7-11-2013

Physical Activity and Psychosocial Adjustment Among 1st and 2nd year Undergraduate Students

Vanessa Mikan

Vanessa Quintanilla Mikan
Candidate

Health, Exercise and Sport Sciences
Department

This dissertation is approved, and it is acceptable in quality and form for publication:

Approved by the Dissertation Committee:

Gloria Napper-Owen, Chairperson

Elias Duryea

Glenn Hushman

Len Kravitz

PHYSICAL ACTIVITY AND PSYCHOSOCIAL ADJUSTMENT AMONG 1ST AND 2ND YEAR UNDERGRADUATE STUDENTS

By

Vanessa Quintanilla Mikan

B.S., Kinesiology, University of Texas at San Antonio, 2004
M.S., Kinesiology, University of the Incarnate Word, 2006

DISSERTATION

Submitted in Partial Fulfillment of the
Requirements for the Degree of

Doctor of Philosophy
Physical Education, Sport and Exercise Sciences

The University of New Mexico
Albuquerque, New Mexico

May, 2013

Dedication

To my Pops and Mami,

Thank you for all the years of unconditional love and support. I never would have made it this far without your constant guidance and motivation. I dedicate this dissertation and degree completion to you both for all the sacrifices you made to make this possible.

Only the strong survive!

Acknowledgements

With the greatest appreciation and gratitude to all who have supported and helped me through the pursuit of my doctorate studies.

To my Advisor, Mentor and Committee Chair, Dr. Napper-Owen, for her wisdom, guidance and patience. I will always remember and cherish your kind words of motivation and unwavering support.

To my Grandparents, for their support and love throughout my entire educational journey.

To my Sunshine, who always knew how to brighten the cloudy dark days.

To Ceyda, for her friendship, support and willingness to go above and beyond to help with any task.

To my Study Contact, Maggie Seibert, for her motivation and willingness to assist in my data collection.

To my friends, Beth Birky and Heidi Nordstrom. Thank you for the supportive talks, motivational speeches and constant hugs.

"If we knew what we were doing, it would not be called research"

-Albert Einstein

PHYSICAL ACTIVITY AND PSYCHOSOCIAL ADJUSTMENT AMONG 1ST AND 2ND YEAR UNDERGRADUATE STUDENTS

By

VANESSA QUINTANILLA MIKAN

B.S., Kinesiology, University of Texas at San Antonio, 2004
M.S., Kinesiology, University of the Incarnate Word, 2006
Ph.D., Physical Education, Sport and Exercise Sciences, University of New Mexico, 2013

ABSTRACT

The transition from adolescence into young adulthood can present many new challenges. How well and to what degree students are able to effectively meet the demands and challenges of college has been labeled as *adjustment* (Mattanah, Hancock, & Brand, 2004). There is a growing interest and need for effective strategies and programs that can assist students in the transition to college.

The purpose of this study was to identify how participation in physical activity, as measured by the International Physical Activity Questionnaire (IPAQ) Short Form may assist or hinder in students' academic, social, personal-emotional adjustment and institutional attachment to college life, as measured by the Student Adaptation to College Questionnaire (SACQ). There were two groups of 1st and 2nd year undergraduate students: 1) physically active students (n = 151) who were enrolled in a Physical Education Non-Professionals (PENP) physical activity courses that met three times per week and 2) non-physically active students (n = 137) who were not currently and had not previously enrolled in a PENP course. There were 288 participants within the study.

Quantitative survey research methods examined a) academic adjustment, b) social adjustment, c) personal-emotional adjustment, d) institutional attachment and e) daily physical activity levels. Descriptive statistics provided information about the overall characteristics of the sample. Research question 1 through 5 were tested using multiple one-way Analysis of Variance (ANOVA). Statistically significant results, $p = .000$, were found between physically active and non-physically active students' Academic, $p = .029$, and Social, $p = .000$ adjustment scores. Cohen's d identified a large effect size for both the Social, $d = .711$, and Personal-Emotional, $d = .870$, adjustment domains. Cronbach's alpha reported an acceptable level ($\alpha = .760$) of internal consistency for the SACQ and a low level ($\alpha = .562$) of internal consistency for the IPAQ. Students within the non-physically active group displayed higher levels of social adjustment and institutional attachment. Students within the physically-active group displayed higher levels of academic and personal-emotional adjustment. Results found that students who demonstrate higher levels of institutional attachment to the university they attend seem to adjust better academically, socially and personal-emotionally.

TABLE OF CONTENTS

List of Figures

List of Tables

Chapter I

Introduction

In recent years the rates of obesity among children, adolescents and adults have risen dramatically, while participation in physical activities has remained unchanged (Leveille, Wee, & Lezzoni, 2005). Institutions, social factors, food economics, cultural trends, physical and environmental challenges and changes in family patterns, which promote sedentary lifestyles and unhealthy eating habits, contribute to the current epidemic (Lohman, Going, & Metcalfe, 2004). Studies have shown that obesity can lead to more severe health ailments such as coronary heart disease, ischemia, stroke, hypertension, type 2 diabetes and certain cancers (Weisberg, 2002). Regular physical activity has been shown to decrease the risk of disease. Because most of the adult population do not meet the recommendations for at least 30 minutes of physical activity 5 days a week (CDC, 2005), obesity may soon replace smoking as the leading cause of death in the United States (Weisberg, 2002).

