ABSTRACT

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Pre- and postassessments were used to determine the impact of HPR 105, Creating a Healthy, Active Lifestyle on college students' (N = 986) change in physical activity level over the course of the fall 1998 semester. The assessments consisted of demographic questions, decisional balance measurements, and a transtheoretical model of change instrument. Qualitative questions were asked on the postassessment. Results indicated a slight decrease in physical activity level from pre- to postassessment. However, compared to national standards, the sample was more physically active than the average person of the same age. Decisional balance measures were consistent with the literature, physically active individuals supported the Pros, and sedentary individuals supported the Cons. Qualitative data provided information pertaining to how physically active the individuals were and the impact of HPR 105 on their activity level, but no pattern regarding ways to change the course emerged. This pilot study was conducted to establish a foundation for future research.

APPLICATION OF THE TRANSTHEORETICAL MODEL OF BEHAVIOR CHANGE TO PHYSICAL ACTIVITY BEHAVIOR IN A COLLEGE EDUCATION COURSE

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CHAPTER I

INTRODUCTION

Background

Over 2.3 million people die every year in the U.S. (Anderson, Kochanek, & Murphy, 1997) and over half of these deaths could have been prevented if people had modified their personal behaviors (Assessing Health Risks in America, 1998). Activities such as tobacco use, poor diet, drug use, including alcohol, violence, risky sexual behaviors, lack of preventive services, and lack of physical activity all contribute to early death rates (Assessing Health Risks in America, 1998). The Youth Risk Behavior Surveillance System (YRBSS) has determined that there are six major risk behaviors that cause most of the serious health problems for youth and young adults. The behaviors include unintentional and intentional injuries, tobacco use, drug use, including alcohol, sexual behaviors, unhealthy dietary patterns, and physical inactivity (Centers for Disease Control and Prevention [CDC], 1995a). Action toward modification of these behaviors is necessary if prevention of unwanted health problems is to occur.

Healthy People 2000 has established goals to reduce these behaviors by the year 2000: (a) increase the healthy life span of people, (b) reduce the health disparities of people, and (c) assure ability to access preventive services to all people. This document contains 319 main health objectives divided into 22 priority areas. The areas in which the most progress has been made are heart disease, stroke, cancer, and unintentional injury.

The areas where the least amount of progress toward goals has been made includes diabetes and other chronic conditions, occupational safety and health, mental health and mental disorders, violence and abusive behavior, and physical inactivity (Physical Health and Activity, 1996). There is the need for additional lifestyle behavior change among a large group of people if these national health goals are going to be reached, especially as the time allocated to reach these goals is quickly diminishing.

According to the Surgeon General's Report, physical inactivity alone results in millions of Americans suffering from preventable illnesses and diseases (Physical Health and Activity, 1996). Problems such as (a) coronary heart disease, (b) adult-onset diabetes, (c) colon cancer, (d) hypertension, and (e) obesity result from improper personal health care (Physical Health and Activity, 1996). Many of these health problems could be prevented if people could motivate themselves toward an exercise program, especially those individuals who initially have no desire or interest to exercise. There are few programs designed to help people who have no interest or desire in becoming physically active; however, these are individuals who stand to benefit the most from an increase in their activity level.

Individuals have identified a variety of reasons they feel prevent them from becoming physically active: (a) women claim a lack of time due to increased responsibility (Henderson & Marble, 1996; Marcus, Pinto, Simkin, Audrain, & Taylor, 1994), (b) facilities are inconvenient, (c) boredom occurs while exercising, (d) exercising makes people stiff and sore the next day (American Heart Association, 1998), (e) some people have a low self-efficacy about exercising (Marcus, Eaton, Rossi, & Harlow, 1994; Marcus

& Owen, 1992; Marcus, Rakowski, & Rossi, 1992), (f) people are deterred due to poor or limited knowledge about proper exercising habits, and (g) fear of injury (Marcus, King, Clark, Pinto, & Bock, 1996)

The challenge for health educators and physicians is how to demonstrate that including regular physical activity into daily routines will help increase others physical and mental health. It has been shown that incorporating physical activity into an individual's lifestyle will help them live longer, healthier, and more independent lives (Assessing Health Risks in America, 1996; National Center for Health Statistics [NCHS], 1997). The Surgeon General's Report (1996) stated that regular physical activity decreases the risk of cardiovascular disease, colon cancer, and noninsulin-dependent diabetes. In addition, it may reduce the risk of depression, arthritis, and osteoporosis, as well as improve health-related quality of life (Physical Activity and Health, 1996). However, only 22% of adults are active, 54% are somewhat active (do not reach the standards set by the American College of Sports Medicine), and 24% or more are completely sedentary (Pate et al., 1995).

Prochaska developed the transtheoretical model of change to facilitate modification of poor health behaviors. Due to the health problems associated with lack of physical activity, this researcher chose Prochaska's model for this research project. All five stages of change were incorporated into the project: (a) precontemplation (not even considering becoming active), (b) contemplation (considering making changes in lifestyle to incorporate physical activity), (c) preparation (making even the smallest attempts at incorporating physical activity, (d) action (actively engaging in physical activity on a more

regular basis, and (e) maintenance (actively engaging in physical activity on a regular basis for at least 6 months) (Marcus, Eaton, et al., 1994; Marcus, Goldstein, et al., 1997; Marcus & Owen, 1992; Marcus, Rakowski, et al.,1992; Marcus & Simkin, 1993; Marcus, Simkin, Rossi, & Pinto, 1996). The model is based upon the idea that people progress at varying rates and tend to form a cyclic pattern between progression and regression (Herrick, Stone, & Mettler, 1997; Marcus, Eaton, et al., 1994; Marcus & Owen, 1992; Marcus, Rakowski, et al., 1992; Marcus, Simkin, et al., 1996; Pinto & Marcus, 1995). Many factors play a role in deciding how fast people move from one stage to another, as well as how long they remain in a specific stage. A few examples of these factors are what stage the individual began in, how much additional support the individual receives, what incentives they believe they have to change their behavior, and how much trouble they have to go through to change their behavior. Additional constructs of self-efficacy, decisional balance, and processes of change are used to help people change their lifestyles.

Previously, behavior problems such as smoking cessation, substance abuse, including alcohol, AIDS prevention, anxiety and panic disorders, eating disorders and obesity, and mammography screening (Prochaska & Velicer, 1997) have used the transtheoretical model of change to facilitate appropriate behavior changes. Progress has been made within each of these areas and the application of the model has been expanded to explore other areas. More recently, researchers have begun to utilize the transtheoretical model of change to facilitate physical activity behavior change through this stage specific approach. Studies have been conducted at the worksite (Marcus, Emmons, et al., 1997), specifically with employed women (Marcus, Pinto, et al., 1994), in

combination with physician counseling (Marcus, Goldstein, et al., 1997), and in combination with smoking cessation programs (Emmons, Marcus, Linnan, Rossi, & Abrams, 1994). However, very little research has been done with the college age population.

Purpose of the Study

The purpose of the study was to determine if the UW-La Crosse general education course HPR 105, Creating a Healthy, Active Lifestyle, influenced changes in staging specific to physical activity from the beginning to the end of the semester. For example, students may have begun the semester in precontemplation and moved into the contemplation stage by the end of the semester. In addition, the Pros and Cons of exercise (decisional balance) were examined to determine if they correlated appropriately with the stages of change.

Statement of the Problem

According to the Surgeon General's Report, the more people partake in regular physical activity, the less likely they are to develop and/or die from some of the leading causes of death and illness (Physical Activity and Health, 1996). However, millions of Americans suffer from illnesses that could easily have been prevented with behavior changes, such as regular physical activity (Physical Activity and Health, 1996). This continual lack of physical activity starting in youth will continue to result in unwanted health problems, often leading to premature death.

Studies conducted in 1995 with high school students determined that their physical activity levels were too low. According to the Youth Risk Behavioral Surveillance System

(Centers for Disease Control and Prevention [CDC], 1995b), 36% of these students did not participate in vigorous physical activity and 79% did not participate in moderate physical activity. In 1996, the Surgeon General's Report indicated that one half of young adults, ages 12-21 years, do not participate in vigorous physical activity (Physical Activity and Health). In addition, the National Center for Health Statistics has determined that one fourth of the entire population is not physically active (Physical Activity and Health, 1996). Thus, it is anticipated that a significant proportion of the students enrolled in HPR 105 will not be physically active upon entering the course.

Need for the Study

HPR 105 has previously used the transtheoretical model of change as part of its curriculum. The faculty have conducted studies concerning the effectiveness of HPR 105 in general. However, to date, faculty have not examined physical activity behavior through the stages of change model. This study provided information about the impact of the class serving as an impetus toward increasing movement through the stages of change pertaining to physical activity. This information will be helpful to the faculty so they can determine what type of changes or modifications, if any, need to be made to the curriculum, specific to physical activity, to facilitate greater changes through the stages. This pilot study will provide a foundation for future researchers when examining the impact of particular elements of the course.

Research Questions

Q_1 = Does enrollment and participation in HPR 105 affect students' stage of change from the beginning of the semester to the end of the semester?

Q_2 = Which stage (precontemplation, contemplation, preparation, action, and maintenance) do the most students enrolled in HPR 105 move (positively and negatively) from the beginning of the semester?

Q_3 = In which direction (positive or negative) do most students enrolled in HPR 105 move throughout the semester?

Q_4 = As a group measure, do the decisional balance measurements support the stages of change?

Q_5 = From the students' perspective, what factors from HRR 105 had the most significant impact on their ability to move through the stages of change?

Q_6 = From the students' perspective, what factors were missing from HPR 105 or need to be changed so individuals may have more success moving through the stages of change?

Assumptions

This study made the following assumptions:

1. The majority of students in HPR 105 provided an accurate perception of their current stage on the assessment instrument.

Delimitations

This study had the following delimitations:

1. Subjects of this study were delimited to students enrolled in HPR 105 during the fall 1998 semester who signed consent forms giving permission to participate in the study and who were present on the days the instrument were given.

Limitations

This study had the following limitations:

1. HPR 105 is a required general education course of all university students. Only those enrolled in the 1998 fall semester were utilized in this study. Since this does not reflect a random sample, the ability to generalize results is limited.
2. Some of the students enrolled in HPR 105 were initially in the maintenance stage, thus no further progress could be accounted for using this model. However, the ability of students to remain in this stage during the semester was assessed.

Definition of Terms

The following terms were used in this study:

Active Lifestyle - an adult should accumulate at least 30 minutes of moderate-intensity physical activity 7 days per week. An individual can perform the activity all at once or accumulate several bouts of exercise throughout the course of the day until they reach their target goal (NCHS, 1997; Pate et al., 1995).

Decisional Balance - the Pros (advantages or positive aspects of changing behavior) and Cons (disadvantages or negative aspects of changing behavior) of behavior change (Prochaska, Redding, Harlow, Rossi, & Velicer, 1994).

Processes of Change - strategies and techniques used to modify experiences and/or environments so progress can be achieved through the stages of change (Marcus, King, et al., 1996; Marcus & Simkin, 1994; Marcus, Simkin, et al., 1996; Pinto & Marcus, 1995).

