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Relationships between exercise motives and maintenance among college students

Judith Ann Craig

RELATIONSHIPS BETWEEN EXERCISE MOTIVES AND MAINTENANCE AMONG COLLEGE STUDENTS

A Thesis

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Approved by:

[redacted] 6-8-2011

Dr. Kim Clark, Chair
Health Science and Human Ecology — Date

[redacted]

Dr. Ted Coleman

[redacted]

Dr. Robert LaChausse

[redacted]

Dr. Shannon Siegel, Kinesiology

ABSTRACT

Despite the known benefits of physical activity, lack of exercise is a significant health problem in the college population. A key issue in exercise maintenance research is developing an understanding of what motivates individuals to begin and maintain an exercise program. The objective of this study was to examine possible gender differences in exercise motives and what role these motives play in advancing individuals to the maintenance phase of an exercise program. College students from three California universities were randomly selected to complete an on-line survey consisting of the EMI-2 instrument, the Exercise Self-Efficacy Scale, the Stages of Change Continuous Measure, and the Social Support for Exercise Scale. The findings of this study suggest that college males and females are equally driven to exercise by intrinsic motives. The results also indicate that intrinsic motives are more crucial than extrinsic motives in moving college students to the maintenance phase of an exercise program. The implication of these findings is that college exercise programs should be specifically designed to appeal to participants' intrinsic motives.

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CHAPTER ONE

INTRODUCTION

Lack of physical activity is a leading risk factor for a variety of chronic conditions such as coronary heart disease, hypertension, diabetes, and some cancers. Evidence shows that regular physical activity improves physiological and psychological health (US Department of Health & Human Services USDHHS, 2000). In addition to weight management, the physiological effects of physical activity are wide-ranging. For example, regular physical activity can reduce the risk of hypertension, coronary heart disease, type 2 diabetes (by 33 - 50%), colon cancer (especially in men), and breast cancer (especially in women) (Miles, 2007). There is also evidence that physical activity can be beneficial in the management of mental health diseases, especially depression and anxiety (Paluska & Schwenk, 2000).

Given the benefits of physical activity and the risk of physical inactivity, it would seem as if participation in physical activity would be the norm. However, findings from the 2001 and 2003 Behavioral Risk Factor Surveillance System (BRFSS) surveys indicate that more than half of U.S.

adults fail to participate in recommended levels of physical activity (Centers for Disease Control and Prevention, 2005). Similarly, rates of physical activity among young people are low. For example, the 2005 Youth Risk Behavior Surveillance System (YRBSS) reports that only 35.8% of high school students nationwide meet the recommended level of physical activity (Centers for Disease Control and Prevention, 2005).

The number of overweight and obese adults is increasing among all population groups (USDHHS, 2002). In 1999, approximately 61% of U.S. adults were overweight or obese compared to an estimated 47% in the late 1970s. Unfortunately, this number continues to grow each year (USDHHS, 2002). Becoming overweight or obese is generally a result of not enough physical activity and the consumption of too many calories.

Gender differences exist among high school students. More high school males (43.8%) than females (27.8%) reported meeting the recommended level of physical activity. The results of the 2005 YRBSS show that the percentage of students engaging in the recommended level of physical activity declined during each of the four years of high school. Evidence indicates that the level of physical

activity also declines from high school to college (Kilpatrick, 2005).

In order to obtain the benefits of physical activity, the Centers for Disease Control and Prevention (CDC) (2005) and the American College of Sports Medicine (ACSM) (2003) recommend that adults engage in at least 30 minutes of moderate-intensity physical activity on most (preferably all) days. Past research, however, indicates that as adolescents enter adulthood, activity levels tend to decline (US Department of Health & Human Services, 2000). More than two thirds of adults fail to meet the level of physical activity recommended for health benefits (Buckworth, 2007). Almost half of all college students report a decrease in physical activity following graduation (Kilpatrick, 2005).

Numerous determinants of physical activity level have been identified in research. These determinants include demographic, psychological, social, cultural, and physical environmental factors, and physical activity characteristics (Anderson, 2003). Pate et al. (1995) argue that situational barriers such as lack of time are among the many reasons given for failing to exercise. Pate et al. (1995) also note work and family responsibilities as

reasons often cited for failure to maintain an exercise program. High rates of attrition are also apparent in the majority of exercise programs (Anderson, 2003). Typically, over 60% of individuals who start a regular exercise program drop out within six months (Pate et al., 1995).

Many factors influence an individual's motivation to adhere to an exercise program. The existing literature surrounding motives for physical activity has delineated two categories of psychological motives: extrinsic and intrinsic (Buckworth, 2007). Intrinsic motivation is associated with performance and ego-related factors such as challenge, strength, endurance, and competition. With intrinsic motivation, the purpose of performing a behavior is for the pleasure and satisfaction of the process. Extrinsic motivation is fueled by tangible rewards and benefits like weight-loss and appearance-related factors. The purpose of an extrinsically motivated behavior is to gain benefits or avoid negative consequences that are expected to occur afterwards.

Studies have shown that individuals acting on intrinsic motivation will be more likely to adhere to a long-term exercise program compared to individuals acting on extrinsic motivation (Buckworth, 2007). Buckworth

explains, "Intrinsic motivation is believed to promote flexible and creative responses that are focused on the task at hand and not contingent on the presence of external reinforcers" (p.4).

An individual's motives for participating in physical activity also tend to be different for different types of physical activity. Individuals involved in group sports tend to report intrinsic motivation as the reason for adhering to physical activity program (Kilpatrick, 2005). Intrinsic motivations, such as enjoyment, challenge, affiliation, and competition, have been found to accompany sport participation. Individuals involved in exercise programs, such as aerobics and other non-competitive physical activity, tend to report extrinsic motives for adherence. Body image, weight management, and strength and endurance have been extrinsic motivations linked to exercise programs (Kilpatrick, 2005).

There is evidence that although men and women share some common motives for exercise, other motives are significantly different (Anderson, 2003). Kilpatrick (2005) found that women tend to be driven by extrinsic motivation (such as losing weight) whereas men tend to be driven more by intrinsic motivation (such as competition). Because men

are driven by intrinsic factors, they tend to prefer physical activities such as team sports, competitive racing, and activities geared toward competition. Because women are more driven by extrinsic motivation, they tend to favor activities geared toward weight loss. Research also shows that, on average, women are more sedentary than men in every age group, and they experience higher rates of obesity (USDHHS, 2000). Buckworth (2007) claims that women tend to be more sedentary because they are motivated by extrinsic rather than intrinsic factors.

Statement of Problem

The number of overweight and obese adults is increasing. The level of physical activity declines from high school to college, and activity levels of college students, on average, fail to improve health and fitness (Kilpatrick, 2005). According to the American College Health Association (ACHA) (2006), only 35.6% of college students report exercising for 20 minutes three to five days per week. Research estimates that 26% to 35% of the nation's college students fall in the overweight and obesity range (Lowry et al., 2000).

Typically, over 60% of individuals who start a regular exercise program drop out within six months (Pate et al., 1995). The challenge is determining what motivates college students to begin and adhere to an exercise program. However, according to Kilpatrick (2005), research that directly compares the motivations to participate in sport and exercise is sparse.

Purpose of Study

To date, much literature surrounding the effect of gender on exercise adherence has failed to recognize the specific psychological motives involved in physical activity adherence (Kilpatrick, 2005). An understanding of what motivates male and female college students to become physically active, and to progress to the maintenance stage, is essential in developing health promotion programs aimed at increasing college student's levels of physical activity. Knowledge of these gender differences will help develop exercise intervention programs specifically tailored to motivate the target audience.

Importance of Study

The American College Health Association's National College Health Assessment (ACHA-NCHA) is a national research survey designed to guide college health service providers, health educators, counselors, and administrators in uncovering their students' habits, behaviors, and perceptions on important health topics (ACHA, 2006). The ACHA-NCHA "supports the health of the campus community by fulfilling the academic mission, supporting short- and long-term health behaviors, and gaining a current profile of health trends within the campus community" (p.1). The ACHA developed the guidebook *Healthy Campus 2010* based on *Healthy People 2010*. *Healthy Campus 2010* establishes national college health objectives that serve as a guideline for developing plans to improve the health of college and university students over the next decade. The major health concerns pertaining to college students in the United States are identified. The top two leading health indicators are physical activity and obesity. The ACHA has determined that, over the next decade, physical activity should be a top priority among national colleges and universities.

The literature regarding adherence to physical activity consistently points to motives as a key variable in exercise adoption and maintenance. With such a large percentage of college students failing to participate in recommended levels of physical activity, it is imperative that health researchers delineate the psychosocial motives that influence physically inactive students to begin and maintain an exercise program. Additionally, in order to determine why individuals adhere to an exercise program for longer than six months, the actual motives that influence these individuals to maintain regular exercise must be determined.

Scope of Study

Data was collected from students attending three colleges within the United States (California State University, San Bernardino, California Polytechnic State University, San Luis Obispo, and Sonoma State University). Students registered in introductory psychology classes at the three universities had an equal opportunity to take the survey.

Limitations

The data for this study were collected from college students through the use of a self-report measure. This type of data collection required college students to report accurately.

The sample for this study was drawn from three universities in California. Due to the fact that all three universities are located in the same state, external validity could have been jeopardized. The sample may not be representative of students outside of California.

