my life.	N	S	O	R
31. Touch and am touched by people I care about.	N	S	O	R
32. Eat 2-3 servings of milk, yogurt or cheese each day.	N	S	O	R
33. Inspect my body at least monthly for physical changes/danger signs.	N	S	O	R
34. Get exercise during usual daily activities (such as walking during lunch, using stairs instead of elevators, parking car away from destination and walking).	N	S	O	R
35. Balance time between work and play.	N	S	O	R
36. Find each day interesting and challenging.	N	S	O	R
37. Find ways to meet my needs for intimacy.	N	S	O	R
38. Eat only 2-3 servings from the meat, poultry, fish, dried beans, eggs, and nuts group each day.	N	S	O	R
39. Ask for information from health professionals about how to take good care of myself.	N	S	O	R
40. Check my pulse rate when exercising.	N	S	O	R
41. Practice relaxation or meditation for 15-20 minutes daily.	N	S	O	R
42. Am aware of what is important to me in life.	N	S	O	R
43. Get support from a network of caring people.	N	S	O	R
44. Read labels to identify nutrients, fats, and sodium content in packaged food.	N	S	O	R
45. Attend educational programs on personal health care.	N	S	O	R
46. Reach my target heart rate when exercising.	N	S	O	R
47. Pace myself to prevent tiredness.	N	S	O	R
48. Feel connected with some force greater than myself.	N	S	O	R
49. Settle conflicts with others through discussion and compromise.	N	S	O	R
50. Eat breakfast.	N	S	O	R
51. Seek guidance or counseling when necessary.	N	S	O	R
52. Expose myself to new experiences and challenges.	N	S	O	R

HPLP II Scoring Instructions

HEALTH-PROMOTING LIFESTYLE PROFILE II

Scoring Instructions

Items are scored as	Never (N)	1
	Sometimes (S)	2
	Often (O)	3
	Routinely (R)	4

A score for overall health-promoting lifestyle is obtained by calculating a mean of the individual's responses to all 52 items; six subscale scores are obtained similarly by calculating a mean of the responses to subscale items. The use of means rather than sums of scale items is recommended to retain the 1 to 4 metric of item responses and to allow meaningful comparisons of scores across subscales. The items included on each scale are as follows:

Health-Promoting Lifestyle	1 to 52
Health Responsibility	3, 9, 15, 21, 27, 33, 39, 45, 51
Physical Activity	4, 10, 16, 22, 28, 34, 40, 46
Nutrition	2, 8, 14, 20, 26, 32, 38, 44, 50
Spiritual Growth	6, 12, 18, 24, 30, 36, 42, 48, 52
Interpersonal Relations	1, 7, 13, 19, 25, 31, 37, 43, 49
Stress Management	5, 11, 17, 23, 29, 35, 41, 47

3/95: snw

PERMISSION FORM

I plan to use the *Health-Promoting Lifestyle Profile II* in a research or evaluation project entitled:
Behavioral Outcomes of an Educational Program for Male Veterans with Peripheral Artery Disease: Teaching Vets to Walk the Walk.
I am enclosing a check for twenty US dollars ($20.00) payable to the University of Nebraska Medical Center College of Nursing.

☐ English ☐ Spanish ☒ Both

Sally McCoy
Print Name

Signature Sally McCoy RN, ANP-C

Adult Nurse Practitioner / Doctoral student
Position

Area Code Telephone #

Mailing Address

E-mail Address

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Susan Noble Walker

Date 4/17/06

Please send two signed copies of this page to:

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6/10/04

APPENDIX E

Six-Minute Walk Test

Distance walked

Number of rest periods ____

Pain rating for 6-minute walk (0-10) ____

APPENDIX E

Demographic and Health Questionnaire

Participant No. _____

Age _____

Race:

Caucasian _____
African American
Hispanic _____
Asian _____
Other (please specify) _____

Education:

Some high school _____
High school graduate _____
Some college _____
College graduate _____

Has any healthcare provider instructed you to walk?

Yes _____ No _____

How often do you walk for exercise?

Never _____ 1-2 days/week _____ 3-4 days/week _____ 5-7 days/week _____

Smoking history:

Never smoked _____
Previous smoker _____
PPD _____ Years
Current smoker
PPD Years

Medical conditions:

High blood pressure _____
Heart disease _____
Diabetes _____
High cholesterol _____
Previous stroke or TIA