Self-Efficacy - the ability and self-confidence to engage in positive behaviors and abstain from problem-type behaviors (Marcus & Simkin, 1994; Prochaska & Velicer, 1997).

Stage of Change - time period, short or long, during which behavioral intentions or actual behaviors may change. Stages are both stable and dynamic in nature (Marcus & Simkin, 1994; Marcus, Simkin, et al., 1996).

Transtheoretical Model of Change - an integrative framework that provides a series of stages for people to progress through to change a problem behavior (Marcus, Eaton, et al., 1994; Marcus, Simkin, et al., 1996). The model considers the current behavioral status, as well as the intention to maintain or change that pattern of behavior (Marcus, Goldstein, et al.,1997). The stages of change include (a) precontemplation, (b) contemplation, (c) preparation, (d) action, and (e) maintenance (Marcus, Eaton, et al., 1994; Marcus, Goldstein, et al., 1997; Marcus & Owen, 1992; Marcus & Simkin, 1994; Marcus, Simkin, et al., 1996). In addition, there are ten processes that individuals use to help progress along the continuum (Marcus, King, et al., 1996; Marcus & Simkin, 1994; Marcus, Simkin, et al., 1996; Pinto & Marcus, 1995). The progression is not always linear due to relapses individuals have at particular stages, thus creating a cyclical property prior to final behavior modification (Marcus, Banspach, et al., 1992; Marcus, Eaton, et al., 1994; Marcus & Owen, 1992).

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

The incorporation of physical activity into everyday lives has been an issue of debate within the second half of the century. In 1995, the Dietary Guidelines for Americans included physical activity as part of their program to maintain and improve weight (Physical Activity and Health, 1996). In 1996, the Surgeon General's report indicated that there is scientific evidence that supports the benefits of physical activity (Physical Activity and Health, 1996). There continues to be growing evidence of the benefits of physical activity.

The transtheoretical model of change has recently been applied to help individuals change their physical activity levels. This theoretical model takes into account an individual's intention to change as well as their actual degree of change (Marcus & Simkin, 1993). Researchers have used this model with a variety of behaviors, thus the rationale for using it for this pilot study. In this chapter, the researcher presents information on physical activity, the transtheoretical model of change, and previous success with the theory.

Physical Activity

According to the Surgeon General, physical activity means walking briskly, vacuuming, jogging, digging in the garden, climbing stairs, or any other physical activity

where exertion is similar to these activities. Regular physical activity means accumulating 30 minutes or more in the above activities most days of the week. In particular, light to moderate physical activity is activity that requires sustained, rhythmic muscular movements, where as vigorous physical activity requires rhythmic, repetitive activity incorporating large muscle groups at 60% or more of maximum heart rate (National Center for Health Statistics [NCHS], 1997). The issues of physical activity include: (a) problems associated with inactivity, (b) why be physically active, (c) Healthy People 2000 goals, (d) ways to incorporate physical activity in lifestyle, and (e) benefits of physical activity.

Problems Associated with Inactivity

Fifty million people have high blood pressure and over 60 million people, 1/3 of the population, are overweight (Physical Activity and Health, 1996). Eight million people have adult-onset (noninsulin-dependent) diabetes and 95,000 people are diagnosed with new cases of colon cancer (Physical Activity and Health, 1996). In addition, 13.5 million people have coronary heart disease and 1.5 million people suffer from heart attacks in any given year (Physical Activity and Health, 1996). Considering heart disease is the leading cause of death in the United States, these numbers do not show that much improvement is being made (Physical Activity and Health, 1996). Millions of Americans suffer from illnesses or diseases that could have been prevented or improved with regular physical activity (Physical Activity and Health, 1996). "However, the majority of the population is sedentary and therefore at increased risk for morbidity and mortality" (Marcus, King, et al., 1996, p. 321).

Why be Physically Active

Currently, more than 60% of American adults are not regularly physically active and 25% are classified as sedentary (Physical Activity and Health, 1996). In addition, about 14% of all young people are not physically active, and 14% of females and 7% of males are completely sedentary (Physical Activity and Health, 1996). These individuals are all at an increased risk of physical, psychological, mental, and emotional health problems. Many could improve their health and quality of life if they incorporated moderate amounts of daily physical activity (Physical Activity and Health, 1996).

According to the Surgeon General's Report, regular physical activity reduces the risk of developing and/or dying from some of the leading causes of death and illness in the United States (Physical Activity and Health, 1996). More specifically, it declared that physical activity actually reduces the risk of premature mortality, coronary heart disease, hypertension, colon cancer, and diabetes mellitus. Physical activity also improves mental health, as well as the health of bones, joints, and muscles (Physical Activity and Health, 1996).

In 1997, a review of Healthy People 2000 stated that people should make choices that support being physically active for the following reasons: (1) it helps protect us against such things as heart disease and hypertension, (2) physically active people tend to outlive those that have never been very active, and (3) the quality of life tends to be better for elderly people who have been active throughout their lives (NCHS, 1997). However, some people tend to make choices concerning their personal health that do not support being physically active. In fact, over half of the two million deaths each year are due to

choices people make regarding physical activity, poor diet, drug use, including alcohol and tobacco violence, risky sexual behaviors, and lack of preventive services (Assessing Health Risks in America, 1998). Efforts to reduce these behaviors has begun, but more information about who needs assistance, as well as education on the extent to which they are endangering themselves is needed (Assessing Health Risks in America, 1998).

Some large corporations and companies have realized the impact being physically active can have on their employees. Money has been saved and productivity has increased by those individuals who have participated in health promotion activities. Employee wellness programs, fitness centers, and exercise programs have been developed and incorporated by some large companies with the expectation of saving money on health insurance and seeing greater employee performance. Results thus far have been promising and large companies consider incorporating health promotion ideas as cost control measures. On the otherhand, small companies have not always chosen the same route. Many small companies won't incorporate such ideas because they believe it is a waste of time and money. However, there are examples such as Kearney Orthopedic and Fracture Clinic, both of Kearney, Nebraska, which implemented health promotion into their businesses and obtained great results. These support the premise that health promotion at the workplace can benefit both the employee and the employer (Barrier, 1997).

Healthy People 2000 Goals

The purpose of Healthy People 2000 is to promote health and prevent disease through changes in lifestyle and environmental factors (DHHS Releases Latest Progress Report on Prevention, 1995-1996). The three broad goals established by the committee of

Healthy People 2000 were to increase the healthy life span of people, to decrease health disparities among Americans, and to assure that all Americans have access to preventive services (DHHS Releases Latest Progress Report on Prevention, 1995-1996). To achieve these goals, 319 specific objectives were established. Physical activity was incorporated into 13 of these objectives (DHHS Releases Latest Progress Report on Prevention, 1995-1996; Physical Activity and Health, 1996). All 319 specific objectives were then further divided into 22 priority areas (DHHS Releases Latest Progress Report on Prevention, 1995-1996).

By 1995, 8% of the goals had been reached or surpassed and progress had been made toward 40% of the other objectives. However, 18% of the objectives showed movement in the opposite direction of the target goal, 5% showed mixed results, and 3% showed no movement in any direction. Over a quarter of the objectives could not be measured due to extenuating circumstances. Specifically regarding physical activity, progress was made in the number of people participating in moderate to vigorous activity. However, 25% of the population was still not active at all. When compared to other objectives, physical activity was one of the objectives that showed the least amount of progress, actually showing movement away from the target goals. Much effort will need to take place if the nation is to reach the fitness objectives by the year 2000 (Marcus, Eaton, et al., 1994).

Ways to Incorporate Physical Activity in Lifestyle

The American Heart Association (1998) has provided many tips for individuals regarding how to be successful when being physically active. The list of tips includes the

following: (1) choose an activity that is fun; (2) do a variety of activities so that boredom does not set in; (3) exercise with a friend, family member, or group of people that will supply encouragement and support; (4) listen to music while exercising; (5) wear the proper apparel when exercising; (6) don't overdo things right away; (7) slowly work toward target level of fitness; and (8) record results as a motivator.

Daily physical activity has been shown to be effective in schools, worksites, and health care settings (Physical Activity and Health, 1996). However, only 19% of all high school students are physically active for 20 minutes or more, 5 days per week in physical education classes (Physical Activity and Health, 1996). The opportunity to introduce appropriate levels of physical activity are available in many classrooms. Physical education, health, and science classes all could provide lessons on the benefits of being physically active.

Businesses have developed many ways to help their employees be physically active because they have found it to be beneficial for them as well. Some of their ideas include: (1) work out a deal with health clubs or centers so employees can purchase reduced membership rates; (2) formulate walking, hiking, biking, etc. clubs or groups from the office; (3) provide incentives for employees to become physically active, such as fitness gear or movie passes; and (4) involve spouses and family members in the membership packages (Barrier, 1997). Support from family and friends has shown to have a positive effect on regular physical activity levels. Thus, businesses have incorporated this idea in many of their motivation strategies (Physical Activity and Health, 1996).

Communities can also help individuals to become more physically active. One of the first things community school boards can do is hire physical education specialists to instruct students on how to become or stay physically active. In this regard, students need to have access to school buildings and other recreational facilities so they can participate safely in physical activities. Good role models should also be available for all community members to associate with and participate in physical activities. Additionally, the activities need to be fun and enhance confidence and self-esteem of the participants. If activities are not enjoyable and rewarding, participants will find something else to do (Physical Activity and Health, 1996).

Health care providers should also talk about the importance of being physically active with all of their patients. Individuals, young and old, male or female, Asian, Hispanics, Hmong, or Caucasian all need physical activity as part of their lives. Segments of communities have the ability to help all people realize the need for physical activity in their lives, as well as to learn how to incorporate it (Physical Activity and Health, 1996).

Within the past five years, communities in Canada have been working with a concept called Active Living. The focus is to implement characteristics of active living into everyone's lives. This concept includes involving the body, the mind, the spirit, the emotions, and the social aspects of being active on a daily basis. Individuals go beyond just the physical aspects of health and do things for reasons above and beyond just trying to get fit and trim. For example, many individuals on Earth Day tried to walk to their destinations not only to save the earth from air pollution, but to increase their physical activity levels as well. Ideas and events such as these appeal to more than just one of the

dimensions of health, thus encourage people to participate. One suggestion to help create more events like these is to have leisure service professionals and health, physical education, and recreation professionals work together (Swedburg & Izso, 1994).

Benefits of Physical Activity

In the past, most people thought they had to participate in vigorous physical activity in order to reap health benefits. However, there is accumulating evidence that moderate activity is associated with positive health benefits (Marcus, King, et al., 1996; Physical Activity and Health, 1996). In addition, the Center for Disease Control and Prevention and the American College of Sports Medicine have stated that accumulating bouts of physical activity throughout the day has many of the same benefits as continuous activity (Physical Activity and Health, 1996). As such, the required intensity and duration of physical activity to achieve positive health benefits have been modified within the past few years.