Delimitations

The research is cross-sectional in nature and cannot uncover the temporal nature of associations. College students may change developmentally as they progress through their college years. This research cannot uncover possible developmental reasons related to exercise maintenance.

Hypothesis

The study addressed the following hypotheses:

H_1: College males are more likely to initiate exercise because of intrinsic motives.

H_2: College females are more likely to initiate exercise because of extrinsic motives.

H_3: Extrinsic exercise motives differ depending on the stages defined by the Transtheoretical Model in both college males and females.

H_4: Intrinsic exercise motives differ depending on the stages defined by the Transtheoretical Model in both college males and females.

H_5: The frequency of exercise participation is positively related to social support in both college males and females.

Rationale of the Proposed Study

Literature indicates that a large majority of college students fail to achieve the recommended level of physical activity despite the well established health benefits of regular exercise. Research supports the fact that males are more likely to be motivated by intrinsic factors and females are more likely to be motivated by extrinsic factors. Individuals motivated by intrinsic factors tend to choose sport participation, and individuals motivated by extrinsic factors tend to choose exercise participation. Research also supports the fact that males and females who experience a greater amount of social support and exercise self-efficacy will be more likely to engage in exercise.

Research that directly compares the motivations to participate in different sport activities is limited (Kilpatrick, 2005). Furthermore, these studies usually fail to examine potentially important gender differences in motivation for physical activity (Kilpatrick, 2005).

Established research indicates that motivating an individual to maintain an exercise program is difficult. Individuals who receive enjoyment from physical activity are more likely to adhere to an exercise program. Individuals who receive social support tend to experience more enjoyment from exercise. Enjoyment has important gender differences when viewed across type of activity. Males and females tend to choose different types of exercise depending on their motivation. Again, males are more likely to choose team sports and females are more likely to choose exercise participation. Kilpatrick claims, "Limited prior research shows that enjoyment is more highly related to sport participation and that body related [*sic*] motivations, such as appearance, weight management, and strength and endurance, are more highly related to exercise participation" (p.88).

There has been a limited amount of research concentrating on the differences in female and male motives

to remain in the maintenance phase of an exercise program (Buckworth, 2007). Research has shown that men tend to gravitate toward physical activity that provides opportunities to demonstrate mastery and competence. Women tend to seek out types of physical activity that provide opportunities to address weight loss and body image. Both males and females are more likely to maintain exercise behavior if they experience self-efficacy and social support (Buckworth, 2007).

What may motivate college males to move through initial stages of change and to finally reach the maintenance phase may be different than what may motivate college females to move through initial stages of change and to finally reach the maintenance phase. Literature indicates that the Transtheoretical Model has established a connection between exercise maintenance and intrinsic motivation (Mullan & Markland, 1997). As individuals move into the maintenance phase, their level of intrinsic motivation increases. If women are more motivated by extrinsic factors, exercise maintenance may be more difficult to accomplish than if they were motivated by such factors. However, increased self-efficacy and social support have been shown to have a strong influence in

behavior maintenance regardless of gender. The Transtheoretical Model can help undercover the connections between exercise motivations, gender, and exercise maintenance.

Definitions of Terms

The following definitions were used for this research:

Action Stage:	When an individual is actively engaged in behavior and lifestyle changes.
Behavioral Beliefs:	Behavioral beliefs are beliefs about the likely positive or negative consequences of the behavior.
Contemplation Stage:	When an individual is aware of problems and is weighing the pros and cons of adopting a lifestyle change, but has made no commitment to change.
Control Beliefs:	Control beliefs are beliefs about self-efficacy, i.e., the ability to perform the behavior.
Duration:	How long an activity is performed.
Exercise maintenance:	In the maintenance stage, individuals are working to maintain changes they have made in terms of adhering to an exercise program.
Extrinsic motivation:	Motivation that is driven by rewards that lie outside the

	activity itself, such as losing weight and tangible rewards.
Exercise initiation:	Beginning an exercise program.
Frequency:	How often an activity is performed.
Intensity:	How hard a person is working or the rate of energy expenditure an activity demands.
Intrinsic motivation:	Motivation that is fueled by performance and ego-related factors, such as challenge, strength, endurance, and competition
Maintenance Stage:	When individuals are working to maintain the changes they have made.
Normative Beliefs:	Normative beliefs are beliefs about the expectations of others (friends, family, and peers) including perceived social pressures that individuals may feel to perform or not to perform a given behavior.
Overweight:	An individual with a body mass index between 25 and 29.9 is considered overweight (USDHHS, 2002).
Physical activity:	The USDHHS (2002) defines physical activity as "Bodily movement that is produced by the contraction of skeletal muscle and that substantially increases energy expenditure" (p.2). Therefore, this term includes all types of physical movement, including team sports, aerobic exercise, hobbies,

	and any activities related to everyday life.
Physical inactivity:	The USDHHS (2002) defines physical inactivity as "A state in which bodily movement is minimal and energy expenditure approximates the resting metabolic rate" (p.2).
Precontemplation Stage:	When an individual is unaware of (or in denial of) any problem and is not considering change.
Preparation Stage:	When individuals have made a commitment to change and may be making small behavior and lifestyle changes.
Social connections:	Developing and maintaining interpersonal relationships.
Social support:	The extent to which an individual receives support from peers and family to continue an exercise program.

Overview of Study

This study compared and contrasted the psychological motives related to physical activity among male and female college students, with implications for the design of effective physical activity programs for college students. Gender differences related to maintenance of physical activity among college students was also examined. It is imperative to understand not only why college students

begin an exercise program, but also what motivates them to maintain an exercise program.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Epidemiology

Despite overwhelming evidence of the health benefits associated with physical activity, few people actually maintain a regular exercise program (Paluska & Schwenk, 2000). National studies have found that 60% of adults were physically inactive or irregularly active. Twenty-two percent of Americans engaged in no physical activity at all (USDHHS, 2000). Only 33% of adults achieve the American College of Sports Medicine (ACSM) and the CDC recommended levels of moderate intensity physical activity (Paluska & Schwenk, 2000).

Levels of physical activity tend to decline from high school to college, and the amount of physical activity of college students is generally insufficient to improve health and fitness (Kilpatrick, 2005). According to Kilpatrick (2005), the rate of physical activity adherence declines as individuals progress from high school to college. Specifically, 38% of college students, compared to 65% of high school students, report participating in regular physical activity (Kilpatrick, 2005). Kilpatrick

also claims that almost half of all college students report a decrease in physical activity following graduation. Clearly, rates of physical activity typically diminish across the life span.

Wallace (2000) also describes how physical activity participation decreases over the lifespan. The most apparent decline occurs between the ages of 15 to 22. Only 42% of males and 30% of females report participating in regular physical activity by the age of 21 (Wallace, 2000). Results from national health-related surveys indicate that approximately 63.7% of high school students, 37.6% of college students, and 14% of adults participate in regular vigorous physical activity. Physical activity participation continues to decrease with age, and only 10% of American adults engage in regular vigorous physical activity (Wallace, 2000). Only 46% of adults ages 18-25 years continue an active lifestyle beyond secondary school (USDHHS, 2000).

Physiological Benefits of Physical Activity

The CDC (2003) describes moderate physical activity as any activity that burns 3.5 to 7 calories per minute. This

activity can come from running, walking, gardening, playing basketball, swimming, or any other activity of choice. Participation in regular moderate physical activity is critical in sustaining good health. Regular moderate physical activity has many positive effects that aid in the prevention of a broad range of health problems and diseases. People of all ages, both male and female, benefit greatly from physical activity (USDHHS, 2002). Regular physical activity can lead to cardiovascular fitness, which can decrease the risk of mortality related to cardiovascular disease (USDHHS, 2002). Regular physical activity has also proven helpful in reducing blood pressure (Miles, 2007).

Regular physical activity is also beneficial in maintaining bone health and muscle strength (USDHHS, 2002). Weight-bearing physical activity is crucial for normal skeletal development and the maintenance of peak bone mass in adolescents. Regular physical activity also appears to reduce the incidence of bone fractures among the elderly (Miles, 2007).

The key to maintaining a healthy weight is the combination of physical activity and a sensible diet. To avoid weight gain, there must be a balance between calories

burned and calories consumed (USDHHS, 2002). Obesity usually results from the consumption of too many calories and the failure to maintain regular physical activity (Miles, 2007).

Psychological Benefits of Physical Activity

A positive correlation exists between physical activity levels and improved mental health (Paluska & Schwenk, 2000). Plante and Rodin (1990) examined over 200 articles on a variety of studies that explored the effects of physical activity on psychological health and well-being. The majority of these articles highlighted the tension and stress reducing effects of physical activity. Plante and Rodin (1990) concluded that the general consensus of these studies was that exercise leads to improved mood, self-concept, and work behavior, as well as improved cognitive functioning during and immediately following exercise. Plante and Rodin (1990) conclude, "Empirical research conducted since 1980 suggests that exercise improves mood and well-being and reduces anxiety, depression, and stress" (p.9).

Akande (1999) suggests that the negative impact of stressful events on health declines as exercise and

nutrition levels increase. Physically active people tend to have lower rates of anxiety and depression than sedentary people. Exercise seems to give the body a chance to practice dealing with stress (Akande, 1999). There is also evidence that regular physical activity can help maintain mental health as individuals age (Azar, 1996). Akande (1999) argues that depression is associated with low levels of norepinephrine and regular exercise increases this neurotransmitter. Akande also claims "Physical exercise can bring about heightened joy, self-esteem, affective awareness, elevated mood [*sic*] and a higher state of consciousness" (p.766).