Adolescence and Adulthood Obesity

The 1999 – 2000 National Health and Nutrition Examination Survey (NHANES) reported that almost 65% of U.S. adults were overweight (Hill, Wyatt, Reed, & Peters, 2003). Brownell and Wadden (1992) found that obesity is not caused by a single entity that can be explained through a single cause. The numerous environmental factors that currently affect eating and physical activity behaviors may be symptoms of a "deeper social force" (Hill, Wyatt, Reed, & Peters, 2003, p. 853). This social force was created by those who longed for a better life for themselves and their children. Through the hard work, physical labor, and action of our ancestors, they were able to create a society in which people had greater access to affordable foods. Society has transitioned from a life of hard physical labor to a more

technology driven society in hopes of creating more time for enjoying family and leisure activities. However, the increase in technology, productivity and fast paced lifestyle has led to a more stressful environment (Hill, Wyatt, Reed, & Peters, 2003). The decrease in physical labor in our daily lives has led to a significant decrease in daily energy expenditure over the past 200 years. Reliance on technology, automobiles, remote controls, cellular phones, garage openers, television and fast food drives has contributed to the development of sedentary lifestyle behaviors (Brownell & Wadden, 1992).

Our current society promotes a lifestyle of excessive food intake through increased food availability and portion sizes and discourages physical activity by limiting accessibility within our environments. The transition from adolescence into young adulthood can present many new challenges, including balancing the first time away from home, parental duties, daily stress from college course work, work and social life. Today more than 65% of high school graduates enroll in a college or university (U.S Bureau of Labor Statistics, 2010). The stress on these students from an increase in course work and workload can contribute to the lack of daily physical activity and the motivation to be active.

Stress and Obesity

Moderate to high levels of daily stress can cause serious mental, physical, and emotional harm. A low, healthy level of stress can provide the desire and encouragement to accomplish goals. Recent studies have found that between 70 and 80 percent of all diseases are strongly related, if not directly associated to the impact of stress in our daily lives (Seaward, 2006). 'Lifestyle' diseases are referred to as the leading cause of death in America. These diseases include, but are not limited to, various diseases of the heart, diabetes mellitus, and kidney disease (Seaward, 2006). To decrease the prevalence of obesity among

adolescents and adults, Bluementhal, Hendi, and Marsillo (2002) state a need for a multifaceted and coordinated approach to change individual behavior patterns and effectively address environmental barriers that impact physical activity and healthful food choices. Excess weight during childhood has been shown to have adverse psychosocial effects that carryover into adulthood, creating a lifetime of potential disease and illness. The development of emotional eating behaviors, such as binge eating, purging, or under eating have shown to act as coping strategies for psychologically perceived stress among college students (Economos, Hildebrant, & Hyatt, 2008). Obesity prevention in a population at large is only as effective as the social and environmental conditions for obesity treatment that support reduction of daily stressors, healthful eating and active lifestyles (Kumanyika et al., 2008). University initiatives and strategies that focus on assisting young adults' transition into college life through the development of healthful behaviors can help assist in keeping daily stress at a low to moderate level, reducing or eliminating the potential for the development of more serious physical or mental health issues.

Adjustment to College Life

The transition to university life is traditionally regarded as positive, involving new opportunities and life changes for students. Students face many new challenges as they adjust to new environments, academic schedules, and daily intellectual and social challenges (Fisher & Hood, 1987). During this transitional process, college students receive both positive and negative feedback from the choices they make, which can assist or hinder the development of their future goals (Salmela-Aro, & Nurmi, 2007). The more academically, socially and emotionally adjusted a student is to his or her environment, the more likely he or

she is to remain in college (Baker & Siryk, 1984; Gerdes & Mallinckrodt, 1994; Woosley, 2003).

First year college students are presented with many psychological adjustments that are influenced by mixed emotions toward new environments, people and daily tasks. Benton, Robertson, Tseng, Newton, and Benton (2003) found that college students experience more "complex" and "severe" mental health problems than ever before. Mental health issues such as increased levels of stress and anxiety, depression, suicidal ideation and personality disorders can be caused by poor adjustment to college. It has been indicated that more research is needed to determine both the individual and environmental influences on the emotional health of first-year college students (Sax, Bryant, & Gilmartin, 2004). Through the development and maintenance of healthy, active campus programs and initiatives, universities can raise the awareness and need for physical activity that promote stress reduction and aides in life adjustments necessary for better mental wellbeing among the student body.