Some of the many benefits of being physically active are as follows: (1) people of all ages, male or female, can reduce their risk of premature mortality, coronary heart disease, hypertension, colon cancer, and diabetes mellitus (Marcus, Rakowski, & Rossi, 1992; Nieman, 1998; Physical Activity and Health, 1996); (2) people who already have high blood pressure can reduce their blood pressure (Nieman, 1998; Physical Activity and Health, 1996); (3) people can reduce feelings of depression and anxiety and promote psychological well-being (Nieman, 1998; Physical Activity and Health, 1996); (4) people can control weight more effectively and reduce body fat percentage (Nieman, 1998; Physical Activity and Health, 1996); (5) people can build up and maintain strong and

healthy bones, muscles, and joints (Nieman, 1998; Physical Activity and Health, 1996); and (6) older adults are stronger and better able to move without falling, thus having fewer injuries (Physical Activity and Health, 1996). Peoples' physical and mental health is affected by physical activity level because physical activity level influences a variety of diseases, as well as other conditions (Marcus, Rakowski, et al., 1992).

In addition to the previously noted benefits, Nieman noted benefits to specific groups of people. For example, individuals who are infected with the HIV virus have an improved quality of life through physical activity. The elderly also have an improved quality of life, as well as an improved life expectancy. Specific issues pertaining to women include improved total fitness, improved fitness level for women who are pregnant, and improved health during menopause. Nieman further noted that self-esteem is increased for individuals who are regularly physically active (1998).

Transtheoretical Model of Change

"The transtheoretical or stages of change model integrates current behavioural status with a person's intention to maintain or change their pattern of behaviour" (Marcus, King, et al., 1996, p. 326). Thus, the model provides a framework for investigating how people try to change their adverse behavior. The model consists of the three basic constructs: a) stages of change, b) decisional balance, and c) self-efficacy. Readiness to change and processes of change are also integral parts of the model (Marcus, Eaton, et al., 1994).

Stages of Change

There are five distinct stages of change that compose the transtheoretical model of change: precontemplation, contemplation, preparation, action, and maintenance. If an individual is in the stage of precontemplation, the individual is not intending to make any changes in their lifestyle. If they are in the stage of contemplation, they are considering making changes to their lifestyle. If they are in preparation, they are making small changes. If they are in action, they are actively engaging in the new behavior. Finally, if they are in maintenance, they are sustaining the change over time (Marcus, Eaton, et al., 1994; Marcus & Owen, 1992; Marcus, Rakowski, et al., 1992; Marcus & Simkin,1993; Marcus, Simkin, Rossi, & Pinto, 1996; Pinto & Marcus, 1995).

The intention of the model is to have a problem behavior cease to exist. The stages of change were developed to allow individuals to be in various stages while attempting to change their behaviors. Some individuals are trying to make a change, while others have no intention. The movement is intended to be linear from precontemplation to maintenance; however, cyclic movement does occur as individuals regress during the process of making a change (Herrick, et al., 1997; Marcus, Eaton, et al., 1994; Marcus & Owen, 1992; Marcus, Rakowski, et al., 1992; Marcus, Simkin, et al., 1996; Pinto & Marcus, 1995). Relapse is not considered a stage. Individuals progress and regress at varying degrees depending on many outside factors (Marcus, Eaton, et al., 1994; Marcus & Simkin, 1993; Pinto & Marcus, 1995).

In certain situations, the stages of change are collapsed into three stages instead of the standard five. In these cases, the first stage consists of individuals who are not

intending to make change. The second stage consists of individuals who are starting to make small changes, but nothing drastic. The last stage consists of individuals who are currently engaging in a new behavior (Marcus & Simkin, 1993; Patrick, et al., 1994). The stages are very similar, but not as detailed.

Decisional Balance

"Decisional balance reflects the individual's relative weighing of the Pros and Cons of changing" (Prochaska & Velicer, 1997, p. 40). Janis and Mann (1977) originally developed the model of decision making, but after much review, it was shortened to just the Pros and Cons of change. Pros are statements that represent the perceived positive aspects of change, or the enhancers of change. Cons are statements that represent the perceived negative aspects of change, or the inhibitors of change (Herrick, et al., 1997). The Pro statements coincide with those individuals in action and maintenance, while the Con statements tend to coincide with those individuals in precontemplation and contemplation (Marcus, Eaton, et al., 1994; Marcus & Owen, 1992).

Self-Efficacy

"Self-efficacy is the situation-specific confidence people have that they can cope with high risk situations without relapsing to their unhealthy or high risk habit (Prochaska & Velicer, 1997, p. 40). Bandura (1977) first discussed the importance of self-efficacy pertaining to individuals changing behaviors. More change will take place when individuals have maximal self-efficacy, or total confidence in themselves. As noted earlier, the Pros and Cons of change are important, but self-efficacy is more important, as well as more related to the stages of change (Marcus, Eaton, et al., 1994).

Individuals with high self-efficacy tend to be in the stages of action and maintenance. In addition, individuals with low self-efficacy tend to be in the stages of precontemplation and contemplation (Marcus, Eaton, et al., 1994; Marcus & Owen, 1992). Patrick, et al., (1994) stated that self-efficacy was vital to the continuance of behavior change.

Readiness to Change

Studies have indicated that in addition to having more Pros than Cons and high self-efficacy, an individual must be ready to change their behavior before change will actually occur (Marcus, Simkin, et al., 1996). Individuals must want to make some type of change before they will even consider the idea.

Processes of Change

"Processes of change are the covert and overt activities that people use to progress through the stages of change" (Prochaska & Velicer, 1997, p. 39). Theoretically, these strategies and techniques were developed to help people progress through the stages of change (Marcus, King, et al., 1996; Marcus, Simkin, et al., 1996; Pinto & Marcus, 1995). Thus far, there have been 10 processes that have received the most support in the research. These processes have been further broken down into two constructs, experiential and behavioral. In 1996, Marcus, Simkin, et al. stated that the experiential processes were most beneficial to those individuals in the beginning stages of change. The behavioral processes were identified as being most beneficial to those individuals in the later stages of change. Thus, individuals in each stage have specific processes in which to engage to help them progress to the next stage of change (Pinto & Marcus, 1995) (see Appendix A).

Previous Research with the Transtheoretical Model of Change

The transtheoretical model of change has been used to bring about change with many problem behaviors. Previously, it has been successful with a variety of addictive behaviors such as alcohol abuse, cocaine abuse, and smoking acquisition and cessation. Diet and weight control, mammography screening, risky sexual behaviors, and sun exposure and sunscreen have also supported the use of the model (Prochaska, et al., 1994). In addition, recent studies with physical activity level have shown to positively support the model.

Health Studies Using the Transtheoretical Model of Change

Early research with the transtheoretical model of change has included: (1) smokers involved in self-change (Prochaska & DiClemente, 1983); (2) HIV risk reduction and sexual behavior change (Prochaska, et al., 1994); (3) smoking and a sedentary lifestyle (King, Marcus, Pinto, Emmons, & Abrams, 1996); (5) nutrition and psychosocial factors (Brug, Glanz, & Kok, 1997); (6) women and mammography (Flynn, 1997; Rakowski, et al., 1992); (7) motivation and exercise (Marcus & Owen, 1992); and (8) individualized, motivationally tailored physical activity intervention and efficacy (Marcus, Bock, et al., 1998). Much of the earlier research pertained to changing problem behaviors and eliminating something from a person's lifestyle. More recent research is attempting to change behaviors to promote healthier living by adding something to a person's lifestyle. Physical activity is one example.

Physical Activity Studies Using the Transtheoretical Model of Change

In a study done by Marcus and Simkin (1993) participants from a worksite health promotion project determined their current stage of change pertaining to physical activity level by answering a questionnaire and self-reporting physical activity for seven days. To facilitate interpretation, the stages were collapsed from the original five stages to three groups. Precontemplation and contemplation comprised the first group, preparation the second, and action and maintenance the third. Results indicated that there were significant differences in physical activity levels between the three groups. Individuals in action and maintenance reported more vigorous and moderate activity than any other stage. In addition, individuals in preparation reported more vigorous and moderate activity than those in precontemplation and contemplation. This baseline study illustrated that stage of change does pertain to physical activity level in similar manner to that of smoking cessation. Marcus and Simkin (1993) concluded that the challenge of initiating and maintaining physically active lives remains a challenge for health professionals.

In 1998, Marcus et al. conducted a study to address motivation and physical activity level. They recruited sedentary community members to participate in their study. They assessed their current stage of change, readiness to change, self-efficacy, and decisional balance pertaining to physical activity. Then, they divided the population into two groups. Throughout the study, one group received information that was intended to motivate them according to their indicated preassessment results, as well as standard self-help information. The other group was only provided with the standard self-help information. Upon conclusion of the study, those individuals who received individualized

information made better progress increasing their physical activity levels than those that received only the standardized information. The authors indicated that more research needs to be done before generalizations can be made about the effects of individualized information on motivation for physical activity.

Additional studies pertaining to physical activity levels have been conducted with community members (Marcus, Banspach, et al., 1992), women (Marcus, Pinto, et al., 1994), worksite (Marcus, Simkin, et al., 1996), and physician counseling (Marcus, Goldstein, et al., 1997). Not much research has included the college age population. Pinto and Marcus conducted a pilot study in 1995 to examine self-reports of physical activity levels among college students. Their results indicated that more stage-matched interventions must be available if this group is going to attempt to increase their physical activity levels.

Summary

The transtheoretical model of change helps people to understand how to change a variety of problem behaviors. When all aspects of the model are appropriately incorporated into the process, change most likely occurs. The following factors have an impact of the promptness of the outcome: (1) initial stage of change (2) number of Pros and Cons for the behavior, (3) amount of self-efficacy, (4) processes of change being used, and (5) degree of readiness to change.

The benefits of being physically active have been clearly demonstrated. This study was a pilot study specifically looking at physical activity levels of the college age population. The intent was to establish a foundation for future research, so stage specific

interventions can be developed and implemented into a general education course. Overall, the goal is to help this population learn how to become more physically active.

CHAPTER III

METHODS AND PROCEDURES

Introduction

This study was conducted to determine the impact of HPR 105, Creating a Healthy, Active Lifestyle, on the students' physical activity levels, as measured by the stages of change continuum. Specifically, the study used the constructs of the transtheoretical model of change to determine how much movement was made through the stages of change from the beginning of the course to the end of the course. Decisional balance measures were also taken and examined to determine if they correlated appropriately with the indicated stages of change.

Subject Selection

The subjects of this study were students enrolled in HPR 105 in the fall 1998 semester who completed a consent form before participating in any aspect of the study. Subjects were at least 17 years of age and reflected different ethnic backgrounds.

Instrumentation

The instrument used in this study consisted of three parts: (a) demographics, (b) decisional balance measurement, and (c) stage of change for physical activity. It was titled "HPR 105 Exercise Behavior Assessment" (see Appendix B). An additional section was added to the postassessment. It consisted of a group of questions developed by the

researcher and a select group of HPR 105 instructors to provide additional qualitative information for enhancement of the quantitative results (see Appendix C).

Demographics

Part one of the instrument included 10 questions to solicit personal information about each subject. The questions pertained to information regarding the subjects' (a) year in school, (b) gender, (c) race, (d) age, (e) living arrangement, (f) tobacco use status, and (g) alcohol consumption. The questions were constructed because previous research has shown these factors may influence how much movement subjects make through the stages of change (Marcus, Rakowski, et al., 1992; Marcus, Rossi, Selby, Niaura, & Abrams, 1992; Reed, Velicer, Prochaska, Rossi, & Marcus, 1997).