Gender Differences Related to Physical Activity

A survey conducted among 1,772 ethnically diverse college students (40% men and 60% women) found that college men and women reported different physical activity levels (George, 2000). According to George, 32% of men but only 22% of women reported participating in at least 30 minutes of moderate intensity physical activity five or more days per week. Among these same group of college students, 22% of men and 13% of women reported engaging in vigorous physical activity five or more days per week. George (2000)

claims that the majority of these college students, both men and women, failed to achieve the current recommended physical activity levels. Even though both college men and women are falling short of the recommended level of physical activity, it appears college women are further behind (George, 2000).

As adolescents progress into adulthood, activity levels decline. This decline seems to be particularly true for women. While 60% of 12-year-olds reported engaging in vigorous exercise, this figure drops to 30% for women by the time they reach the age of 21 (CDC, 2005). Physical activity levels among women in the United States consistently remain lower than men throughout the adolescent and adult years (USDHHS, 2000). George (2000) claims "Previous work suggests that university students may not meet physical activity guidelines and that women appear to engage in aerobic exercise less frequently than men" (p.128).

Differences in the physical activity level of male and female college students in Australia and Britain have been noted. Leslie (1999) found that the average college student in Australia fails to meet the current physical activity recommendations of the American College of Sports Medicine.

Leslie also notes that "Australian studies have shown differences in physical activity levels between men and women, with more women than men being insufficiently active to achieve most of the long-term health benefits" (p.21). Similar findings are evident in Britain. Miles (2007) reports that the 2003 Health Survey for England indicates that activity levels were greater in college men than women.

Socioeconomic and Ethnic Differences

Cancer, cardiovascular disease, and diabetes account for almost 70% of mortality in the United States, with nonwhite minorities at the greatest risk for morbidity and mortality related to disease (Fahlman, Hall, & Lock, 2006). Compared to Caucasians, African Americans have higher rates of obesity, stroke, diabetes, and heart disease. The Hispanic population has a higher rate of diabetes and obesity than non-Hispanic whites (Fahlman, Hall, & Lock, 2006). Higher rates of diabetes, in every population, are related to obesity and lack of physical activity (USDHHS, 2000). Less than 33% of African American and Hispanic women claim to participate in regular physical activity. In general, lower socioeconomic groups are less likely to

engage in physical activity and more likely to be at risk for diabetes (Fahlman, Hall, & Lock, 2006).

Hall, Kuga, and Jones (2002) claim that researchers studying college populations tend to find a low level of physical activity and a higher rate of obesity among African-American men and women. Leslie (1999) believes that "Race and ethnicity might influence the basic psychological processes of perception, cognition, value acquisition, personality development and expression, and social interaction" (p. 20). Leslie (1999) suggests that the very way one thinks about physical activity and exercise may be influenced by one's gender and racial classification.

Women have higher rates of inactivity than men, and this seems to be especially true among minority women. Nationally, rates of physical inactivity in women range from 23% to 57% (Cassetta, 2007). African-American and Hispanic women report rates of physical inactivity as 36% and 40% respectively (Cassetta, 2007).

Motives Related to Physical Activity

Motivation can be either intrinsic or extrinsic in nature. With intrinsic motivation, the purpose of performing a behavior is for the pleasure and satisfaction

of the process. The behavior is internalized and becomes an integral part of the make up of an individual. In contrast, extrinsic motivation is driven by rewards that lie outside the activity itself, such as losing weight and tangible awards (Buckworth, 2007).

Kilpatrick (2005) found many differences between men's and women's motives for physical activity. Kilpatrick found that the link between weight management and exercise participation (rather than sport participation) was especially true for women. Findings in this particular study suggest that college women have greater concerns regarding their body weight than do men. Kilpatrick (2005) argues that the findings of this study seem appropriate on the surface, given that younger women, on average, are more likely to be overweight than their male peers. Kilpatrick also argues that this may well be reflective of a deeper, long-standing concern that has an origin in childhood. Kilpatrick (2005) speculates that "Young girls may diet more often and have less body satisfaction than young boys, perhaps in response to contemporary societal standards of female body shape" (p. 93).

There is evidence that although women and men share some common motives for exercise, other motives are

significantly different (Anderson, 2003). Research shows that women tend to be more sedentary than men in every age group, and they experience higher rates of obesity (USDHHS, 2001). This may be due to the fact that women tend to be motivated by extrinsic motivation, such as weight management. Kilpatrick (2005) found that college women have greater concerns regarding their body weight than do men. Kilpatrick also found that the motive of weight management is more strongly linked to exercise than sport participation. Other findings indicate that men are more often intrinsically motivated by performance and ego-related factors, such as challenge, strength, endurance, and competition when compared with women. Men seem to seek out types of activities that provide for opportunities to demonstrate mastery and competence (Kilpatrick, 2005).

Kilpatrick (2005) sampled a total of 233 students, aged from 18 to 47 years, and enrolled in undergraduate health and kinesiology courses at a university in the southeastern United States. Kilpatrick found that the highest-rated motives for sport participation were competition, affiliation, enjoyment, and challenge. Kilpatrick also found that the highest-rated motives for weight loss and appearance were exercise behaviors.

Kilpatrick concluded, "These factors may indicate that sport participation is more closely linked to intrinsic motives, whereas exercise is associated with primarily extrinsic motives" (p.92). Enjoyment seems to be closely related to sport participation, whereas body-related motivations, such as weight management, seem to be more closely related to exercise participation. According to Kilpatrick (2005), sport is highly related to challenge and competition, and exercise is highly related to appearance and weight loss.

Kilpatrick's findings showed that, compared to women, men were motivated more by performance and ego-related factors, such as challenge and competition. Kilpatrick (2005) states "Our findings seem to support the notion that exercise participants, and perhaps men in particular, are inclined to view exercise and fitness activities as an opportunity to pursue and achieve ego-related goal outcomes" (p.93).

These findings are similar to those by Koivula (1999) who found that if a person participates in a sport activity and reports an enjoyable and meaningful experience, this person will be more likely to continue participating. What one person views as enjoyable and meaningful may be

different from others. Koivula questioned 440 college students at Stockholm University regarding their motives for physical activity participation. Koivula found that females seem to value competition less than males. Weight control and appearance seemed to be strong participation motives for women. Koivula argues that the gender differences are a result of societal expectations. Generally, men are expected to value competition and women are expected to avoid competing with others. Compared to men, women are expected to be more concerned with physical appearance. Compared to men there is also a much stronger pressure on women to be slim (Koivula, 1999).

Looking at a sample of 347 college students drawn from six different universities, Hall, Kuga, and Jones (2002) also found that men preferred team sport activities to non-competitive choices. Women's choices were more wide-ranging, including sports, walking, running, biking, and exercise classes. This diversity in women's choices lies in contrast to the more narrowly competitive nature of young men and their team sport socialization in this society (Hall, Kuga, & Jones, 2002).

According to Allen (2006), both men and women have a need for belonging and tend to seek out social contexts

such as sports or exercise classes in which to satisfy this need. For many participants, the social aspect of exercise participation is what provides meaning and enjoyment. Individuals who become members of a group with similar activity interests will be more likely to continue participating in these activities (Allen, 2006). Allen claims that the desire for social bonds and connections with others has a long history in psychological research. Allen refers to this "desire for social bond" as the need for affection between people, the need for positive regard from others, belongingness, affiliation motivation, and the need for relatedness. Allen (2006) also suggests that a sense of belonging in an exercise sport setting is characterized by feeling secure, included, and respected (Allen, 2006). The feeling of social belonging and enjoyment experienced during physical activity is associated more with intrinsic rather than extrinsic motivation.

Health Behavior Theories and Physical Activity

The choice to participate in exercise seems to be dynamic in nature. Individuals tend to pass through stages in their transition from physical inactivity to the

maintenance of regular exercise (Mullan & Markland, 1997). The Transtheoretical Model, developed by Prochaska and DiClemente (1983), is a stages-of-change model often used to look at the adoption and maintenance of exercise behavior (Mullan & Markland, 1997). The model proposes that individuals who engage in behavior change pass through five stages. These stages range from no thought of exercise behavior to successful maintenance of exercise behavior. The five stages are precontemplation, contemplation, preparation, action, and maintenance.

In the precontemplation stage, an individual is unaware of (or in denial of) any problem and is not considering change. In the contemplation stage, an individual is aware of problems and is weighing the pros and cons of adopting a lifestyle change, but has made no commitment to change. In the preparation stage, an individual has made a commitment to change and may be making small behavior and lifestyle changes. In the action stage, an individual is actively engaged in behavior and lifestyle changes. Finally, in the maintenance stage, an individual is working to maintain the changes they have made. As a result, the ultimate goal of exercise programs should be moving individuals into the maintenance phase.