College Campuses and Healthy Behaviors

Environmental factors such as buffet style cafeterias and excessive portion sizes can contribute to overeating and poor nutrition among college students (Levitsky, Halbmaier, & Mrdjenovic, 2004). Due to the lack of nutrition education at lower grade levels, many college students do not realize that their food choices and portion sizes commonly exceed the recommended serving size (Bryant & Dundes, 2005). In order to aid in the battle against obesity and inactivity, college campuses all over the United Sates have begun to make changes within the campus environment to promote healthful behaviors. Cafeterias and school meal programs within the recent years have increased the availability of healthier food

on campuses. Campus Recreation programs offer students a wide variety of physical activity options including personal training, group exercise classes, and outdoor adventures. These types of programs provide students with the opportunity to be physically active and develop social-personal relationships with fellow students.

Intra-personal, inter-personal and environmental factors have been found to influence college students' physical activity and eating habits (Boyle & LaRose, 2008). Poor eating habits and behaviors have become major problems within the general population as well as among college students. A combination of poor eating behaviors and physical inactivity can lead to obesity, which may lead to various other health issues and possibly death (Von Ah, Ebert, Ngamvitroj, Park, & Kang, 2004). Participation in regular vigorous physical activity has been positively associated with an increase in psychological well-being, cognitive function and positive outlook among college students and can assist in decreasing levels of anxiety, depression, stress and negative mood (Dunn, Trivedi, & O'Neal, 2001; Bhui & Bhugra, 2002; Bray & Born, 2004).

Research identifying college student behaviors that affect physical activity levels has been neglected. Environmental influences on physical activity within this population have not been investigated. However, the working and living environments of college students have been shown to influence students' physical activity behaviors negatively (Keating, Guan, Pinero, & Bridges, 2005). Where and with whom students live can provide a positive or negative influence on various health practices including healthy eating behaviors and physical activity levels. Residential halls can bring stress to newcomers; however they also provide a good opportunity for social support from fellow students who may experience similar academic and social stresses (Jones, Harel, & Levinson, 1992).

Social health is defined as the development and maintenance of meaningful interpersonal relationships (Powers, Dodd, & Jackson, 2011). Inter-personal factors, such as social support, have shown to play a positive role in students' physical activity and eating behaviors, motivating individuals to engage in more healthful practices. Good social health can increase one's self-confidence in social interactions and provide emotional security (Powers, Dodd, & Jackson, 2011), while a lack of social support may be detrimental to health behaviors during times of stress (Von Ah, Ebert, Ngamvitroj, Park, & Kang, 2004). Adequate social support can communicate the fact that one is loved and can increase one's motivation to care for oneself. Self-awareness (the ability to be aware of what you feel and using inner knowing to make skillful decisions), self- motivation (provides one with the ability to initiate to undertake or continue a task or activity without another's probing or supervision), and self-management (the ability to control anxiety and impulses and to use anger appropriately) may influence one's ability to develop interpersonal skills and relationships (Girdano, Everly, & Dusek, 2009; Merriam-Webster, 2013). Through the increased promotion of group exercise programs and group initiative opportunities on college campuses, students may be provided with motivational social environments focused on increasing interpersonal relationships through physical activity and healthful behaviors.

Ultimately, the self-motivation, self-awareness, and self-management of healthy behaviors are the responsibility of the individual in order to become more responsible for putting forth the effort and energy to eat healthy and exercise daily. However, education is needed to promote such changes. Therefore, there is a need for health professionals to develop effective strategies and programs for college campuses and university communities. Programs should focus on educating students on how to develop and maintain healthy active

lifestyles; which will aid in increasing the health-related quality of life for the students, campus and community.

Statement of the Problem

Challenges in balancing social, emotional and academic responsibilities leave many college students feeling overwhelmed, and can cause them to develop and engage in risky health behaviors such as alcohol use, tobacco use, physical inactivity and unhealthy dietary habits. There is a growing interest and need for effective strategies and programs that assist in this transition on educating college students on the importance of the development of healthy active lifestyle behaviors.

Purpose of the Study

The purpose of this study was to identify how participation in physical activity, as measured by the International Physical Activity Questionnaire (IPAQ) Short Form. May assist or hinder in a students' academic, social, personal-emotional adjustment and institutional attachment to college life, as measured by the Student Adaptation to College Questionnaire (SACQ). The target population was first and second year undergraduate students enrolled at the University of New Mexico in Albuquerque, New Mexico. Through the identification of the various psychosocial influences that first and second year students experience during their transition into college life, health professionals can develop multifaceted programs that address the personal, social and physical environmental factors related to participation in daily physical activity.

Research Questions

In this study the following research questions were investigated:

Research Question 1: Is there a relationship between physically active and non-physically active students' academic adjustment scores?

Research Question 2: Is there a relationship between physically active and non-physically active students' social adjustment scores?

Research Question 3: Is there a relationship between physically active and non-physically active students' personal-emotional adjustment scores?

Research Question 4: Is there a relationship between physically active and non-physically active students' attachment to their college adjustment scores?