Decisional Balance Measurement

Part two of the instrument included 16 questions regarding decisional balance as used by Marcus, Rakowski, et al. (1992). Decisional balance questions represent positive and negative orientations to physical activity and ask the subjects to decide where along a continuum they believe they fall. The Likert-type continuum used in this study ranged from "extremely important" to "not at all important." An example of a positive (Pro) statement was, "I would feel more confident if I exercised regularly." Conversely, an example of a negative (Con) statement was, "Regular exercise would take too much of my time." There were 10 Pro statements and 6 Con statements.

The decisional balance measurement was composed of two components. The first component consisted of six items that represented the unfavorable perceptions of exercising, and reasons why people do not exercise, referred to as the Cons. The second

component was composed of 10 items that represented the positive aspects of exercising, referred to as the Pros. The component loadings were all over .50 and the coefficient alpha reliabilities were satisfactory (Cons = .79 and Pros = .95).

Stage of Change

Part three of the instrument had subjects identify their present stage of change. The subjects were provided definitions for physical activity and for regular physical activity. The question, "Do you engage in regular physical activity?" was then posed. Subjects responded by choosing the best description of their physical activity behavior over the past 6 months. The responses coincided with the stages of change, but also allowed subjects to choose responses in between two specific stages. The stages were represented by: (1) "No, and I don't plan to start in the next 6 months:" precontemplation; (2) "No, but I am planning to start in the next 6 months:" contemplation; (3) "No, but I am planning to start in the next 30 days:" preparation; (4) "Yes, I have been for less than 6 months:" action; and (5) "Yes, I have been for more than 6 months:" maintenance. In addition to the five stages, blank lines were provided to allow the subjects to indicate a level of physical activity different than the provided statements. For example, number 29 on the assessment reads, "I currently do not exercise, but I am thinking about starting to exercise in the next 6 months" and number 32 reads "I currently exercise some, but not regularly." If the subjects do not feel that their physical activity level exactly matches either of these statements, but it does fall somewhere in between them, they would answer yes to either number 30 or 31. Indicating answer number 30 means the subjects feel their activity level is closer to number 29 and indicating number 31 means the subjects feel their activity level

is closer to number 32. This assessment is identical to an assessment used in a 1997 study conducted by Reed, et al.

The stage of change measure was shown to have a .78 Kappa index of reliability over a 2-week period (Marcus, Rossi, et al., 1992). Concurrent validity for this measure was demonstrated by its significant association with the Seven Day Physical Activity Questionnaire (Marcus & Simkin, 1993).

Postassessment Qualitative Questions

Questions were developed and revised by the researcher and a select group of HPR 105 instructors. The questions were open-ended and developed to produce qualitative data that would add richness to the quantitative data. Each member of the group was initially asked to develop a list of questions they were interested in knowing students' responses to. Then, the researcher collected the questions and formed an initial draft of possible questions. These questions were then distributed to the group for additional comments and revisions. Another draft of the questions was then developed. All members of the group agreed on the presentation of each question before it was included on the final draft of the assessment.

There were initially six sets of questions developed by the group. All subjects received one of the six sets of questions. However, only one set of questions was used for data analysis. The questions included: (a) Are you more physically active now than when you began the class? If you are more active, explain in what ways HPR 105 contributed to your increased level of activity? If you are not more active, explain why you have not increased your activity level; (b) What factors from HPR had the most impact on your

physical activity level; and (c) What factors, if any, were missing from HPR 105 or need to be changed so individuals may have more success regarding their physical activity in the future? The researcher analyzed only these data for patterns and themes using a code system (Coffey & Atkinson, 1996). The remaining questions provided the instructors of HPR 105 with information relevant to the course from the students' perspective.

Procedures

The preassessment instrument was completed by 845 subjects and 752 subjects completed the postassessment instrument during the fall 1998 semester. Subjects were provided a rationale for the study and asked their permission to publish any of the information by signing the consent form (see Appendix D). Due to the large number of subjects in the study, course proctors distributed the assessment instrument. Subjects were then provided instructions on how to fill out their anonymous number and section one of the instrument. After completing section one, the researcher provided: (1) an explanation of how to fill out section two, (2) three example questions, (3) time to complete this section, (4) an explanation of section three, (5) an example for section three, and (6) time to complete this section (see Appendix E). Upon completion of the entire assessment instrument, all subjects passed everything to the center aisles for collection by proctors. All questions posed by subjects were answered by the researcher. At the end of the semester, an identical assessment, with the added qualitative questions, was administered in the same manner (see Appendix F). For the additional questions, subjects were instructed to follow the specified directions on their individual papers.

Data Analysis

Due to the exploratory nature of this study, frequency counts were used to determine the majority of the results. Frequencies were determined for all demographic information, as well as stage of change responses. Percentages were then calculated to determine what type of movement was made by the subjects. In addition, percentages were calculated with the demographic factors cross referenced with the stages of change. The decisional balance measures were correlated with the stages of change using a Spearman's Rho statistical analysis. The qualitative data was analyzed by following a rubric provided by Coffey and Atkinson (1996). All of the qualitative responses were initially read through twice, and general ideas or topics were hand written in the margins of the actual assessments. The ideas and topics were then collected on a spreadsheet and tallies were used to indicate the number of subjects who responded with the same answers. After reviewing the spreadsheet data, initial themes or patterns were developed. The data were then regrouped and reorganized until patterns and themes emerged. After the researcher developed a final set of patterns and themes, it was reviewed by a colleague for additional input. Additional revisions were then made before the final themes and patterns were reported as results and supported by quotes provided from the subjects.

CHAPTER IV

RESULTS AND DISCUSSION

Introduction

Previous studies have determined the type of factors that affect individuals' physical activity levels. The transtheoretical model of change has been utilized to place individuals into one of five specific stages of change according to their current physical activity level. Decisional balance measures have also been included to support the stage of change determined by the individual. It has been shown that participating in physical activity contributes to a variety of health benefits, as well as preventing many illnesses and diseases.

This study was conducted to determine the impact of HPR 105, Creating a Healthy, Active Lifestyle, on the physical activity levels of students enrolled in the fall 1998 semester. The subjects were provided with both a pre- and postassessment to determine their physical activity level, as well as decisional balance measures.

Descriptive statistics were used to explore possible factors that related to stage of change for physical activity. Crosstabs were used to determine the correlation between decisional balance measures and stage of change. Qualitative data were analyzed using a coding system for patterns and themes.

Results

Of the 985 students initially enrolled in HPR 105, 845 students completed the preassessment and 752 completed the postassessment. Only those students who attended class on September 23, 1998 completed the initial assessment. At the time of the postassessment, the number of students was less due to medical problems, academic difficulties, death, or failure to attend class. All data were included when the results were formulated.

Description of the Sample

The preassessment group of subjects were predominately on-campus (73%) freshmen (68%) and sophomores (20%). They ranged in age from at least 18 (51%) to 19 to 20 (37%) to greater than 21 (12%) years of age. There were 317 (38%) males and 517 (62%) females. The majority were nonsmoking (84%) Caucasians (97.2%). Of the group, 631 (76%) subjects indicated they drank alcohol, 53% stated they drank zero to one time per week, and 44% stated they drank two to three times per week.

The postassessment group of subjects were predominately on-campus (73%) freshmen (67%) and sophomores (20%). They ranged in age from at least 18 (40%) to 19 to 20 (46%) to greater than 21 (14%) years of age. There were 277 (37%) males and 475 (63%) females. The majority were nonsmoking (86%) Caucasians (96.9%). Of the group, 577 (78%) subjects indicated they drank alcohol, 63% stated they drank zero to one time per week, and 36% stated they drank two to three times per week.

Stage of Change

The subjects initially were divided into 11 stages of change according to the assessment developed by Reed, et al. (1997). Due to a small number of subjects in certain stages, the stages were collapsed into three categories. The first category included precontemplation and contemplation, the second category included preparation, and the last category included action and maintenance. For the preassessment (N = 850), 102 (12.0%) subjects were in the first category, 255 (30.0%) were in the second, and 493 (58.0%) were in the third. For the postassessment (N = 765), 92 (12.0%) subjects were in the first category, 318 (41.6%) subjects were in the second, and 355 (46.4%) were in the third. There was no movement with the first category. However, there was a noticeable increase in the second category and a noticeable decrease in the third category. The percentage of students regressing from Category Three to Category Two made up the difference (see Table 1).

Stage of Change by Year in School

In the demographic section of the assessment, subjects were asked their current enrollment status. For the preassessment 584 students were freshmen, 165 were sophomores, 78 were juniors, and 23 were seniors. For the postassessment 508 students were freshmen, 157 were sophomores, 76 were juniors, and 24 were seniors.

Freshmen. The majority of the subjects in the preassessment, as well as the postassessment, were freshmen, 68.7% and 66.4% respectively. For the preassessment, 66 (7.8%) subjects were in Category One, 164 (19.3%) were in Category Two, and 354 (41.6%) were in Category Three. For the postassessment, 48 (6.3%) subjects were in

Table 1. Pre- and Postassessment Results for Stage of Change of HPR 105 Students Enrolled during the Fall 1998 Semester.

	Preassessment (N = 850)*		Postassessment (N = 765)*	
Stage of Change	n	% of N	n	% of N
Category One	102	12.0	92	12.0
Category Two	255	30.0	318	41.6
Category Three	493	58.0	355	46.4

*There were a number of subjects who indicated they were in more than one stage, thus accounting for the number of increased responses.

Category One, 206 (26.9%) were in Category Two, and 254 (33.2%) were in Category Three.

Sophomores. The sophomores were the next largest group of subjects with 165 (19.4%) participants in the preassessment and 157 (20.5%) in the postassessment. For the preassessment, 19 (2.2%) subjects were in Category One, 60 (7.1%) were in Category Two, and 86 (10.1%) were in Category Three. For the postassessment, 25 (3.3%) subjects were in Category One, 73 (9.5%) were in Category Two, and 59 (7.7%) were in Category Three.

Juniors. The juniors comprised 78 (9.2%) of the subjects for the preassessment and 76 (9.9%) of the subjects for the postassessment. For the preassessment, 11 (1.3%) subjects were in Category One, 23 (2.7%) were in Category Two, and 44 (5.2%) were in

Category Three. For the postassessment, 13 (1.7%) subjects were in the Category One, 31 (4.1%) were in Category Two, and 32 (4.2%) were in Category Three.

Seniors. The seniors were the smallest group within the study. There were 23 (2.7%) subjects participating in the preassessment and 24 (3.1%) subjects participating in the postassessment. For the preassessment, 6 (0.7%) subjects were in Category One, 8 (0.9%) were in Category Two, and 9 (1.1%) were in Category Three. For the postassessment, 6 (0.8%) subjects were in Category One, 8 (1.0%) were in Category Two, and 10 (1.3%) were in Category Three (see Tables 2 and 3).