Buckworth (2007) found that both intrinsic and extrinsic motivation increased across stages of change, suggesting that both intrinsic and extrinsic motivation remain important throughout the adoption and maintenance process. Individuals in the contemplation stage reported lower intrinsic and extrinsic motivation than those in the preparation and action stages. Individuals in the preparation and action stages reported lower intrinsic and extrinsic motivation than did those in the maintenance stage. According to Mullan and Markland (1997) and Buckworth (2007), an individual acting on intrinsic motivation will be more likely to be in the maintenance stage of change. Individuals in the maintenance stage reported high levels on intrinsic motivation. Similarly, Mullan and Markland (1997) found that intrinsic motivation distinguished those in the action and maintenance stages of change from those in the precontemplation and contemplation stages. The degree of intrinsic motivation increased in each of the five stages, peaking in the maintenance stage.

Lorentzen (2007) also studied the Transtheoretical Model with regards to exercise behavior. In this study, data were collected from 2,336 men and women, aged 31 to 67, using a self-administered questionnaire. Information

regarding stages of change in physical activity, self-efficacy, social support, and perceived behavioral control was collected. Lorentzen found an individual's self-efficacy and stage of change to be related. Precontemplators had the lowest self-efficacy score, while maintainers had the highest. Self-efficacy scores increased across the five stages, peaking in the maintenance stage. Lorentzen (2007) claims the most common barriers to exercise reported were tiredness, depression, anger, stress, and lack of social support. Lorentzen concludes that "The present findings suggest that for moving individuals more effectively along the stage continuum, interventions should attempt to increase precontemplators', preparers', and actors' confidence in doing planned physical activity despite both practical and psychological barriers" (p.101).

Lorentzen (2007) also noticed a positive linear relationship between stages of physical activity behavior change and social support from family and from friends. Precontemplators perceived less family support compared to those in the maintenance stage. These findings suggest that it is imperative to foster social support from family and friends in order to move preparers to the action stage

(Lorentzen 2007). Lorentzen highlights the importance of enhancing physically inactive individual's self-efficacy to start and exercise program despite perceived barriers. Lorentzen (2007) claims that "Intervention strategies aimed at validating and developing the physical activity identity of contemplators, preparers, and actors might include encouraging these people to plan and do physical activity in public places" (p.103).

Wallace (2000) conducted a study in which a random sample of 937 undergraduate students, ages 17-24, at a midwestern university completed a mailed questionnaire. This study revealed that, among females, exercise self-efficacy and social support were both significant predictors of stage of exercise. However, exercise self-efficacy seemed to be the greatest predictor of stage of exercise. Results also showed that both exercise self-efficacy and social support steadily increased across the stages of exercise. Social support for physical activity, physical activity history, and exercise self-efficacy were also significant predictors of stage of exercise behavior change among males, and these also increased across stages. Although social support was a significant predictor of exercise stage among both female and male undergraduate

students, what was different among males and females was from whom this social support was received (Wallace, 2000). Females' social support came more from their family, whereas social support for males came more from their peers. Regardless of where the support is drawn, Wallace (2000) highlighted the importance of social support as a predictor of physical activity. Wallace (2000) also claims, "If young adults leave the college campus as sedentary individuals, they will be very unlikely to adopt a physically active lifestyle upon entry into the workforce" (p. 504).

Self-Determination Theory

According to the Self-Determination Theory (SDT), humans inherently possess psychological needs for autonomy, competence, and social relatedness (Deci & Ryan, 1985). According to Kilpatrick (2005), these needs facilitate the adoption of behaviors and activities that provide for their fulfillment. Kilpatrick claims, "One of the major tenets of this theory concerns the distinction of intrinsic and extrinsic motives" (p. 93). Intrinsic motivation is thought to be the driving force behind most human behavior. If intrinsic motivation is present, behavioral maintenance is

positively affected. The presence of an extrinsic reward positively affects the decision to continue the behavior (Kilpatrick, 2005). Kilpatrick found that intrinsic reasons were more likely to be associated with sport participation and extrinsic reasons were more likely to be associated with exercise. Extrinsic motives were less likely to be associated with the maintenance of an exercise program. Kilpatrick (2005) concludes, "The motives associated with sport participation may more likely lead to long-term adherence than the motives associated with exercise, and that some of the difficulties in long-term maintenance of exercise programs are a result of the extrinsic goal motivations underlying exercise" (p. 93). This could explain the greater adherence rates of sport participation compared to aerobic activities.

Theory of Planned Behavior

According to Ajzen's (1991) Theory of Planned Behavior (TPB), human behavior is guided by behavioral beliefs, normative beliefs, and control beliefs. Behavioral beliefs are beliefs about the possible positive and negative consequences of the behavior. Normative beliefs are beliefs about what others will think or expect, including perceived

social pressures that individuals may feel to perform or not to perform a given behavior. Control beliefs are beliefs about self-efficacy, i.e., the ability to perform the behavior. These three considerations influence an individual's motivation (intention) to perform the behavior, and ultimately an individual's performance of the behavior.

Rhodes (2006) examined the Theory of Planned Behavior in the area of physical activity. The study included 252 undergraduate students who completed a survey in which TPB, physical activity, and related variables were measured at baseline and also two weeks later. Motivation explained 37% of the variance of behavior. Individuals seemed to be more motivated by factors other than being persuaded about the benefits of physical activity. Attitudes, which seemed to be internalized (a decision made by the individual as to the importance of physical activity rather than being lectured on the importance of physical activity), had a large effect on motivation. Rhodes (2006) also found that subjective norms played a valuable part in motivating an individual to adopt exercise behaviors. Students who had social support from family and peers were 64% more likely to engage in physical activity. Social support increased an

individual's enjoyment of exercise and therefore increased motivation. Rhodes (2006) concluded that individuals who experienced greater levels of social support enjoyed exercise more and were more likely to maintain an exercise program.

In summary, it is evident that the number of overweight and obese adults is increasing. The level of physical activity declines from high school to college, and the activity levels of college students are generally insufficient to improve health and fitness. An understanding of what motivates college students to become physically active and maintain physical activity levels throughout college is essential in developing health promotion programs aimed at increasing the health of students. To date, much literature surrounding the effect of gender on exercise adherence has failed to recognize the specific psychological motives involved in physical activity adherence. This study attempted to examine the possible psychological motives related to physical activity and exercise maintenance among male and female college students. Further knowledge of these gender differences will help develop exercise intervention programs specifically tailored to motivate college students.

CHAPTER THREE

METHODOLOGY

The purpose of this study was to uncover what motivates college students to begin and maintain an exercise program. Differences in male and female exercise motives were also examined. Knowledge of these gender differences can help develop exercise intervention programs specifically tailored to motivate the target audience. However, research that directly compares the motivations to participate in sport and exercise, and to maintain an exercise program, is sparse. This study examined not only why female and male college students begin an exercise program, but also what motivates them to maintain an exercise program.

Approach

The data were collected from college students attending three different universities in California. Students who were enrolled in introductory psychology courses at the three universities had the opportunity to complete an on-line survey, after giving their informed consent. Students attending the participating universities

(California State University, San Bernardino, Sonoma State University, and California Polytechnic State University, San Luis Obispo) had equal access to this survey. In order to increase interest, participating students (from each university) were entered into a drawing for a $50.00 gift card to Amazon.com. Data were collected from 450 students (110 men, 340 women) aged from 18 to 59 (m = 20.76, sd = 5.15).

College students who chose to participate in this study answered questions from four measurements. The Social Support for Exercise Scale (Prochaska, Rodgers, & Sallis, 2002) was used to access participants' perception of social support from friends, peers, and family. The Stages of Change-Continuous Measure (Marcus, Selby, Niaura, & Rossi, 1992) was used to determine the reasons why or why not college students adopt and maintain an exercise program. In order to determine the motives of female and male college exercisers, the Exercise Motivations Inventory, second version (EMI-2) (Markland & Ingledew, 1997) was used. The EMI-2 examined intrinsic and extrinsic motives, and uncovered possible differences between the motives of female and male exercisers. The third measure used was an exercise self-efficacy scale (Marcus, Selby, Niaura, &

Rossi, 1992). This scale examined how confident exercisers are to overcome the obstacles that may get in the way of exercising.

The four measures (The Social Support for Exercise Scale, The Stages of Change-Continuous Measure, the EMI-2, and the Self Efficacy Measure) helped determine why or why not male and female college students begin, and more importantly, maintain an exercise program.

Research Method

The hypotheses addressed in this study were as follows:

H_1: College males are more likely to initiate exercise because of intrinsic motives.

H_2: College females are more likely to initiate exercise because of extrinsic motives.

H_3: Extrinsic exercise motives differ depending on the stages defined by the Transtheoretical Model in both college males and females.

H_4: Intrinsic exercise motives differ depending on the stages defined by the Transtheoretical Model in both college males and females.

H_5: The frequency of exercise participation is positively related to social support in both college males and females.

The data collected are quantitative in nature. The research design for this study is cross-sectional. According to Leedy and Ormrod (2005), cross-sectional designs are useful when participants from different groups (in this case, male and female), are sampled and compared. The data for this study were collected at one single time. Leedy and Ormrod explain that a disadvantage of a cross-sectional design is that such a design cannot look at change over time. However, this study was not concerned with change over time. This study was interested in uncovering the motives of exercisers and the perceived obstacles of non-exercisers. Therefore, a cross-sectional design was appropriate for the needs of this study.