Research Question 5: Is there a relationship between physically active and non-physically active students' Full Scale adjustment scores?

Scope of Study

This study examined the physical activity levels and psychosocial adjustment of undergraduate first and second year students. This comparative research study utilized survey design through a quantitative approach. Self-administered questionnaires were used for data collection.

The researcher followed quantitative research methods to examine a) academic adjustment, b) social adjustment, c) personal-emotional adjustment, d) attachment to college and e) daily physical activity levels, among a group of undergraduate college students enrolled in an 1-hour credit Physical Education for Non-Professional (PENP) activity courses that met three times per week and a Registrar computer generated list serve of first and second year undergraduates students who were not enrolled in a PENP course at the University of New Mexico (UNM) in Albuquerque, New Mexico. This study had a total of 288 participants. A random selection of 151 students enrolled in moderate-intensity aerobic

activity PENP courses that met three times per week were administered the survey via pencil and paper method. The Study Contact administered the questionnaires to PENP course students who volunteered to particpate. Students within the PENP group only had access to the questionnaire for the duration of the designated class time.

For the Online group, the researcher requested a computer generated listserv of 500 students from the university Registrar's office after the final drop date for Fall 2012 enrollment. The Online group contained 137 students who were not enrolled in a PENP course during the Fall 2012 semester. The researcher emailed the Online students requesting participation within the study. The questionnaire was attached to the email via www.surveymonkey.com. Following Dillman's protocol for online surveys, students had access to the www.surveymonkey.com website link for four weeks in order to allow plenty of time to complete the questionnaire. An inadequate first response was received by the Online group. Therefore, the researcher emailed the Registrar for an additional 600 general list serve students who met eligibility requirements.

Upon completion of the questionnaires, students from both groups were given the option to be entered in a raffle for an iPAD. Statistical analysis for all data in this study was performed using SPSS 20.0 software.

Limitations

1. The IPAQ-Short Form is self-report; therefore, students may have under or overestimated daily levels of physical activity.
2. First and second year freshman may still have been acclimating to daily college life and may not had a full understanding of the educational demands of college.

3. PENP course students were required to participate in physical activity at least three times per week.
4. Survey methods have potential "volunteer" bias.

Delimitations

1. The questionnaire was sent only to first and second year students at the University of New Mexico.
2. Data collection and analysis occurred during the fall semester, September-December 2012.
3. PENP student participants were involved in aerobic-based courses and activity.
4. The survey on average took 10-20 minutes to complete.

Significance of Study

Lack of physical activity among the college population has become a health problem. The American College Health Association reports 3 out of every 10 students are overweight or obese (Strout, 2007). Although obesity is a major health concern, institutions have been slow to calculate what the cost will be if students' sedentary habits and poor diets continue to harm their health (Strout, 2007). Diet, environmental and lifestyle changes, along with psychological stress, play major roles in leading new students toward harmful stress coping behaviors such as drug use/abuse, alcohol use/abuse, and emotional eating/binging. College health experts predict that some colleges will have to increase health-services staffing to handle an influx of students with chronic diseases related to obesity (Strout, 2007). Multiple factors/stressors influence daily physical activity levels; therefore, a multifaceted approach aimed at increasing physical activity, improving diet quality and eliminating environmental barriers would assist in promoting a positive environment and enhancing college life.

Interventions aimed at the college population may assist in reducing the risk of becoming overweight or obese during the transition from adolescents into young adulthood (Desai, Miller, Staples, & Bravender, 2008). The goal of a university or college is to educate and provide students with a promising future; therefore, colleges and universities should play a leading role within this movement. Through the promotion of healthy active campuses, universities can increase the health related quality of life for students, faculty, staff and the community.

Definition of Terms

Academic Adjustment*:* A students' success at coping with the various educational demands characteristics of the college experience (SACQ, 1989).

Health: A state of complete physical, mental and social well-being and not merely the absences of disease or infirmity (World Health Organization, 1948).

Health Behavior: The action taken by a person to maintain, attain or regain good health and to prevent illness. Health behaviors reflect a person's health beliefs (Mosby's Medical Dictionary, 2009).

Health Constraint: The threat or use of force to prevent, restrict, or dictate the action or thought of others in relation to an individual's health.

Health-related Quality of Life (HRQOL): A patient outcome measure that extends beyond traditional measures, including dimensions such as physiology, function, social activity, cognition, emotion, sleep/rest, energy/vitality, health perception, general life satisfaction (McGraw-Hill Concise Dictionary of Modern Medicine, 2002).

Institutional Attachment: Focuses on a students' satisfaction with the college experience in general and with the college he or she is attending in particular (SACQ, 1989).

International Physical Activity Questionnaire (IPAQ): The purpose of the questionnaire is to provide a common instrument that can be used to obtain internationally comparable data on health-related physical activity (www.ipaq.ki.se).

Motivation: The characteristics of being moved to do something (Ryan & Deci, 2000). A willingness or desire to be engaged and commit effort to completing a task (Walters, 1998).