Table 2. Preassessment Results for Indicated Stage of Change by Year in School of HPR 105 Students Enrolled during the Fall 1998 Semester (N = 850)*

	Freshman		Sophomore		Junior		Senior	
Stage of Change	n = 584	%**	n = 165	%**	n = 78	%**	n = 23	%**
Category One n = 102	66	7.8	19	2.2	11	1.3	6	0.7
Category Two n = 255	164	19.3	60	7.1	23	2.7	8	0.9
Category Three n = 493	354	41.6	86	10.1	44	5.2	9	1.1
Percent Totals		68.7		19.4		9.2		2.7

*There were a number of subjects who indicated they were in more than one stage, thus accounting for the number of increased responses.
**The percentage is of N.

Table 3. Postassessment Results for Indicated Stage of Change by Year in School of HPR 105 Students Enrolled during the Fall 1998 Semester (N = 765)*

	Freshman		Sophomore		Junior		Senior	
Stage of Change	n = 508	%**	n = 157	%**	n = 76	%**	n = 24	%**
Category One n = 92	48	6.3	25	3.3	13	1.7	6	0.8
Category Two n = 318	206	26.9	73	9.5	31	4.1	8	1.0
Category Three n = 355	254	33.2	59	7.7	32	4.2	10	1.3
Percent Totals		66.4		20.5		10.0		3.1

*There were a number of subjects who indicated they were in more than one stage, thus accounting for the number of increased responses.
**The percentage is of N.

Stage of Change by Gender

Almost two-thirds (62.6%) of the subjects for the preassessment and postassessment (63.6%) were female. Males comprised the remaining 37.3% and 36.4% respectively.

Males. For the preassessment, only 39 (4.6%) males staged themselves in Category One. However, 81 (9.5%) males staged themselves in Category Two, and 197 (23.2%) males staged themselves in Category Three. For the postassessment, only 29 (3.8%) males placed themselves in Category One. In addition, 111 (14.5%) males placed themselves in Category Two and 138 (18.0%) placed themselves in Category Three.

Females. For the preassessment, 63 (7.4%) females staged themselves in Category One. However, 173 (20.4%) females staged themselves in Category Two, and 296 (34.9%) females staged themselves in Category Three. For the postassessment, 63 (8.2%) females placed themselves in Category One. In addition, 207 (27.1%) females placed themselves in Category Two and 217 (28.4%) placed themselves in Category Three (see Tables 4 and 5).

Decisional Balance Measures

The literature indicates that individuals in precontemplation and contemplation were least likely to believe that Pro statements relative to physical activity were important to their lives. Instead, they rated the Con statements much higher and of more importance. Those individuals in preparation did not believe either the Pros or the Cons

Table 4. Preassessment Results for Stage of Change by Gender of HPR 105 Students Enrolled during the Fall 1998 Semester (N = 849)*

	Male		Female	
Stage of Change	n = 317	% of N	n = 532	% of N
Category One n = 102	39	4.6	63	7.4
Category Two n = 254	81	9.5	173	20.4
Category Three n = 493	197	23.2	296	34.9

*There were a number of subjects who indicated they were in more than one stage, thus accounting for the number of increased responses.

Table 5. Postassessment Results for Stage of Change by Gender of HPR 105 Students Enrolled during the Fall 1998 Semester (N = 765)*

	Male		Female	
Stage of Change	n = 278	% of N	n = 487	% of N
Category One n = 92	29	3.8	63	8.2
Category Two n = 318	111	14.5	207	27.1
Category Three n = 355	138	18.0	217	28.4

*There were a number of subjects who indicated they were in more than one stage, thus accounting for the number of increased responses.

were always the most important things in life. Their answers varied from one to the next. However, individuals in the action and maintenance stages believed the Pro statements were much more important than the Con statements (Marcus, Rakowski, et al., 1992).

The results of this study deviated slightly from the previous research. For the preassessment, individuals in Category One rated the Cons to be of more importance than the Pros. Individuals in Category Two decreased their belief in the Cons, but also decreased their belief in the Pros. Category Three supported the research by drastically increasing support of the Pros and decreasing support of the Cons. For the postassessment, not much change occurred. In comparison to the preassessment, Category One was a little more supportive of the Pros, but not quite as supportive of the Cons. Category Two was more supportive of the Pros, but also a little more supportive of the Cons. On the contrary, Category Three showed a significant decrease in support of

the Pros and a slight increase in support of the Cons (see Tables 6 and 7 and Figures 1 and 2).

Table 6. Preassessment Scores of Pros and Cons by Stage of Change of HPR 105 Students Enrolled during the Fall 1998 Semester.

Stage of Change	Pro	Con
Category One	-.242*	.169*
Category Two	-.250*	.095*
Category Three	.381*	-.184*

*p = .01

Table 7. Postassessment Scores of Pros and Cons by Stage of Change of HPR 105 Students Enrolled during the Fall 1998 Semester.

Stage of Change	Pro	Con
Category One	-.181*	.131*
Category Two	-.172*	.115*
Category Three	.280*	-.194*

*p = .01

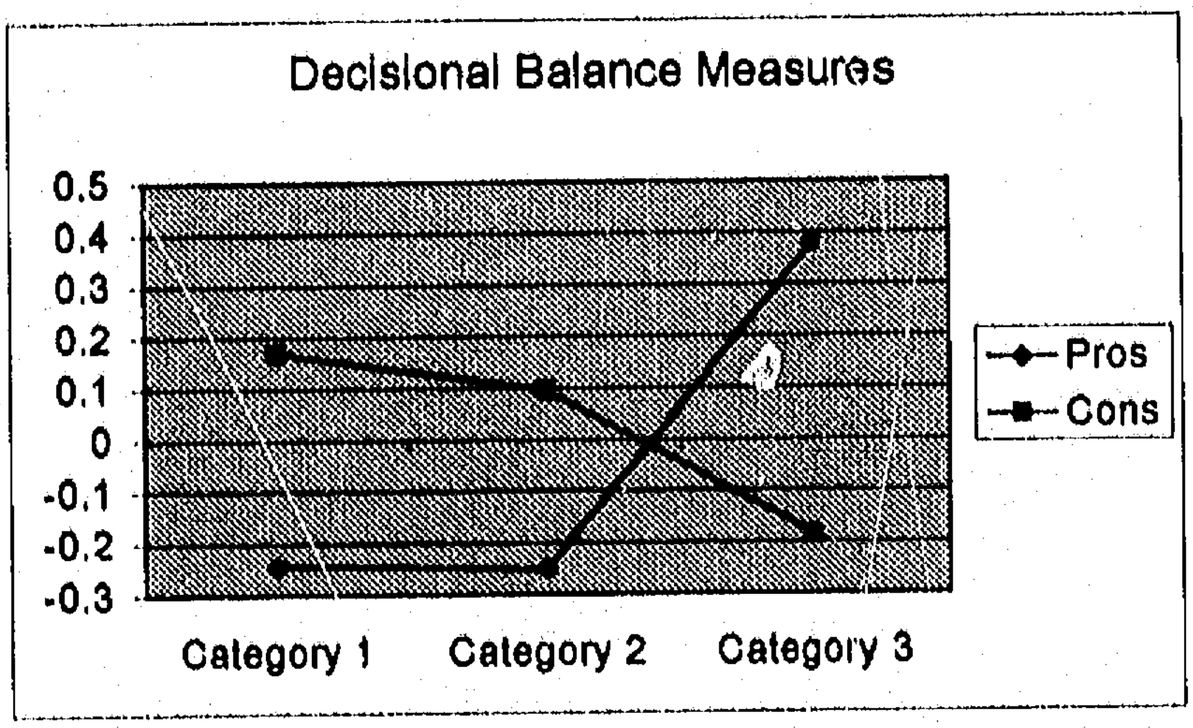

Figure1. Preassessment View of Pros and Cons Scale by Stage of Change of HPR 105 Students Enrolled during the Fall 1998 Semester.

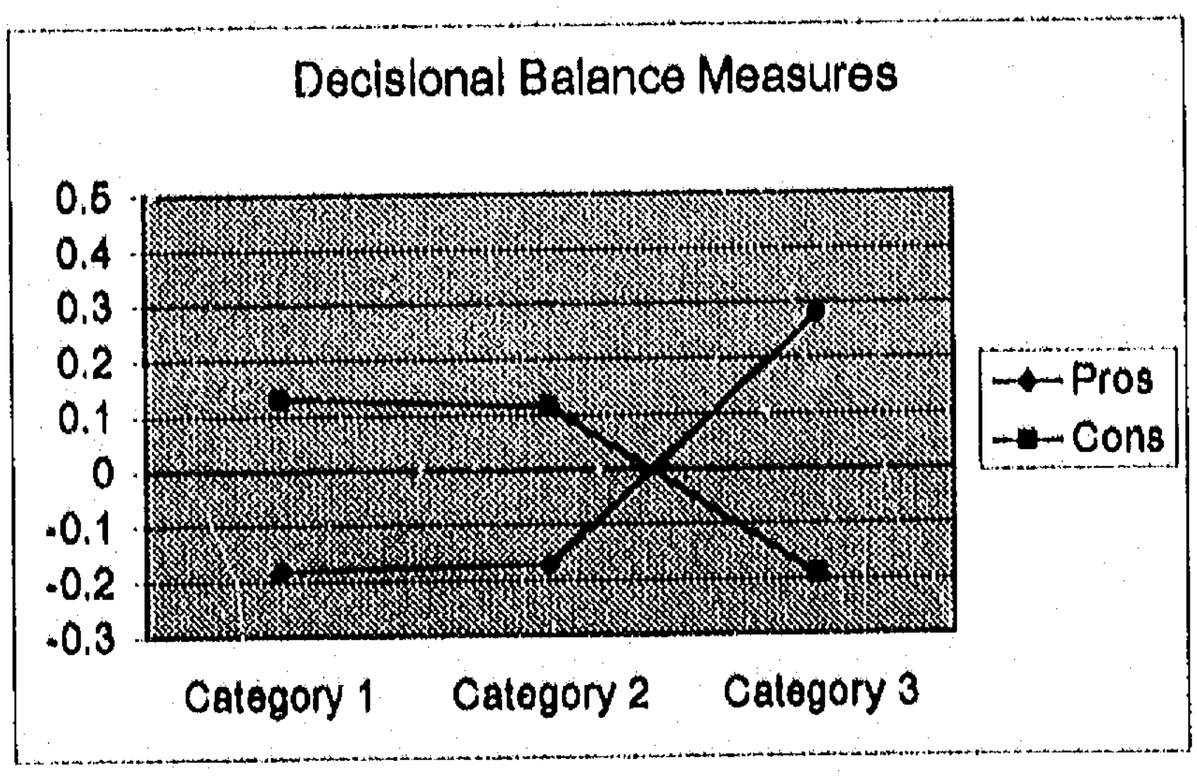

Figure 2. Postassessment View of Pros and Cons Scale by Stage of Change of HPR 105 Students Enrolled during the Fall 1998 Semester.

Qualitative Data Results

As part of the final assessment, some of the subjects were asked if they were more physically active at the time of the final assessment than when they began the class. The most popular reported results were more active, already active, and not more active. Other subjects noted they were somewhat more active, had started to be more active, but then quit, were more active, but not because of the class, and were content with where they currently were at in their exercise habits. In addition to being asked about their physical activity levels, they also were asked either a) what ways HPR 105 contributed to their increased level of activity, or b) why they had not increased their activity level. After reviewing the responses, a few major themes were identified.