Data Collection

Students enrolled in introductory psychology courses at the participating universities were notified of an on-line link leading them to the survey. Consent to participate in the study was obtained through a consent form that described the general purpose of the study,

issues of confidentiality of responses, time commitment, risk and benefits of participation, and contact information regarding the researcher (see Appendix A). Participants were also assured that the study was reviewed and approved by the Institutional Review Board (see Appendix B). Participants were informed that they must be 18 years of age to complete the survey.

Appendix C shows the questionnaire for the participants. The survey was adapted from Exercise Motivations Inventory, second version (EMI-2), The Social Support for Exercise Scale, The Stages of Change-Continuous Measure, and the Self Efficacy Measure (Marcus, Selby, Niaura, & Rossi, 1992; Markland & Ingledew, 1997; Prochaska, Rodgers, & Sallis, 2002). The survey was designed to examine six measures: demographics, social support, exercise motives, exercise self-efficacy, stage of exercise, and exercise frequency.

Demographics

Participants were asked to report their gender, ethnicity, age, and college by answering four questions. Participants were asked to bubble in the answer that they felt best described these four areas.

Social Support

The Social Support for Exercise Scale was used to access participant's perceptions of social support from friends, peers, and family (Prochaska, Rodgers, & Sallis, 2002). The Social Support for Exercise portion of the survey contained 13 questions. A sample question is, "During the past three months, my friends have given me encouragement to stick with my exercise program." Participants' responses ranged from 1 (none) to 5 (very often). This scale has demonstrated adequate reliability (alpha = .81) (Prochaska, Rodgers, & Sallis, 2002).

Exercise Motives

Participants were asked questions related to intrinsic and extrinsic motivation. The instrument used was Markland and Ingledew's (1997) Exercise Motivations Inventory - 2 (EMI-2). The EMI-2 has demonstrated adequate test (.59)-retest (.88) reliability (Markland & Ingledew, 1997). The EMI-2 is composed of 51 items that comprise 14 subscales. These subscales are "stress management, revitalization, enjoyment, challenge, social recognition, affiliation, competition, health pressures, ill-health avoidance, positive health, weight management, appearance, strength and endurance, and nimbleness" (p. 370). Each subscale

reflects a different motivational reason to engage in physical activity. A sample question is, "Personally, I exercise (or might exercise) to stay slim." Participants responded to each item on a six-point scale ranging from 0 (not true for me) to 5 (very true for me). Permission to use the EMI-2 was granted by David Markland, via email (see Appendix D).

Exercise Self-Efficacy

The Exercise Self-Efficacy Scale was used to measure how confident participants are to overcome the obstacles that may get in the way of exercising (Marcus, Selby, Niaura, & Rossi, 1992). A sample question is, "I am confident to exercise if I am under a lot of stress." Exercise self-efficacy was assessed using a five-point scale (1 "not at all confident," to 5 "extremely confident"). The self-efficacy scale has demonstrated high internal consistency coefficients ranging from .77 to .87 (Marcus et al. 1992). Permission to use the Exercise Self-Efficacy scale was granted, via email (see Appendix E).

Stage of Exercise

In order to determine which phase of the Transtheoretical Model [precontemplation (non-believers in exercise), precontemplation (believers in exercise),

contemplation, preparation, action, or maintenance a participant is in], Marcus' (1992) Stages of Change-Continuous Measure was used. This measure has demonstrated adequate test (.76)-retest (.82) reliability (Marcus, Selby, Niaura, & Rossi, 1992). This Stages of Change-Continuous Measure consists of 24 questions. A sample question is, "I have been successful at exercising regularly and I plan to continue." Participant's responses ranged from 1 (strongly disagree) to 5 (strongly agree). Permission to use the Stages of Change - Continuous Measure was granted by Zoe Bruno (see Appendix F).

Exercise Frequency

Participants were asked three questions related to exercise frequency. Responses ranged from 0 days to 7 days. For example, participants were asked how many days, in the past week, they were physically active for at least 20 minutes. Participants were also asked how many days, per week, they perceive the typical college student to be physically active.

Statistical Analysis

Frequency distributions were computed for all demographic variables showing the number and percentage of

male and female respondents, their ethnicity, years in college, and marital status. Descriptive statistics, histograms, and measures of skewness were computed to examine the nature of the distribution of scores for all dependent variables (e.g., self-efficacy) and to check for outliers. For those dependent variables that were not normally distributed, raw scores were converted to standard scores (i.e., z scores) for inferential analyses. The standard scores were then returned to their normal scores for interpretation. For H_1 (College males are more likely to initiate exercise because of intrinsic motives), means and standard deviations, as well as histograms for each group showing the distribution of intrinsic motives scores, were computed. Since the scores were normally distributed, an independent samples t-test was conducted to examine gender differences in intrinsic motivation. The independent samples t-test examines the degree to which the sample means for each group (male and female) vary exclusively to random variability (i.e., chance). The alpha level for all inferential tests was .05. This means that the probability is 5% or less that the effect between the two sample means is due exclusively to random variability, and therefore, the effect is statistically significant. The calculated t

value, degrees of freedom, p values, and measures of effect size (Cohen's d) were calculated. For H_2 (College females are more likely to initiate exercise because of extrinsic motives), means and standard deviations, as well as histograms for each group showing the distribution of intrinsic motivation scores, were computed. Since the scores were normally distributed, an independent samples t-test was conducted to examine gender differences in extrinsic motivation. For H_3 and H_4 (extrinsic and intrinsic exercise motives differ depending on the stages defined by the Transtheoretical Model in both college males and females), a one-way ANOVA was computed to determine if scores for the different TTM stages differ by gender. Since a significant F score was obtained, post hoc tests were conducted to determine the nature of the difference between all pair-wise comparisons. For H_5 (The frequency of exercise participation is positively related to social support in both college males and females), a Pearson product moment coefficient (r) was computed to determine the nature and strength of the relationship between exercise frequency and social support. A hierarchical linear regression was computed to determine if the relationship between exercise frequency and social support was moderated by gender. A

correlation matrix as well as a measure of accounted variability (R squared) was reported.

Validity of Data

Students enrolled in introductory psychology courses at each of the three universities had an equal chance of participating in the study. Participants were told of the nature of the study, the time commitment of the survey, and the guaranteed confidentiality of their responses. Informed consent was required before proceeding with the survey.

Limitations

The sample for this study was drawn from three universities in California. Due to the fact that all three universities are located in the same state, external validity could have been jeopardized. The sample may not be representative of students outside of California.

On-line surveys pose some threats. Students may be concerned with the confidentiality of their responses. However, each participant was assured that all responses will be kept in strict confidentiality and email addresses will not be shared. Also, students may not have seen how the study was relevant and may have chosen not to invest

the time needed to complete the survey. In order to increase a student's willingness to complete the survey, an incentive was offered. Students who participated were entered into a drawing for a $50.00 gift card to amazon.com. One winner from each university was chosen. The data for this study were collected from college students through the use of a self-report measure. This type of data collection required college students to report accurately.

Delimitations

The research was cross-sectional in nature and did not uncover a temporal nature of associations. College students may change developmentally as they progress through their college years. This research did not uncover possible developmental reasons related to exercise maintenance. However, this study looked at the exercise motives of college students and was therefore not concerned with changes that may occur with age.

Originality of the Data

The research involved in this study is original. The data analyzed were the data described in the aforementioned research design and instrumentation. This study

contributed to the knowledge of exercise motives of college students.

CHAPTER FOUR

RESULTS AND DISCUSSION

Presentation of the Findings

Hypothesis One

College Males are More Likely to Initiate Exercise Because of Intrinsic Motives. An independent samples t-test was used to compare the intrinsic scores of male and female respondents. No difference between the means of the two groups ($t(392) = 1.13$, $p = .26$) was found. The mean score of intrinsic motives of college males ($m = 62.12$, $sd = 25.60$) was not significantly different from the mean score of intrinsic motives of college females ($m = 65.31$, $sd = 1.36$). Therefore, the data fail to support the hypothesis that college males are more likely than college females to initiate exercise because of intrinsic motives.

Hypothesis Two

College Females are More Likely to Initiate Exercise Because of Extrinsic Motives. An independent samples t-test was used to compare the mean scores of external motives in exercise between college males and college females. A significant difference between the means of the two groups ($t(409) = 3.03$, $p = .01$) was found. The mean of external

motives in females was significantly higher (m = 40.86, sd = 14.65) than the mean of external motives in males (m = 35.61, sd = 16.77). Therefore, the data support the hypothesis that college females are more likely to initiate exercise because of extrinsic motives.

Hypothesis Three

Extrinsic exercise motives differ depending on the stage defined by the Transtheoretical Model. A one-way ANOVA comparing an individual's extrinsic motives score to his/her state of change (defined by the Transtheoretical Model) was computed. A significant difference was found among the stages ($F(4,287) = 7.75$, $p = .001$). Bonferroni was used to determine the nature of the differences between the stages of change. This analysis revealed that individuals in the precontemplation stage had lower extrinsic motives scores (m = 30.44, sd = 16.36) than individuals in the maintenance stage (m = 44.08, sd = 14.21) ($p = .001$). Individuals in the contemplation stage had lower extrinsic motives scores (m = 36.20, sd = 13.31) than individuals in the maintenance stage (m = 44.08, sd = 14.21) ($p = .001$). The remaining pair-wise comparisons did not differ significantly.