Personal-Emotional Adjustment: Examines how a student is feeling psychologically and physically (SACQ, 1989).

Physical Activity: Any bodily movement that works your muscles and uses more energy than or use when you're resting (National Heart Lung and Blood Institute, 2009).

Physical Education: The domain of education that instructs on the psychomotor, cognitive, affective and health related facets of physical movement concepts and motor skill development (Gregory, 2006).

Psychosocial: The mind's ability to, consciously or unconsciously, adjust and relate the body to its social environment (Gale Encyclopedia of Medicine, 2008).

Sedentary: Doing or requiring much sitting; not physically active (Merriam-Webster, 2011).

Self-Efficacy: Belief that one has the capabilities to execute the courses of actions required to manage prospective situations (Bandura, 1977).

Social Adjustment: Contains items relevant to the interpersonal-societal demands of college (SACQ, 1989).

Stress: The experience of a perceived threat (real or imagined) to one's mental, physical, or spiritual well-being, resulting from a series of physiological responses and adaptations (Seaward, 2006).

Student Adaptation to College Questionnaire (SACQ): Designed to measure the effectiveness of student adjustment to college. This report presents scores within four domains: *academic adjustment*, *personal-emotional adjustment*, *social adjustment*, and *attachment* (SACQ, 1989).

Well-being: The state of being healthy, happy and prosperous (Merriam-Webster, 2011).

Chapter II

Review of Literature

Despite the abundance of information through various media sources and technology that outlines the important role physical activity plays in our health and wellbeing, a majority of the American population continues to fall victim to sedentary behaviors. Obesity has been directly associated with the development of cardiovascular disease which affects physical and social functioning as well as one's quality of life (Poirier et al., 2006; Kumanyika et al., 2008). The current obesity epidemic has become a major concern in the United States with approximately 66 million obese American adults and 74 million overweight American adults (Ogden et al., 2006; Kumanyika et al., 2008).

The prevalence of obesity-related cardiovascular disease (CVD) risk factors (including hypercholesterolemia, hypertensions and impaired glucose intolerance) are higher in overweight and obese adults than non-overweight adults (Gregg et al., 2005). Effective treatment of obese individuals can substantially reduce risk factors for CVD and improve quality of life (Poirier et al., 2006; Kumanyika et al., 2008). Obesity prevention of 'the population at large' is highly relevant to the treatment of obesity in that it fosters social and environment conditions that support healthful eating and active living (Kumanyika et al., 2008, p. 430). The US National Health and Nutrition Examination Survey (Ogden et al., 2006) reported consistent trends of higher obesity prevalence among non-Hispanic blacks, Mexican-Americans, American Indians and Alaska Natives, other Hispanic/Latino, Native Hawaiians and Pacific Islanders. Prevalence is increasing among US resident immigrants within ethnic minority populations in relation to duration within the United States (Goel,

McCarthy, Phillips, & Wee, 2004; Himmelgreen et al., 2004; Kaplan, Huguet, Newsom, & McFarland, 2004).

The need for treatment is highest among low-income and ethnic minority populations who have the highest burden of obesity, CVD, and stroke outcomes but less access to healthcare services (Smith et al., 2005; Kumanyika et al., 2008). Health professionals struggle with two main challenges: (a) getting inactive people to engage in physical activity and (b) getting those who are irregularly active to engage more regularly in physical activity (Nahas, Goldfin, & Collins, 2003). Community initiatives should focus on a combination of education, motivation, social support and environmental factors that influence healthy lifestyle behaviors. One's attitude toward the development of healthful practices can either help or hinder the behaviors change process.

Bandura's Theory on Self-Efficacy

Bandura's Theory of Self-Efficacy suggested that behavior is better predicted by an individual's belief in their capabilities to do whatever is needed to succeed than by the behaviors' importance (Bandura, 1977). Self-efficacy plays a central role in analyzing changes achieved in fearful and avoidant behaviors (Bandura, 1977). Psychological complications such as depression and low self-esteem could prevent one's ability to motivate themselves to adopt a healthier behavior (Bennett & Sothern, 2009). Bandura's theory (1977) is based on the principal assumption that psychological procedures, whatever their form, serve as means of creating and strengthening expectations of personal efficacy.