In regards to why people had increased their physical activity levels, subjects stated they learned information in lectures that persuaded them to become more active. The benefits and advantages of being a healthy, active person especially concerned many of the subjects. Subjects made comments like: (a) "More active; I realize how much exercise affects your life now and in the future;" (b) "I have increased my physical activity and become more intelligent about activity choices. I learned (from HPR) where I am now, where I want to be, and what I have to do to get there;" and (c) "Yes, made me realize the importance of taking care of my body and the benefits it brings into my life."

In regards to why subjects did not become more physically active, lack of priority seemed to be a major factor. Subjects had other activities or events taking place in their lives they believed were more important or necessary. In addition, many of the subjects were adapting to college life and going through a lot of personal change. Subjects made

comments like: (a) "Not really. I had more time during the summer to exercise. I would like to exercise regularly but find it hard to find the time;" (b) "No, I am not more active, mostly because I do as much as I am able to do, considering my schedule;" (c) "I haven't become more physically active because of the stresses of school. I am a first semester freshman, so college life is a big change for me. I've had to work more with the school work, than with myself;" (d) "No, too busy;" and (e) "No, not really for any reason. I just need to work on time management." There were also a number of subjects who were happy with their activity level. Some examples of their responses included: (a) "No-I can't increase it any more. I already have swim practice twice a day and lift weights;" (b) "I am currently as active as I was before class began. I regularly participate in several sports and do some exercises besides;" and (c) "I am at the maintenance level of activity already."

The same group of subjects answered a question pertaining to the factor(s) from HPR 105 that had the most impact on their level of physical activity. After reviewing the responses, four major themes surfaced: (1) information provided in lectures, (2) information provided in labs, (3) the benefits and advantages of being a healthy, active person, and (4) nothing from class created an impact. Subjects stated: (a) "The DINE Analysis and lectures on eating had a great impact on me because I learned easy ways to make a change in my diet. I also learned that exercise and eating right has the most benefits;" (b) "I think the health factors and risks related to inactivity—it's scary;" (c) "The labs, getting to do all the different activities;" and (d) "I didn't think any specific factor was the cause."

The final question this group of subjects was asked to respond to was what factors, if any, were missing from HPR 105 or need to be changed so individuals may have more success regarding their physical activity in the future. Again, there were a couple of major themes that surfaced. The majority of students agreed there were no major changes needed. However, there were suggestions concerning the structure and presentation of both lectures and labs. Students made comments like: (a) "Everything seemed alright—it focuses on college students—that's good," (b) "I don't think you could have done anything else with this large of a group," and (c) "I feel that though the instructors were well-educated, that this class was very unorganized. Jumping from one subject to another is not a good way to teach. I did enjoy the lab part and how you did different activities."

Discussion and Implications

The results of the study may have been affected by several factors that took place during the course of the semester. First, it was assumed the subjects initially did not have much knowledge or understanding of the transtheoretical model of change. However, part of the curriculum for HPR 105 includes a one-hour lecture on the transtheoretical model of change. The lecture provides definitions of the stages, as well as examples of people who are presently in all of the stages of change. Thus, the subjects may not have initially known enough about the model to accurately place themselves along the continuum, but after listening to the lecture and preparing for an examination over the material, their second placement may be a reflection of their increased knowledge versus a true change of stage. Therefore, because there were not any real large movements of change from one

stage to another, the changes that did occur could be a result of students realizing their initial placement was not accurate.

Another consideration is that the majority of the class, 68.7%, were freshmen. They have many adjustments to make to learn how to live on their own, and physical activity seems to be one of the first things to be discontinued. In addition, the timing of the assessments could have had an impact on the results as well. The initial assessment was given within the first couple of weeks of class when stress levels were low and the subjects were excited to be on campus. The second assessment was given the last week of class, the week before finals. Many subjects had multiple examinations the week of the assessment and were preparing for finals the upcoming week. Stress levels were much more elevated and the subjects may have been burned out. Thus, physical activity may not have been a priority at the time, therefore, the results of the assessment may have been affected.

On another note, the weather changed from the beginning of the semester to the end of the semester and many outdoor activities were no longer accessible. Especially in Wisconsin, people have a natural tendency to be more active when the weather permits outdoor activities, thus a decline in physical activity could be due to climatic changes. In relation to this, the timing of the assessments may have altered the results. The preassessment was given in September when people could be participating in outdoor activities. The postassessment was given in December when the number of outdoor activities was limited. This factor could be related to the number of people regressing on the stage of change continuum. If the preassessment had been done in January and the

postassessment done in May, the results may indicate more progress through the stages of change because people have become more physically active with outdoor activities.

Compared to national statistics, the actual number of subjects who claimed to be physically active, these results are good. For the preassessment, 748 (88.0%) subjects perceived themselves to be in Categories Two and Three, and for the postassessment 673 (88.0%) subjects perceived themselves to be in Categories Two and Three; thus, they are physically active or starting to become physically active on a regular basis. However, national statistics stated that almost half of American youths, ages 12-21, are not vigorously active on a regular basis (Physical Activity and Health, 1996). Results indicate that students enrolled at the University of Wisconsin-La Crosse and enrolled in HPR 105 tend to be more physically active than others of the same age. Since the largest percentage of subjects were already active, there may have been a ceiling affect. This may have created a small regression toward the mean at postassessment.

The college age population is a complex sample to work with due to the enormous amount of change occurring in their lives. The number of outside factors influencing their everyday lives, in combination with the changes they continuously make to adjust to the new stage in their life, probably affected their decisions regarding physical activity level. Many students experience a large amount of stress throughout their entire college career, thus worrying about their physical activity level is not a priority.

Although the study cannot be generalized to the university population, it did provide a base for future research. In addition, the information provided by the qualitative data provided further insight as to what was effective in regards to changing physical

activity levels. It is noted in the literature that many individuals are not as physically active as they should be, but with additional research, changes in curriculum could be made to help future students increase their physical activity behaviors.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The stages of change were collapsed into three categories due to the small number of subjects in some of the initial 11 stages. The exact same percentage of subjects indicated they were in Category One for both the pre- and postassessments. The percentage of subjects who claimed to be in Category Two increased from pre- to postassessment. On the contrary, there was a decrease in the percentage of subjects in Category Three from pre- to postassessment. There was not one particular demographic factor that seemed to have an impact on stage of change.

The decisional balance measures were slightly different than what the transtheoretical model supports. Overall, the Cons supported Category One and the Pros supported Category Three, which coincides with the theory. Additionally, the decisional balance measures coincided with the stages of change indicated by the subjects. Although there were a number of subjects who regressed from Category Three to Category Two, the overall number of subjects who perceived themselves to be physically active is still much higher than the national average of people this age. HPR 105, Creating a Healthy, Active Lifestyle, although designed to help people lead healthier, active lives does not solely concentrate on physical activity level. Physical activity is only one of many curricular issues, but it was the focus of this study.

Conclusions

Conclusions regarding research questions, as well as possible applications of the study are as follows:

1. It does not appear that HPR 105 had any positive statistically significant impact on stage of change for physical activity. Subjects really did not change their physical activity levels much over the course of the semester. The only real movement shown was a slight decrease in the number of subjects in Category Three and a slight increase in the number of subjects in Category Two.
2. Demographic factors had no real impact on stage of change or change in physical activity level.
3. The decisional balance measures were slightly different than what the transtheoretical model predicts. However, the Pros supported Category Three and the Cons supported Category One.
4. The factors that were most significant to those individuals who did make changes in their physical activity levels were the information provided in lecture and labs. Especially noted were the benefits and advantages of being a healthy, active person.
5. There were a variety of ideas suggested by the subjects that they believed were missing or need to be changed to help future students increase physical activity level. Particular topics addressed most frequently were laboratory experiences and lecture presentation. However, there were no consistent suggestions for any one particular idea. The only suggestion that did repeatedly appear was that nothing needed to be changed.

Recommendations

This was a pilot study to determine if HPR 105, Creating an Active Healthy Lifestyle, served to influence changes in staging specific to physical activity from the beginning to the end of a semester. Additionally, decisional balance measures were examined to determine if they correlated appropriately with the stages of change. The results of this study will provide a foundation for future studies using HPR 105 subjects and the transtheoretical model. Recommendations for future consideration include:

1. The stage of change instrument used in this study may have been too complex for subjects to understand. A majority of subjects chose one of the five main stages while avoiding intermittent possibilities. It may be less complicated if fewer options were available in the instrument.
2. The timing of the pre- and postassessment ought to be changed. A better time frame may be to give the preassessment during the first day of class and the postassessment two to three weeks before the end of the semester. Since stress levels appeared to be high at the end of the semester, giving the assessment two to three weeks earlier may result in a more accurate perception of physical activity levels.
3. In addition to changing the timing of the assessments, providing another assessment midway through the semester before the lecture on the transtheoretical model of change might provide interesting information. This assessment would provide another perception of the stage of change the subjects believe they are in before being formally introduced to the model. Data could be analyzed from preassessment to middle-assessment, middle-assessment to postassessment, and preassessment to

postassessment. Overall, the results may establish a more accurate account of the changes that occur between stages.

4. Another option would be to wait until after the lecture on the transtheoretical model of change before providing the preassessment. Subjects would then be informed about the model and more accurately place themselves in the appropriate stage. The postassessment would be given the week before finals. The time frame between assessments would be quite small, but the results might provide a more accurate account of their change in physical activity level versus a change in their knowledge of the model.
5. Changing the lecture time of the transtheoretical model of change to the beginning of the semester is another alternative. The lectures about the model could be provided the first couple days of class so subjects would know how to properly evaluate their current stage of change, and then the first assessment could be provided. Additional assessments would be provided throughout the remainder of the semester.
6. The time frame could also be during a J-term or M-term class. There would still be factors to consider, such as J-term would only assess people during the winter and M-term would only assess people during the spring, but both pre- and postassessments would be provided with similar outdoor conditions. Other factors to consider would be the short overall time period and the amount of time people focus on a healthy lifestyle would increase due to class time versus individual motivation.
7. The spring semester would provide another sample population. The time period would be consistent with this study, but other factors would have to be taken into

consideration. For example, the subjects would be entering the study during winter, when people tend not to be as physically active, and completing the study during spring, when activity levels tend to rise.

8. A longitudinal study following the progression or regression of people through the stages of change could also be conducted. Subjects could be assessed for a designated time period to determine what type of lifestyle they choose. Doing this type of study could eliminate some of the factors that might have skewed the present study results.
9. To enhance movement through the stages of change, stage specific interventions could be added to the curriculum. Each specific stage has its own characteristics; thus people in different stages require different processes to facilitate change. For individuals in each particular stage, recommendations specific to their stage could be provided to help them progress toward the next stage.
10. A study with an in-depth focus on the definition of physical activity might provide different results. Subjects could list what type of physical activities they participate in during an average week, and then stage themselves. Another suggestion would be to provide a more thorough definition of physical activity, including a list of possible activities to choose from, for subjects to examine before they create their list of activities. Subjects would then stage themselves according to their personal lists. Additionally, heart rate in correlation with physical activity would be another consideration. Subjects would have to obtain a certain heart rate for a specific time period in order to categorize that activity as part of their physical activity time period.