Hypothesis Four

Intrinsic exercise motives differ depending on the stage defined by the Transtheoretical Model. A one-way ANOVA comparing an individual's intrinsic motives score to his/her stage of change (defined by the Transtheoretical Model) was computed. A significant difference was found among the stages ($F(4,275) = 25.36$, $p = .001$). Bonferroni was used to determine the nature of the differences between the stages of change. This analysis revealed that individuals in the precontemplation stage had lower intrinsic motives scores ($m = 41.70$, $sd = 23.02$) than individuals in the contemplation stage ($m = 55.02$, $sd = 20.63$) ($p = .007$). Individuals in the precontemplation stage had lower intrinsic motives scores ($m = 41.70$, $sd = 23.02$) than individuals in the preparation stage ($m = 69.86$, $sd = 16.59$) ($p = .001$). Individuals in the precontemplation stage had lower intrinsic motives scores ($m = 41.70$, $sd = 23.02$) than individuals in the action stage ($m = 67.84$, $sd = 18.38$) ($p = .001$). Individuals in the precontemplation stage had lower intrinsic motives scores ($m = 41.70$, $sd = 23.02$) than individuals in the maintenance stage ($m = 76.42$, $sd = 19.85$) ($p = .001$). Individuals in the contemplation stage had lower intrinsic

motives scores (m = 55.02, sd = 20.63) than individuals in the action stage (m = 67.84, sd = 18.38) (p = .009). Individuals in the contemplation stage had lower intrinsic motives scores (m = 55.02, sd = 20.63) than individuals in the maintenance stage (m = 76.42, sd = 23.02) (p = .001).

Hypothesis Five

Exercise frequency is positively related to social support. A simple linear regression was calculated predicting subjects' exercise frequency from their social support score. A significant regression equation was found ($F(1,394) = 62.11$, $p = .001$), with an R^2 of .369. Therefore, perceived social support can explain 36.9% of the variance in exercise frequency. Subjects' predicted exercise frequency is equal to .951 + .088 (social support). For every one point increases in social support, the frequency of exercise increases by 8.8%.

Discussion of the Findings

The results of this study indicated that college males are not more likely than college females to initiate exercise because of intrinsic motives. These findings are inconsistent with the findings of Kilpatrick (2005) and Koivula (1999). Both Kilpatrick and Koivula found that

college men were more likely to initiate exercise because of intrinsic motives compared to college women. However, Bastos (2006) compared high school students to college students and found that the more educated individuals become, the more likely they are to exercise for intrinsic reasons rather than appearance (extrinsic) reasons. The findings of Bastos indicated that education level, rather than gender, seemed to account for more of the differences in exercise motives among individuals. The results of this study showed that, compared to college males, college females are equally driven to exercise by internal motives. When designing exercise programs for college students, this information could be critical. Exercise programs should be tailored to appeal to the internal motives of both female and male college students.

The results of this study suggest that college females are more likely to exercise for extrinsic motives compared to college males. Similar to the current study, Kilpatrick (2005) and Koivula (1999) found that college women were more likely than college males to initiate exercise because of extrinsic motives. Koivula (1999) found that women, regardless of age, are more concerned with physical appearance and therefore are more likely than men to give

an extrinsic reason for exercise. Similar to Kilpatrick and Koivula, the results of this study indicate that external motives for exercise participation are more prevalent among females than males.

The results of this study suggest that internal motives are a factor in advancing college students to the maintenance stage of the Transtheoretical Model. An understanding of what motivates college students to become physically active, and to progress to the maintenance stage, is essential in developing health promotion programs aimed at increasing college student's levels of physical activity. Unfortunately, 60% of individuals who start a regular exercise program drop out within the first six months (Pate et al., 1995). The current study revealed that one of the factors involved in exercise maintenance seems to be intrinsic motives for both college males and females. As college students move from precontemplation and contemplation to maintenance, their intrinsic motives scores increase.

The results of this study were replicated in the findings of both Mullan and Markland (1997) and Buckworth (2007). They found that individuals acting on intrinsic motivation rather than extrinsic motivation will be more

likely to be in the maintenance stage of an exercise program. The findings of this study are similar. Intrinsic motives were more of a factor than extrinsic motives in moving individuals through the five stages of the Transtheoretical Model. The degree of intrinsic motivation increased in each of the five stages of the Transtheoretical Model and peaked in the maintenance phase. Buckworth (2007) found that intrinsic motivation increased across the stages of change. Individuals in the contemplation stage reported lower intrinsic motivation than did those in preparation and action. Similar to this study, Buckworth (2007) concluded that individuals acting more on intrinsic motives rather than extrinsic motives are more likely to be in the maintenance stage of change.

Similar to this study, Koivula (1999) and Kilpatrick (2005) found that if exercise participation were driven by intrinsic motives, a person would be more motivated to participate in such activities. Again, the results of this study found that college males and college females are equally likely to exercise due to intrinsic motives. Also, the results of this study showed that intrinsic motives, rather than extrinsic motives, are what moves individuals to enter the maintenance phase of an exercise program. It

seems as if exercise programs should be designed to appeal to the intrinsic motives, rather than the extrinsic motives, of both college males and females.

The results of this study suggest there is a moderate correlation between exercise frequency and social support among college students. Lorentzen (2007) and Wallace (2000) reported a positive linear relationship between exercise frequency and social support. Lorentzen argues that in order to encourage physically inactive individuals to begin and maintain an exercise program, it is imperative to foster social support from family and friends.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to examine exercise motives of college students. The current research also hoped to uncover any gender differences related to exercise motives. An understanding of what motivates male and female college students to become physically active, and to progress to the maintenance stage of an exercise program, is essential in developing health promotion programs aimed at increasing college students' levels of physical activity. Knowledge of gender differences can help in developing exercise intervention programs specifically tailored to motivate the target audience.

College students from three California universities (California University San Bernardino, Cal Poly San Luis Obispo, and Sonoma State) had the opportunity to participate in the study. Participants completed an on-line survey consisting of four measurements. The four instruments were chosen to measure each participant's exercise motives, exercise self-efficacy, social support for exercise, and stage of exercise. Together, these

instruments provided information on what motivates college students to begin and maintain an exercise program, what stage of an exercise program they are in, what role social support plays in exercise frequency, and gender differences related to exercise participation.

The results of this study show that intrinsic motives are more influential than extrinsic motives in moving college students to the maintenance stage of an exercise program. The results also show that college males and females are equally driven to exercise by intrinsic motives. However, extrinsic motives for exercises are more prevalent among college females than college males. This study showed only a moderate correlation between exercise frequency and social support.

Significance of the Study

With such a large percentage of college students failing to participate in the recommended levels of physical activity, it is imperative that health researchers uncover the motives that influence physically inactive students to begin and maintain an exercise program. The results of this study provide valuable information in this area. Consistent with previous research, this study

revealed that individuals acting on intrinsic motives rather than extrinsic motives are more likely to be in the maintenance phase of an exercise program. The results of this study showed that male and female students are equally driven to exercise by intrinsic motives. Therefore, college exercise programs should be specifically designed to appeal to participants' intrinsic motives.

Limitations and Strengths

There are several limitations that should be noted related to this study. First, participants were required to self-report their exercise frequency and duration. Self reports are subject to reporting bias and may result in inaccurate estimates (Zhoe et al., 2010). Student survey results have been generally valid, particularly if the survey is conducted anonymously (Sussman et al., 1995). Second, participants of the study were from three California universities. Due to the fact that the sample was drawn from three universities in the same state, external validity could have been jeopardized. The sample may not be representative of college students outside of California or even across the entire state. Third, the research was cross-sectional in nature and did not uncover

a temporal nature of associations. Additionally, college students may change developmentally as they progress through their college years. This research did not uncover possible developmental reasons related to exercise maintenance. Finally, this study examined the relationship between individuals' intrinsic motives and their transition through the stages of the Transtheoretical Model. There may be additional influential variables involved in advancing individuals through the five stages of change. Future studies could concentrate on uncovering some of these possible variables.

It is important to also note several strengths of this study. First, this study employed random sampling which increases external validity. Students enrolled in introductory psychology courses at the participating universities had an equal opportunity to participate in this study. Students who attend the participating universities are required to take an introductory psychology class, so the data collected from each university are representative of the student body. Second, the survey instrument employed measures with adequate test-retest reliability. Third, the sample size used in this

study (n = 450) provided adequate statistical power (beta = .80). Therefore, the ability to find an effect was .80.

Recommendations

Future work in this area should further examine the influence of social support on exercise frequency. Inconsistent with this study, previous research has indicated a strong connection between social support and exercise maintenance. It would be valuable to utilize a measurement other than Prochaska, Rodgers, & Sallis' Social Support for Exercise Scale and compare the findings to this study. Social support could be a vital component related to intrinsic motivation. To dismiss the importance of social support because this current study found only a weak to moderate correlation between social support and exercise frequency could be detrimental to the success of exercise programs.

Future studies should also examine specific exercise activities that appeal to intrinsic motives. For example, activities such as aerobic classes, team sports, weight lifting, running, pilates, and swimming could appeal to different motives, depending on the individual. College students who are intrinsically motivated to exercise are

more likely to exercise consistently. Information on what activities appeal to individuals' intrinsic motives, and whether these activities differ by gender, could be crucial in designing successful exercise programs.