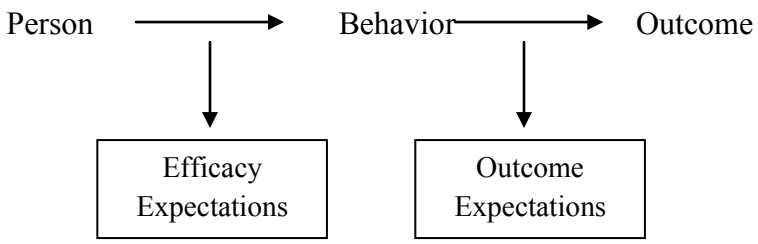


Figure 2.1 Bandura's Outcome Expectancy Process

Outcome expectancy has been defined as a person's estimate that a given behavior will lead to a certain outcome, while efficacy expectation is the belief in oneself that one can successfully execute the behavior required to produce the desired outcome (Bandura, 1977). Efficacy expectations play a lead role in determining how much effort one will expend and for how long one will persist when facing an obstacle, fear or behavior change. The stronger the self-efficacy, the more persistent one's efforts will be (Bandura, 1977). Strong efficacy expectations are developed through repeated efforts and over time begin to outweigh the negative impact occasional failures have on one's self efficacy. Exercise adherence has been positively associated with self-efficacy (Marshall & Biddle, 2001).

Self-efficacy among college students has been identified as the strongest predictor for health-promoting behavior (Luzzo, Hasper, Albert, Biddy, & Martinelli, 1999). Unhealthy diets among college students can be linked to low levels of self-efficacy (Cusatis & Shannon, 1996). A lack of research suggests a need to further examine the various psychosocial factors that influence healthful behaviors among college students (Von Ah, Ebert, Ngamvitroj, Park, & Kang, 2004). Impairments to the psychological well-being of an individual may influence his/her ability to believe in their capability to successfully participate and complete nutritional and weight management programs (Sothern, Gordon, & von Almen, 2006; Bennett & Sothern, 2009). Individuals attempting to change a behavior

(physical or mental) often move through a series of changes and stages before the past behavior has been permanently replaced with a new behavior (Marcus, Rossi, Selby, Niaura, & Abrams, 1992; Marcus, Eaton, Rossi, & Harlow, 1994; Nigg & Courneya, 1998).

Goal-setting and self-monitoring are two popular strategies commonly used by health professional to encourage the behavior-modification process (Bennett & Sothern, 2009). Goal-setting allows one to develop and set short and long terms goals/or benchmarks promoting one's self-efficacy in order to accomplish long-terms goals. Self-monitoring allows one to identify personal and environmental barriers that influence one's behavior change. Through the reduced exposure to the identified barriers, one has the ability and opportunity to overcome the perceived barriers and embrace new behaviors (Bennett & Sothern, 2009). Several studies have identified a positive relationship between exercise self-efficacy and the stages of behavior change (Marcus, Eaton, Rossi, & Harlow, 1994; Nigg & Courneya, 1998; Marshall & Biddle, 2001). In order to change a behavior, whether it is to engage in more physical activity or healthy eating habits, one must go through a process of repeated efforts of trial and error, developing and maintaining healthy lifestyle choices that affect one's total wellbeing.

Transtheoretical Model for Behavior Change

The transtheoretical model for behavior changes is composed of five keys stages: *precontemplation* (one has no intention of becoming physically active or engaging in healthy dietary habits), *contemplation* (one begins to think about starting to engage in daily physical activity and healthy habits- within the next 6 months), *preparation* (one begins to make small changes in behavior but still not meeting physical activity recommendations or dietary guidelines), *action* (one begins to meet recommendations for daily physical activity and

begins to establish healthy eating habits-usually within the past 6 months), and *maintenance* (one has successfully regularly meets recommendations for daily physical activity and dietary guidelines for at least 6 months or longer) (Prochaska & DiClemente, 1982; Prochaska & DiClemente, 1983; Marshall & Biddle, 2001). The process for behavior change is influenced by various cognitive and behavioral processes. The five cognitive processes include *dramatic relief, consciousness raising, self-evaluation, environmental re-evaluation, and social liberation* and are the most effective during the precontemplation and contemplation stages. The five behavioral processes include *helping relationships, self-liberation, counter-conditioning, stimulus control, and reinforcement management* and are the most effective for those within the preparation, action and maintenance stages of change (Prochaska & DiClemente, 1982; Spencer, Wharton, Moyle, & Adams, 2007). In order to achieve maintenance of a new behavior, one must use the appropriate process for each stage of change.

The potential gains and losses of a behavior are often assessed before one begins to prepare to change an existing behavior (Marcus, Rakowski, & Rossi, 1992). The weighing of these potential gains and losses are often assessed in the precontemplation, contemplation and preparation stages and becomes less important once one enters the action and maintenance stages (Marcus & Simkin, 1994; Buxton, Wyse, & Mercer, 1996; Marshall & Biddle, 2001). Within the action and maintenance stage one begins to understand and appreciate the health benefits that come with engaging in healthy habits. Marcus and Simkin (1994) found that the higher the self-efficacy the faster and individual can advance through the stages of behavior change. Several studies have found a positive association between the

improvements in health behaviors through the application of the transtheoretical model for behavior change.