Then, they could reflect back on their list of physical activities to determine their appropriate stage.

11. Finally, a recommendation to use a control group is made. Another general education class on campus could provide a similar group of subjects to use as the control group. Data could be compared and implications formed as to the effectiveness of the HPR 105 course.

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APPENDIX A

THE PROCESSES OF EXERCISE BEHAVIOR CHANGE

The Processes of Exercise Behavior Change

Process	Definition
Experiential	
Consciousness Raising	Efforts by the individual to recall and seek new information related to exercise and adoption of activity
Dramatic Relief	Affective or intense emotional experiences related to sedentary lifestyle.
Environmental Reevaluation	Consideration and self-assessment of how exercise impacts others in the physical and social environment.
Social Liberation	Awareness, availability, and acceptance by the individual of societal and social influences on encouraging and promoting exercise.
Self-Reevaluation	Emotional and cognitive reappraisal by the individual with respect to exercise activity.
Behavioral	
Counterconditioning	Use of exercise to cope with unpleasant emotions.
Helping Relationships	Trusting, accepting, and using the support of caring others to enhance and assist with the individual's exercise activity.
Reinforcement Management	Changing the contingencies that control or maintain sedentary behavior.
Stimulus Control	Control of situations and other causes which trigger inactivity.
Self-Liberation	The individual's choice and commitment to maintain exercise.

APPENDIX B

HPR 105 EXERCISE BEHAVIOR ASSESSMENT

HPR 105 Exercise Behavior Assessment

The purpose of this assessment has been explained to me, and I am voluntarily participating. I understand that there are no risks involved in filling out this assessment and that my responses will remain anonymous. Therefore, I fully agreed to participate in the research project that coincides with this assessment.

1. What is your year in school?
   a. Freshman (0-29 credits)
   b. Sophomore (30-59 credits)
   c. Junior (60-89 credits)
   d. Senior (90 or more credits)
   e. Other

2. What is your gender?
   a. Male
   b. Female

3. What is your race?
   a. Caucasian/White
   b. African-American
   c. Native American
   d. Latino-Chicano
   e. Asian-American

4. What is your age?
   a. < 17 years old
   b. 17-18 years old
   c. 19-20 years old
   d. 21-22 years old
   e. > 22 years old

5. Where do you live?
   a. On-campus housing
   b. Off-campus with friends
   c. Off-campus with family
   d. Off-campus alone
   e. Fraternity/Sorority housing

6. Do you smoke cigarettes?
   a. Yes
   b. No go to question 8

7. If yes, how many cigarettes per day?
   a. 1-10
   b. 11-20
   c. 21-30
   d. 31-40
   e. > 40

8. Do you drink alcohol?
   a. Yes
   b. No go to question 10

9. If yes, how many drinks do you normally have per week?
   a. 0-2
   b. 3-6
   c. 7-10
   d. 11-14
   e. > 14

10. How many days do you normally drink per week?
    a. 0-1
    b. 2-3
    c. 4-5
    d. 6-7

Please answer the following questions by filling in the letter of the response that best coincides with how you feel about the statement. (a = Extremely Important, b = Somewhat Important, c = Unsure, d = Not Very Important, e = Not at All Important)

11. I would have more energy for my family and friends if I exercised regularly.

a.	b.	c.	d.	e.
Extremely Important	Somewhat Important	Unsure	Not Very Important	Not at All Important

12. I would feel good about myself if I kept my commitment to exercise regularly.

a.	b.	c.	d.	e.
Extremely Important	Somewhat Important	Unsure	Not Very Important	Not at All Important

13. I think I would be too tired to do my daily work after exercising.

a.	b.	c.	d.	e.
Extremely Important	Somewhat Important	Unsure	Not Very Important	Not at All Important

14. I would feel less stressed if I exercised regularly.

a.	b.	c.	d.	e.
Extremely Important	Somewhat Important	Unsure	Not Very Important	Not at All Important

15. I would feel more confident if I exercised regularly.

a.	b.	c.	d.	e.
Extremely Important	Somewhat Important	Unsure	Not Very Important	Not at All Important

16. At the end of the day, I am too exhausted to exercise.

a.	b.	c.	d.	e.
Extremely Important	Somewhat Important	Unsure	Not Very Important	Not at All Important

17. I would have less time for my family and friends if I exercised regularly.

a.	b.	c.	d.	e.
Extremely Important	Somewhat Important	Unsure	Not Very Important	Not at All Important

18. I feel uncomfortable when I exercise because I get out of breath and my heart beats very fast.

a.	b.	c.	d.	e.
Extremely Important	Somewhat Important	Unsure	Not Very Important	Not at All Important

19. Regular exercise would help me have a more positive outlook on life.

a.	b.	c.	d.	e.
Extremely Important	Somewhat Important	Unsure	Not Very Important	Not at All Important

20. Regular exercise would take too much of my time.

a.	b.	c.	d.	e.
Extremely Important	Somewhat Important	Unsure	Not Very Important	Not at All Important

21. I would feel more comfortable with my body if I exercised regularly.

a.	b.	c.	d.	e.
Extremely Important	Somewhat Important	Unsure	Not Very Important	Not at All Important

22. It would be easier for me to perform routine physical tasks if I exercised regularly.

a.	b.	c.	d.	e.
Extremely Important	Somewhat Important	Unsure	Not Very Important	Not at All Important

23. I would find it difficult to find an exercise activity that I enjoy that is not affected by bad weather.

a.	b.	c.	d.	e.
Extremely Important	Somewhat Important	Unsure	Not Very Important	Not at All Important

24. I would sleep more soundly if I exercised regularly.

a.	b.	c.	d.	e.
Extremely Important	Somewhat Important	Unsure	Not Very Important	Not at All Important

25. Regular exercise would help me relieve tension.

a.	b.	c.	d.	e.
Extremely Important	Somewhat Important	Unsure	Not Very Important	Not at All Important

26. I would like my body better if I exercised regularly.

a.	b.	c.	d.	e.
Extremely Important	Somewhat Important	Unsure	Not Very Important	Not at All Important

Consider the following question, **"Do you engage in regular physical activity?"**

NOTE: Physical activity or exercise means walking briskly, vacuuming, jogging, digging in the garden, climbing stairs, or any other physical activity where exertion is similar to these. Regular physical activity or exercise means accumulating 30 minutes or more in the above activities most days of the week. For example, you could take one 30 minutes walk, jog, hike or swim, or three 10 minutes walks, or 15 minutes of vacuuming, 10 minutes of digging and 5 minutes of climbing.

For items 27-37 please answer **YES** (a) to the **ONE** statement that reflects what you currently do regarding physical activity. All others should be marked **NO** (b).

27.	I currently do not exercise and I do not intend to start exercising in the next 6 months.	a. yes	no	b.
28.	_____	a. yes	no	b.
29.	I currently do not exercise, but I am thinking about starting to exercise in the next 6 months.	a. yes	no	b.
30.	_____	a. yes	no	b.
31.	_____	a. yes	no	b.
32.	I currently exercise some, but not regularly.	a. yes	no	b.
33.	_____	a. yes	no	b.
34.	_____	a. yes	no	b.
35.	I currently exercise regularly but I have only begun doing so within the last 6 months.	a. yes	no	b.
36.	_____	a. yes	no	b.
37.	I currently exercise regularly and have done so for longer than 6 months.	a. yes	no	b.

APPENDIX C

POSTASSESSMENT QUESTIONS

Postassessment Questions

1. Are you more physically active now than when you began the class? If you are more active, explain in what ways HPR 105 contributed to your increased level of activity? If you are not more active, explain why you have not increased your activity level.

2. What factors from HPR 105 had the most impact on your physical activity level?

3. What factors, if any, were missing from HPR 105 or need to be changed so individuals may have more success regarding their physical activity in the future?

Postassessment Questions

1. Circle the answer below that best describes your belief that this course has increased your understanding of living a healthy lifestyle?

   Strongly Agree Agree Undecided Disagree Strongly Disagree

   Explain.

2. Use the scale below to answer the following question.

Very Positive Changes	Positive Changes	Small Changes	No Changes	Undecided
5	4	3	2	1

As a result of HPR 105, what positive changes did you make in the following area:

a. Level of physical activity. 5 4 3 2 1
   Explain.

Postassessment Questions

1. What lecture topics would you suggest adding to HPR 105?

2. What Friday morning lab activities would you suggest adding to HPR 105?

3. In what ways did the pre- and post-assessments done in lab help you personally?

Postassessment Questions

1. Circle the answer below that best describes your belief that this course has provided you with the information and knowledge needed to live a healthier lifestyle after college?

   Strongly Agree Agree Undecided Disagree Strongly Disagree

   Explain.

2. Use the scale below to answer the following question.

Very Positive Changes	Positive Changes	Small Changes	No Changes	Undecided
5	4	3	2	1

   As a result of HPR 105, what positive changes did you make in the following area:

   a. Improvement in nutritional dietary habits 5 4 3 2 1
      Explain.

Postassesament Questions

1. Are you more physically active now than when you began the class? If you are more active, explain in what ways HPR 105 contributed to your increased level of activity? If you are not more active, explain why you have not increased your activity level.

2. Use the scale below to answer the following question.

Very Positive Changes	Positive Changes	Small Changes	No Changes	Undecided
5	4	3	2	1

As a result of HPR 105, what positive changes did you make in the following area:

a. Relaxation techniques for your life style. 5 4 3 2 1
   Explain.

Postassessment Questions

1. Use the scale below to answer the following questions.

Very Positive Changes	Positive Changes	Small Changes	No Changes	Undecided
5	4	3	2	1

As a result of HPR 105, what positive changes did you make in the following areas:

a. Focus on a more positive outlook from the attitudinal stand point. Explain. 5 4 3 2 1

b. Correction of posture and body mechanics for preventing back disorders. Explain. 5 4 3 2 1

APPENDIX D

INFORMED CONSENT FOR

APPLICATION OF THE TRANSTHEORETICAL MODEL

OF BEHAVIOR CHANGE TO EXERCISE BEHAVIOR

GENERAL CONSENT FORM

Informed Consent for Application of the Transtheoretical Model of
Behavior Change to Exercise Behavior
General Consent Form

I give my informed consent to participate in this study that examines how HPR 105 impacts healthy lifestyle behaviors. I consent to presentation and publication or other dissemination of study results so long as the information is anonymous and disguised so that no identification can be made. I further understand that although a record will be kept of my having participated in this project, all information collected from my participation will be identified by number only.

1. I have been informed that my participation in this project will involve my filling out an assessment at the beginning and the end of the semester.

2. I have been informed that the general purpose of this project is to examine how HPR 105 impacts healthy lifestyle behaviors.

3. I have been informed that there are no known expected discomforts or risks involved in my participation in this project. This judgment is based upon the fact that students are asked to fill out two assessments. The results of the project will not have any affect on the students' grades.