In order to obtain the health benefits of physical activity, the CDC recommends that adults engage in at least 30 minutes of moderate-intensity physical activity on most days. The challenge is determining what motivates individuals to exercise consistently. The results of this current study provide valuable information for the development of health promotion programs specifically designed to increase physical activity among college students. College students acting on intrinsic motives rather than extrinsic motives are more likely to maintain an exercise program. It is crucial that health promotion programs appeal to the intrinsic motives of college students. Recreation departments on university campuses should invest time researching their specific student population to determine which exercise activities students associate with intrinsic motives. College-based fitness centers could then offer a variety of these activities to draw students in, and more importantly encourage them to return.

APPENDIX A

CONSENT FORM

Consent Form

The study in which you are being asked to participate in is designed to investigate motives for participating in physical activity among young adults. This study is interested in all types activities that college students participate in. There are no right or wrong answers to this survey. This study is being conducted by Judy Craig under the supervision of Drs. Robert LaChausse and Kim Clark in the Department of Health Science and Human Ecology at California State University, San Bernardino (CSUSB). The Institutional Review Board (IRB) at CSUSB has reviewed and approved this study. Your participation in this study will consist of filling out a brief survey online. The survey takes about 10 minutes to complete. All information will remain completely confidential. This means that no identifying information will be linked to your responses. We are interested in group data only. This survey is voluntary. You do not have to participate in this study and may stop at any time. At the end of the survey, you will be asked if you would like to submit your responses. If you choose not participate in this study, you will not be penalized in any way. At no time will the information you provide be linked to your personal information.

APPENDIX B

IRB LETTER OF APPROVAL

CALIFORNIA STATE UNIVERSITY

SAN BERNARDINO

Academic Affairs

Office of Academic Research • Institutional Review Board

March 19, 2010
Ms. Judy Craig
c/o: Prof. Kim Clark
Department of Health Science and Human Ecology
California State University
5500 University Parkway
San Bernardino, California 92407
Dear Ms. Craig:

CSUSB INSTITUTIONAL REVIEW BOARD Full Board Review IRB# 09081 Status APPROVED

Your application to use human subjects, titled "Relationships Between Exercise Motives and Maintenance Among College Students" has been reviewed and approved by the Institutional Review Board (IRB). The attached informed consent document has been stamped and signed by the IRB chairperson. All subsequent copies used must be this officially approved version. A change in your informed consent (no matter how minor the change) requires resubmission of your protocol as amended. Your application is approved for one year from March 19, 2010 through March 18, 2011. One month prior to the approval end date you need to file for a renewal if you have not completed your research. The protocol renewal form is on the IRB website. See additional requirements of your approval below.

The CSUSB IRS has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval notice does not replace any departmental or additional approvals which may be required.

Your responsibilities as the researcher/investigator reporting to the IRE Committee include the following requirements. You are required to notify the IRS of the following: 1) submit a protocol change form if any substantive changes (no matter how minor) are made in your research prospectus/protocol, 2) if any unanticipated/adverse events are experienced by subjects during your research, and 3) when your project has ended by emailing the IRB Coordinator. Please note that the protocol change form and renewal form are located on the IRB website under the forms menu. Failure to notify the IRB of the above may result in disciplinary action. You are required to keep copies of the informed consent forms and data for at least three years.

If you have any questions regarding the IRE decision, please contact Michael Gillespie, IRB Compliance Coordinator. Mr. Michael Gillespie can be reached by phone at (909) 537-7588, by fax at (909) 537-7028, or by email at mgillesp@csusb.edu. Please include your application identification number (above) in all correspondence.

Best of luck with your research.

Sincerely,
Sharon Ward, Ph.D., Chair Institutional Review Board
SW/mg
cc: Prof. Kim Clark, Department of Health Science and Human Ecology

909.537.7588 • fax: 909.537.7028 • http://irb.csusb.edu/
5500 UNIVERSITY PARKWAY, SAN BERNARDINO, CA 92407-2393

APPENDIX C

SURVEY

1. College Exercise Motives Survey

College Exercise Motives Survey

The study in which you are being asked to participate in is designed to investigate motives for participating in physical activity among young adults. This study is interested in all types activities that college students participate in. There are no right or wrong answers to this survey. This study is being conducted by Judy Craig under the supervision of Drs. Robert LaChausse and Kim Clark in the Department of Health Science and Human Ecology at California State University, San Bernardino (CSUSB). The Institutional Review Board (IRB) at CSUSB has reviewed and approved this study.

Your participation in this study will consist of filling out a brief survey online. The survey takes about 10 minutes to complete. All information will remain completely confidential. This means that no identifying information will be linked to your responses. We are interested in group data only. This survey is voluntary. You do not have to participate in this study and may stop at any time. If you choose not participate in this study, you will not be penalized in any way.

At no time will the information you provide be linked to your personal information. If you have any questions or comments on this study, please contact Judy Craig at jcraig@csusb.edu. A copy of findings from this study will be available in June 2010 by contacting Judy Craig at jcraig@csusb.edu

As a way of thanking you for your participation, you will be eligible to win a $50.00 gift certificate to Amazon.com. If you choose to complete the survey, you will receive a code number at the end of this survey. In order to be eligible for the drawing, you need to send an email with your email address and the code number in the body of the email to jcraig@csusb.edu. This information will not be linked to your survey responses in any way. Your email address and code number will be placed in a raffle. Only one winner will be drawn. Your odds of winning our about 1 in 150. The researcher will contact the winner of the drawing via email at the end of the study in June 2010.

If you have read and understand the above statements, please click on the 'Continue' button below to indicate your consent to participate in this study.

*** 1. I acknowledge that I have read and understand the purpose and nature of this study and freely consent to participate in the study. I also acknowledge that I am at least 18 years of age.**

If you have read and understand the above statements, please click the "Continue" button below to indicate your consent to participate in this study and then click on "NEXT".

◯ CONTINUE

2. Part A

2. What is your gender?:

- ◯ Male
- ◯ Female

3. Which of the following best describes you?:

- ◯ White
- ◯ Hispanic/ Latino
- ◯ African American
- ◯ Asian
- ◯ Native American
- ◯ Other (please specify) _____

4. How old are you?:

5. What college do you currently attend?

- ◯ California State University, San Bernardino (CSUSB)
- ◯ Cal Poly San Luis Obispo (SLO)
- ◯ San Diego State University (SDSU)
- ◯ Other

3. Part B.

6. Below is a list of things people might do or say to someone who is trying to exercise regularly. If you are no trying to exercise, then some of the questions may not apply to you, but please read and give an answer to every question.

Please rate each question. Rate how often hour friends, acquaintances, classmates, or coworkers have said or done what is described during the last three months.

	Never	Rarely	A few times	Often	Very Often
Exercised with me.	○	○	○	○	○
Offered to exercise with me.	○	○	○	○	○
Gave me helpful reminders to exercise (i.e. "Are you going to exercise tonight?)	○	○	○	○	○
Gave me encouragement to stick with my exercise program.	○	○	○	○	○
Changed their schedule so we could exercise together.	○	○	○	○	○
Discussed exercise with me.	○	○	○	○	○
Complained about the time I spend exercising.	○	○	○	○	○
Criticized me or made fun of me for exercising.	○	○	○	○	○
Gave me rewards for exercising (bought me something or gave me something I like).	○	○	○	○	○
Planned for exercise on recreational outings.	○	○	○	○	○
Helped plan activities around my exercise.	○	○	○	○	○
Asked me for ideas on how they can get more exercise.	○	○	○	○	○
Talked about how much they like to exercise.	○	○	○	○	○

4. Part C. EMI-2

On the following page are a number of statements concerning the reasons people often give when asked why they exercise. Whether you currently exercise regularly or not, please read each statement carefully and indicate, by circling the appropriate number, whether or not each statement is true for you personally, or would be true for you personally if you did exercise. If you do not consider a statement to be true for you at all, circle the '0'. If you think that a statement is very true for you indeed, circle the '5'. If you think that a statement is partly true for you, then circle the '1', '2', '3' or '4', according to how strongly you feel that it reflects why you exercise or might exercise.

Remember, we want to know why you personally choose to exercise or might choose to exercise.