Transition from High School to College Life

College freshman are exposed to a variety of new experiences and environments that can have a direct influence on their health and risk of obesity. Changes in eating habits, living environments and daily physical activity levels along with possible increase in risky behaviors such as alcohol consumption, tobacco and drug use, can directly impact one's body composition. The freshman year has been commonly associated with weight gain and can increase a young adult's risk of falling victim to the "Freshman 15" (Ferrara, 2009; Gropper et al., 2011; Zagorsky & Smith, 2011). There are two types of body fat: essential and nonessential. Essential body fat is needed for normal physiological and biological functioning. Nonessential body fat or storage fat can be found surrounding internal organs in the abdominal cavity. Excessive intake of unhealthy food options has been known to cause an increase in weight and nonessential body fat (Vella & Kravitz, 2002). An increase in total percent of body fat can increase one's risk of developing various health related disorders (Gropper et al., 2011).

College students are prone to stress because of varying academic commitments, financial pressures, and lack of study and time managements skills (LaBrie, Ehret, Hummer, & Prenovost, 2012). Stress eating or over-consumption of calories can often occur during late night study sessions or to mask the emotions toward academic performance and social pressures. Challenges in balancing social, emotional and academic responsibilities leave many students feeling overwhelmed. Successful adjustment to college has been identified as a predictor for academic success among first year students (Van Heyningen, 1997), while

withdrawal from college is often linked to those who experience adjustment difficulties (Gerdes & Mallinckrodt, 1994).

University interventions have been shown to successfully enhance the adjustment to college for students (Baker & Siryk, 1986). The current state of the obesity epidemic identifies an evident need for an increase in health education. University required wellness courses and initiatives should be developed and aimed at assisting first and second year college students with the adjustment to college by focusing on the development of lifelong healthy behaviors.

Changes in Physical Activity Levels

Defined as any voluntary bodily movement generated by the contraction of skeletal muscles resulting in energy expenditure, physical activity has been widely recognized as an important behavioral characteristic for health promotion and disease prevention (Caspersen, Christenson, & Pollard, 1986; Shephard & Bouchard, 1994; Daniels et al., 2005; Pate et al., 2006). The percentage of high school students participating in daily physical education classes decreased significantly from 1991-1995 (41.6% to 25.4%) and then rose only slightly to 28.4% from 1995-2003 (Pate et al., 2006). Forty-percent of elementary schools require students to participate in physical education while only 5.4% of high schools require seniors to enroll in physical education (Pate et al., 2006). The National Association for Sport and Physical Education (2004) recommends that middle and high school students engage in a minimum of 225 minutes of physical activity per week or 45 minutes per day. Students who are predominantly inactive are more likely to have weight problems and poor eating habits along with psychosocial and social problems. Regular physical activity plays a crucial role

in aiding in the maintenance of one's physical, physiological and psychological well-being (Haskell et al., 2007; Bonomi & Westerterp, 2012).

Environmental influences, lack of physical fitness knowledge and increase in academic workload can influence daily physical activity levels among college freshman, resulting in significant body changes. Greater access to parks, gyms/recreational facilities, and walking/jogging trails have been shown to increase daily physical activity levels and reduce risk of obesity (Brownson, Baker, Housemann, Brennan, & Bacak, 2001). The U.S. Surgeon General (2009) recommended that Americans engage in 10,000 steps in order to reduce risk of disease and maintain fitness. The distance from university students' dormitories to central areas of main campus has been shown to contribute to an increase in daily physical activity levels (Yakusheva, Kapinos, & Weiss, 2011). Therefore, most college students are more active on weekdays as compared to weekends, most likely due to walking to and from class, dormitories and across college campuses (Behrens & Dinger, 2003). Research found that students who live in dormitories closer to the school gym or recreational facility are likely to engage in exercise more frequently than those who live at a further distance (Yakusheva, Kapinos, & Weiss, 2011). An increase in academic workload means an increase in study time, which requires students to spend more time in sedentary environments and positions, thereby decreasing physical activity levels (Zagorsky & Smith, 2011). The National College Health Assessment (American College Health Association, 2007) found that only 19 percent of college students report meeting the recommended amount of moderate-intensity daily physical activity. This evidence suggests that different types of intervention strategies be employed to encourage daily physical activity among college students.

Interventions to Increase Physical Activity Levels in College Students

Support from family and friends, perceived enjoyment and self-motivation, accessibility of recreational facilities, adequate transportation, and weather and campus safety have been identified as major determinants of physical activity in college students (Keating, Guan, Castro, & Bridges, 2005). Conceptually based physical education classes have been used to teach students about the benefits of exercise and how to start personal exercise programs, which encourages students to engage in more healthful exercise choices (Slava, Laurie, & Corbin, 1984; Byrnteson, & Adams, 1993). These courses, in longitudinal studies, have shown to improve exercise attitudes and increase the frequency and types of physical activity after graduation (Slava, Laurie, & Corbin, 1984; Byrnteson, & Adams, 1993; Ferrara, 2009).