4. I have been informed that there are no "disguised" procedures in this project. All procedures can be taken at face value.

5. I have been informed that the investigator will answer questions regarding the procedures of this project.

6. I have been informed that I am free to withdraw from the project assessment phase at any time without penalty.

Concerns about any aspects of this study may be referred to principal researcher, Dawn Vogler (608-782-1253) or thesis advisor, Dr. Richard Detert (608-785-8166). If you want more information of the Protection of Human Subjects call Garth Tymeson (608-785-8155).

_____ _____

Researcher Participant

Date: Date:

APPENDIX E

PROTOCOL FOR PREASSESSMENT

Hi! My name is Dawn Vogler and, as you know, I am currently the assistant for HPR 105. This year we are examining how HPR 105 impacts the students' healthy lifestyle behaviors. As a part of the course this semester, we will be taking an assessment at the beginning of the semester, as well as the end. We are focusing on group information, therefore, all information disclosed by individual students will remain anonymous. We will be filling out this assessment section by section, so please do not work ahead. We you finish with a section, please remain quiet and look forward so I know you are finished and we can proceed as quickly as possible. If there are any extra copies of the assessment, please leave them in the aisle and someone will be around to pick them up. Before you begin the assessment, a consent form must be signed. It is the first page. The reason for the consent form is so that I have your permission to provide any information we acquire with other professionals. Please read and sign the consent form now.

A scantron sheet has been inserted into the handout. At this time, please fill out only the Social security section with the following information. Put up example. The first two numbers will be the month of your birth, the second two numbers will be the date of your birth, and the last five numbers will be the last five digits of your current phone number. Please fill out this section now, but do not fill out any other information.

The actual assessment is broken down into three parts. Please turn to page 1 of the assessment. The first part deals with demographic information such as your year in school, your gender, and your age. Please look at question 6 now and change go to

question 10 to go to question 8, also look at question 8 and change go to question 12 to go to question 10. Please fill out this section now. It consists of questions 1-10.

The second part looks at various aspects of your life and how exercise affects them. I will read you the directions and then provide you with three examples of how to answer the questions. The directions are: Please answer the following questions by filling in the letter of the response that best coincides with how you feel about the statement. (a = Extremely Important, b = Somewhat important, c = Unsure, d = Not Very Important, e = Not at All Important)

Example 1:

I would have more energy for my family and friends if I exercised regularly.

What you must determine is if you exercised regularly would the impact of having more energy for family and friends be important to you or not.

Your answers will range from extremely important to not important at all.

Example 2:

I think I would be too tired to do my daily work after exercising.

What you must determine is if you exercised would the impact of being too tired to do your daily work be important to you or not.

Example 3:

At the end of the day, I am too exhausted to exercise.

What you must determine is if it is important to you or not that at the end of the day you are too exhausted to exercise.

For all of the following questions, you must determine if the impact of exercise on the particular aspect of your life is important to you or not. Please turn to page 2 and complete part two of the assessment. It consists of questions 11-26.

Please turn to the last page. Number 29 should read, I currently do not exercise, but I am thinking about starting to exercise in the next 6 months. Your task on this section is to determine your current level of physical activity. The blank lines have been provided to allow you to indicate a level of physical activity different than the provided statements. For example, as number 29 reads, I currently do not exercise, but I am thinking about starting to exercise in the next 6 months and number 32 reads I currently exercise some, but not regularly. If you do not feel that your physical activity level exactly matches either of these statements, but it does fall somewhere in between them, then you would answer yes to either number 30 or 31. Indicating answer number 30 means you feel your activity level is closer to number 29 and indicating number 31 means you feel your activity level is closer to number 32. Remember, you can only choose one answer to be yes. All other answers must be no. Do not fill out anything on the blank lines. An example of how the scantron sheet should look is like this. Please fill out the last section of the assessment and turn your papers over when finished.

At this time, please insert your scantron back inside your handout and pass all papers to the right. Thank you for filling out the assessment.

Please answer the following questions by filling in the letter of the response that best coincides with how you feel about the statement. (a = Extremely Important, b = Somewhat important, c = Unsure, d = Not Very Important, e = Not at All Important)

Example 1:

I would have more energy for my family and friends if I exercised regularly.

a.	b.	c.	d.	e.
Extremely Important	Somewhat Important	Unsure	Not Very Important	Not at All Important

Example 2:

I think I would be too tired to do my daily work after exercising.

a.	b.	c.	d.	e.
Extremely Important	Somewhat Important	Unsure	Not Very Important	Not at All Important

Example 3:

At the end of the day, I am too exhausted to exercise.

a.	b.	c.	d.	e.
Extremely Important	Somewhat Important	Unsure	Not Very Important	Not at All Important

Remember: You must determine if the impact of exercise on the particular aspect of your life is important to you or not.

Consider the following question, "**Do you engage in regular physical activity?**"

NOTE: Physical activity or exercise means walking briskly, vacuuming, jogging, digging in the garden, climbing stairs, or any other physical activity where exertion is similar to these. Regular physical activity or exercise means accumulating 30 minutes or more in the above activities most days of the week. For example, you could take one 30 minutes walk, jog, bike or swim, or three 10 minutes walks, or 15 minutes of vacuuming, 10 minutes of digging and 5 minutes of climbing.

For items 27-37 please answer **YES** (a) to the **ONE** statement that reflects what you currently do regarding physical activity. All others should be marked **NO** (b).

27.	I currently do not exercise and I do not intend to start exercising in the next 6 months.	a.	yes	b.	no
28.	_____	a.	yes	b.	no
29.	I currently do not exercise, but I am thinking about starting to exercise in the next 6 months.	a.	yes	b.	no
30.	_____	a.	yes	b.	no
31.	_____	a.	yes	b.	no
32.	I currently exercise some, but not regularly.	a.	yes	b.	no
33.	_____	a.	yes	b.	no
34.	_____	a.	yes	b.	no
35.	I currently exercise regularly but I have only begun doing so within the last 6 months.	a.	yes	b.	no
36.	_____	a.	yes	b.	no
37.	I currently exercise regularly and have done so for longer than 6 months.	a.	yes	b.	no

APPENDIX F

PROTOCOL FOR POSTASSESSMENT

Hi! At the beginning of the semester, you filled out an assessment, and I informed you that at the end of the semester you would be filling out a similar assessment. Therefore, today we are going to take the time to do that. We will be filling it out section by section, so please do not work ahead. When you finish a section, please remain quiet and look forward so I know you are finished, and we can proceed as quickly as possible.

A scantron sheet has been inserted into the assessment. At this time, please fill out only the Social Security section with the following information. **EXAMPLE.** The first two numbers will be the month of your birth, the second two numbers will be the date of your birth, and the last five numbers will be the last five digits of your current phone number. If you have changed phone numbers since the last time we took the assessment, please use the last five digits of your old phone number. Please fill out this section now, but do not fill out any other information.

The actual assessment is broken down into four parts. Please look at page 1 of the assessment. The first part deals with demographic information such as your year in school, your gender, and your age. Please fill out this section now. It consists of questions 1-10.

The second part looks at various aspects of your life and how exercise affects them. I will read you the directions and provide you with three examples of how to answer the questions. **EXAMPLE.** The directions are: Please answer the following questions by

filling in the letter of the response that best coincides with how you feel about the statement. (a = Extremely Important, b = Somewhat important, c = Unsure, d = Not Very Important, e = Not at All Important)

Example 1:

I would have more energy for my family and friends if I exercised regularly.

What you must determine is if you exercised regularly would the impact of having more energy for family and friends be important to you or not.

Your answers will range from extremely important too not important at all.

Example 2:

I think I would be too tired to do my daily work after exercising.

What you must determine is if you exercised would the impact of being too tired to do your daily work be important to you or not.

Example 3:

At the end of the day, I am too exhausted to exercise.

What you must determine is if it is important to you or not that at the end of the day you are too exhausted to exercise.

For all of the following questions, you must determine if the impact of exercise on the particular aspect of your life is important to you or not. Please turn to page 2 and complete part two of the assessment. It consists of questions 11-26.

Please turn to page four. Your task on this section is to determine your current level of physical activity. **EXAMPLE.** The blank lines have been provided to allow you to

indicate a level of physical activity different than the provided statements. For example, as number 29 reads, I currently do not exercise, but I am thinking about starting to exercise in the next 6 months and number 32 reads I currently exercise some, but not regularly. If you do not feel that your physical activity level exactly matches either of these statements, but it does fall somewhere in between them, then you would answer yes to either number 30 or 31. Indicating answer number 30 means you feel your activity level is closer to number 29 and indicating number 31 means you feel your activity level is closer to number 32. Remember, you can only choose one answer to be yes. All other answers must be no. Do not fill out anything on the blank lines. An example of how the scantron sheet should look is like this.

Please turn to the last page. The last section of the assessment asks you to answer a couple of questions. Please follow the instructions provided and answer questions thoroughly. After completion of this section, please sit quietly and face the front.

Please insert the scantron sheet back into the assessment and pass all papers to the center aisle. Thank you for filling out the assessment.

Please answer the following questions by filling in the letter of the response that best coincides with how you feel about the statement. (a = Extremely Important, b = Somewhat important, c = Unsure, d = Not Very Important, e = Not at All Important)

Example 1:

I would have more energy for my family and friends if I exercised regularly.

a.	b.	c.	d.	e.
Extremely Important	Somewhat Important	Unsure	Not Very Important	Not at All Important

Example 2:

I think I would be too tired to do my daily work after exercising.

a.	b.	c.	d.	e.
Extremely Important	Somewhat Important	Unsure	Not Very Important	Not at All Important

Example 3:

At the end of the day, I am too exhausted to exercise.

a.	b.	c.	d.	e.
Extremely Important	Somewhat Important	Unsure	Not Very Important	Not at All Important

Remember: You must determine if the impact of exercise on the particular aspect of your life is important to you or not.

Consider the following question, **"Do you engage in regular physical activity?"**

NOTE: Physical activity or exercise means walking briskly, vacuuming, jogging, digging in the garden, climbing stairs, or any other physical activity where exertion is similar to these. Regular physical activity or exercise means accumulating 30 minutes or more in the above activities most days of the week. For example, you could take one 30 minutes walk, jog, bike or swim, or three 10 minutes walks, or 15 minutes of vacuuming, 10 minutes of digging and 5 minutes of climbing.

For items 27-37 please answer **YES** (a) to the **ONE** statement that reflects what you currently do regarding physical activity. All others should be marked **NO** (b).

27.	I currently do not exercise and I do not intend to start exercising in the next 6 months.	a.	yes	b.	no
28.	_____	a.	yes	b.	no
29.	I currently do not exercise, but I am thinking about starting to exercise in the next 6 months.	a.	yes	b.	no
30.	_____	a.	yes	b.	no
31.	_____	a.	yes	b.	no
32.	I currently exercise some, but not regularly.	a.	yes	b.	no
33.	_____	a.	yes	b.	no
34.	_____	a.	yes	b.	no
35.	I currently exercise regularly but I have only begun doing so within the last 6 months.	a.	yes	b.	no
36.	_____	a.	yes	b.	no
37.	I currently exercise regularly and have done so for longer than 6 months.	a.	yes	b.	no