7. Personally, I exercise (or might exercise)...

	0 NOT AT ALL TRUE FOR ME	1	2	3	4	5 VERY TRUE FOR ME
1 To stay slim	○	○	○	○	○	○
2 To avoid ill-health	○	○	○	○	○	○
3 Because it makes me feel good	○	○	○	○	○	○
4 To help me look younger	○	○	○	○	○	○
5 To show my worth to others	○	○	○	○	○	○
6 To give me space to think	○	○	○	○	○	○
7 To have a healthy body	○	○	○	○	○	○
8 To build up my strength	○	○	○	○	○	○
9 Because I enjoy the feeling of exerting myself	○	○	○	○	○	○
10 To spend time with friends	○	○	○	○	○	○
11 Because my doctor advised me to exercise	○	○	○	○	○	○
12 Because I like trying to win in physical activities	○	○	○	○	○	○
13 To stay/become more agile	○	○	○	○	○	○
14 To give me goals to work towards	○	○	○	○	○	○
15 To lose weight	○	○	○	○	○	○
16 To prevent health problems	○	○	○	○	○	○
17 Because I find exercise invigorating	○	○	○	○	○	○
18 To have a good body	○	○	○	○	○	○
19 To compare my abilities with other peoples'	○	○	○	○	○	○
20 Because it helps to reduce tension	○	○	○	○	○	○
21 Because I want to maintain good health	○	○	○	○	○	○
22 To increase my endurance	○	○	○	○	○	○
23 Because I find exercising satisfying in and of itself	○	○	○	○	○	○
24 To enjoy the social aspects of exercising	○	○	○	○	○	○
25 To help prevent an illness that runs in my family	○	○	○	○	○	○
26 Because I enjoy competing	○	○	○	○	○	○

27 To maintain flexibility	○	○	○	○	○	○
28 To give me personal challenges to face	○	○	○	○	○	○
29 To help control my weight	○	○	○	○	○	○
30 To avoid heart disease	○	○	○	○	○	○
31 To recharge my batteries	○	○	○	○	○	○
32 To improve my appearance	○	○	○	○	○	○
33 To gain recognition for my accomplishments	○	○	○	○	○	○
34 To help manage stress	○	○	○	○	○	○
35 To feel more healthy	○	○	○	○	○	○
36 To get stronger	○	○	○	○	○	○
37 For enjoyment of the experience of exercising	○	○	○	○	○	○
38 To have fun being active with other people	○	○	○	○	○	○
39 To help recover from an illness/injury	○	○	○	○	○	○
40 Because I enjoy physical competition	○	○	○	○	○	○
41 To stay/become flexible	○	○	○	○	○	○
42 To develop personal skills	○	○	○	○	○	○
43 Because exercise helps me to burn calories	○	○	○	○	○	○
44 To look more attractive	○	○	○	○	○	○
45 To accomplish things that others are incapable of	○	○	○	○	○	○
46 To release tension	○	○	○	○	○	○
47 To develop my muscles	○	○	○	○	○	○
48 Because I feel at my best when exercising	○	○	○	○	○	○
49 To make new friends	○	○	○	○	○	○
50 Because I find physical activities fun, especially when competition is involved	○	○	○	○	○	○
51 To measure myself against personal standards	○	○	○	○	○	○

5. Part D..SE

8. This part looks at how confident you are to exercise when other things get in the way. Read the following items enter in the box the number that best expresses how each item relates to you in your leisure time. Please answer using the following 5-point scale.

	Not at all confident	Somewhat confident	Moderately confident	Very confident	Completely confident
I am under a lot of stress.	○	○	○	○	○
I am depressed.	○	○	○	○	○
I am anxious.	○	○	○	○	○
I feel I don't have the time.	○	○	○	○	○
I don't feel like it.	○	○	○	○	○
I am busy.	○	○	○	○	○
I am alone.	○	○	○	○	○
I have to exercise alone.	○	○	○	○	○
My exercise partner decides not to exercise that day.	○	○	○	○	○
I don't have access to exercise equipment.	○	○	○	○	○
I am traveling.	○	○	○	○	○
My gym is closed.	○	○	○	○	○
My friends don't want me to exercise.	○	○	○	○	○
My significant other does not want me to exercise.	○	○	○	○	○
I am spending time with friends or family who do not exercise.	○	○	○	○	○
It's raining or snowing.	○	○	○	○	○
It's cold outside.	○	○	○	○	○
The roads or sidewalks are snowy.	○	○	○	○	○

6. Part E. SOC

9. Please use the following definition of exercise when answering these questions:

Regular Exercise is any planned physical activity (e.g., brisk walking, aerobics, jogging, bicycling, swimming, rowing, etc.) performed to increase physical fitness. Such activity should be performed 3 to 5 times per week for 20-60 minutes per session. Exercise does not have to be painful to be effective but should be done at a level that increases your breathing rate and causes you to break a sweat.
Please enter the number in the box that indicates how strongly you agree or disagree with the following statements.

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1. As far as I'm concerned, I don't need to exercise regularly.	○	○	○	○	○
2. I have been exercising regularly for a long time and I plan to continue.	○	○	○	○	○
3. I don't exercise and right now I don't care.	○	○	○	○	○
4. I am finally exercising regularly.	○	○	○	○	○
5. I have been successful at exercising regularly and I plan to continue.	○	○	○	○	○
6. I am satisfied with being a sedentary person.	○	○	○	○	○
7. I have been thinking that I might want to start exercising regularly.	○	○	○	○	○
8. I have started exercising regularly within the last 6 months.	○	○	○	○	○
9. I could exercise regularly, but I don't plan to.	○	○	○	○	○
10. Recently, I have started to exercise regularly.	○	○	○	○	○
11. I don't have the time or energy to exercise regularly right now.	○	○	○	○	○
12. I have started to exercise regularly, and I plan to continue.	○	○	○	○	○
13. I have been thinking about whether I will be able to exercise regularly.	○	○	○	○	○
14. I have set up a day and a time to start exercising regularly within the next few weeks.	○	○	○	○	○
15. I have managed to keep exercising regularly through the last 6 months.	○	○	○	○	○
16. I have been thinking that I may want to begin exercising regularly.	○	○	○	○	○
17. I have lined up with a friend to start exercising regularly within the next few weeks.	○	○	○	○	○
18. I have completed 6 months of regular exercise.	○	○	○	○	○
19. I know that regular exercise is worthwhile, but I don't have time for it in the near future.	○	○	○	○	○
20. I have been calling friends to find someone to start exercising with in the next few weeks.	○	○	○	○	○
21. I think regular exercise is good, but I can't figure it into my schedule right now.	○	○	○	○	○
22. I really think I should work on getting started with a regular exercise program in the next 6 months.	○	○	○	○	○

7. Part F.

10. During the past 7 days, on how many days were you physically active for a total of at least 20 minutes per day? (Physical activity means an activity that increased your heart rate and made you breathe and sweat)

◯ 0 days ◯ 1 day ◯ 2 days ◯ 3 days ◯ 4 days ◯ 5 days ◯ 6 days ◯ 7 days

11. On how many of the past 7 days did you exercise to strengthen or tone your muscles?

◯ 0 days ◯ 1 day ◯ 2 days ◯ 3 days ◯ 4 days ◯ 5 days ◯ 6 days ◯ 7 days

12. During the past 7 days, on how many days do you think the TYPICAL STUDENT AT YOUR COLLEGE is physically active?

◯ 0 days ◯ 1 day ◯ 2 days ◯ 3 days ◯ 4 days ◯ 5 days ◯ 6 days ◯ 7 days

Developed by Dr. Robert LaChausse and Judith Craig. Adapted from survey instruments described on page 43.

APPENDIX D

EXERCISE MOTIVATION INVENTORY - 2

PERMISSION OF USE

Dear Judy,

Thank you for your interest in the EMI-2. You are very welcome to use

it. Good luck with your research.

Best regards,

David.

David Markland, PhD, C.Psychol

Senior Lecturer/Deputy Head of School (Research)

School of Sport, Health & Exercise Sciences

Bangor University

Adeilad George Building

Holyhead Road

Bangor, Gwynedd, LL57 2PZ

http://www.shes.bangor.ac.uk/

Email: d.a.markland@bangor.ac.uk

Tel: (01248) 382756

Fax: (01248) 371053

APPENDIX E

EXERCISE SELF-EFFICACY SCALE

PERMISSION OF USE

-----Original Message-----

From: Judy Craig [mailto:Judy Craig@rimsd.k12.ca.us]

Sent: Thursday, May 15, 2008 4:23 PM

To: jsrossi@uri.edu

Subject: Self-efficacy scale/permission to use

Hello, my name is Judy Craig and I am currently working on my thesis at Cal State University San Bernardino. I will be looking at the differences in exercise motives between college males and females. I will also be looking at the different reasons males and females enter the maintenance phase of an exercise program, including exercise self-efficacy. I am working with Dr. Robert LaChausse at CSUSB. I am looking for permission to use this tool in our study.

Thank you very much for your time,

Judy Craig

judy_craig@rimsd.k12.ca.us

No problem - happy to grant "permission" to use this measure - one of these days I will get around to publishing it as well!

-Joe Rossi

Joseph S. Rossi, Ph.D.

Professor and Director of Research

Cancer Prevention Research Center

and Department of Psychology

University of Rhode Island

2 Chafee Road

Kingston, RI 02881-0808

TEL: (401)874-5983

FAX: (401)874-5562

EML: jsrossi@uri.edu <mailto:jsrossi@uri.edu>

WEB: http://www.uri.edu/research/cprc/Faculty/JRossi.htm

APPENDIX F

STAGES OF CHANGE

PERMISSSION OF USE

Date: May 16, 2008

To: Judy Craig

Cal State University San Bernardino

Thank you for your interest in my work. Below you will find a list of articles that you can refer to for specific information about questionnaires, scoring, and reliability and validity. Also listed below are several articles about our interventions to promote physical activity.

I would also like to refer you to my book entitled, *Motivating People to Be Physically Active*, which is published by Human Kinetics and available at www.humankinetics.com as well as most university libraries. It includes all the measures I have developed along with their theoretical foundations and scoring. It also includes information on conducting interventions with various populations.

This letter grants you permission to use my measures, questionnaires, and scoring keys for research purposes only. I only request that in any presentation, manuscript, or written material, the original instruments should be cited appropriately. Good luck with your research. I wish you much success!

Again, thank you for your interest.

Sincerely,

Bess H. Marcus, Ph.D.

Professor of Community Health and Psychiatry & Human Behavior

Director, Centers for Behavioral & Preventive Medicine

Brown Medical School and The Miriam Hospital

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