Several studies have assessed the improvement of physical activity levels through the use and promotion of pedometers among college students and faculty members (D'Alonzo, Stevenson, & Davis, 2004; Haines et al., 2007). Significant improvements in daily physical activity levels through the use of pedometers have been observed in both 12 and 16 weeks interventions. D'Alonzo, Stevenson and Davis (2004) observed significant improvements within daily physical activity levels, aerobic fitness, flexibility, strength, reduction in body fat and increase in exercise self-efficacy through the use of 3 day per week, 16 week intervention on African American and Hispanic college-aged females. Haines et al. (2007) found that a 12-week walking and wellness intervention greatly improved fitness levels, mood, health awareness, nutritional habits and health status among college campus faculty and staff. Participants reported that significant others and friends joined them in their health improvements efforts through walking and dieting.

Project Graduate Ready for Activity Daily (GRAD) has been used to promote physical activity through the transition of university graduation (Calfas et al., 2000). This laboratory and lecture based intervention among senior college students has shown a significant increase in physical activity levels among college females, but not among college males during intervention. However, most participants returned to baseline values two years after completion of the program (Calfas et al., 2000). The Active Recreation on Tertiary Education Campuses (ARTEC) initiative has been found to promote self-reported physical activity among college students during an 8-week program of activity classes (Leslie, Sparing, & Owen, 2001). Project Teaching Exercise/Activity Maintenance (TEAM), a campus-based physical activity intervention based on the Transtheoretical Model for Behavior Change, found that change in the amount of daily physical activity among college students enrolled in a college-level physical activity class was associated with the individual's "readiness" to start or maintain an exercise program (Buckworth, 2001; Ferrara, 2009). Interventions designed to increase physical activity have shown to be effective in the college student population. However, it is important to determine what factors and types of programs will assist in improving long-term participation in physical activity and regular exercise (Ferrara, 2009). By promoting walking and other various forms of moderate-intensity physical activities among young college students, they may be able to increase their daily physical activity level and decrease their risk of weight gain and other health related issues.

College Students and Weight Change

Society promotes a lifestyle of excessive food intake through increased food availability and portion sizes and discourages physical activity by limiting accessibility

within our environments. Physical inactivity and poor diets are associated with at least 300,000 deaths per year (Von Ah, Ebert, Namvitroj, Park, & Kang, 2004). College life presents an opportune time to establish healthy behaviors; however, students during this time often develop unhealthy eating behaviors and habits. Eating habits are a universal problem among the general population and college students. Buffet style cafeterias and excessive portion sizes served within the dining halls and student centers on campuses contribute to overeating and poor nutrition (Levitsky, Halbmaier, & Mrdjenovic, 2004). Most college students typically consume a diet lacking in fruit, vegetables and dairy and consume higher amounts of high-fat, fried, pre-prepared, high sugar, and low nutrient foods (Brunt, Rhee, & Zhong, 2008). Unhealthful behaviors such as binge-eating and skipping meals can become common forms of weight control among college students, which measures nutritional risk and unwanted weight gain (Sax, 1997; DeBate, Topping, & Sargent, 2001).

Students have been shown to cope with additional stress by eating high-caloric comfort foods (Dallman et al., 2003; Wansink, Cheney, & Chan, 2003; Kandiah, Yake, Jones, & Meyer, 2006). The National College Health Assessment (American College Health Association, 2007) reported that only 5 percent of college students consumed the recommended amount of fresh fruits and vegetables. A diet of fresh fruits and vegetables and low in meat and fats has been directly associated with a healthier weight and lower body mass index (Togo, Osler, Sørensen, & Heitmann, 2001). Less sleep due to study time and coursework requirements has shown to increase appetite and preference for carbohydrates and caloric-intensive caffeinated drinks (Carskadon, 1990; Hicks, Fernandez, & Pellegrini, 2001; Malinauskas, Aeby, Overton, Carpernter-Aeby, & Barber-Heidal, 2007). Stress and

unhealthy eating, poor sleeping and exercising habits have been identified as contributors to college students' change in body weight (Gropper et al., 2011).

Research has found it common for freshman to gain an average of 1.6-8.8lbs during the course of the first academic year (Hovell, Mewborn, Randle, & Fowler-Johnson, 1985; Butler, Black, Blue, & Greteback, 2004; Gropper et al., 2011; Vella-Zarb & Elgar, 2009). Therefore, over the years the "Freshman 15" has been identified as more of a myth than fact for most college freshman (Anderson, Shapiro, & Lundgren, 2003; Levitsky, Halbmaier, & Mrdjenovic, 2004; Hajhosseini, et al., 2006; Gropper et al. 2011). Gropper et al., (2011) found a significant increase in weight gained between freshman and sophomore years (69%) with initially 15% of the participants being overweight during their freshman year and increasing to 23% by the end of their sophomore year. Focus group sessions have identified students' struggles to adopt healthful eating and exercise behaviors in college life (Cluskey & Grobe, 2009).

In order to ensure healthful dietary practices, nutrition education and health behaviors should begin in high school since health patterns have been reported to develop by late adolescence (Brunt, Rhee, & Zhong, 2008). Health behavior change can be challenging. Therefore, a variety of social support and skill building programs to assist students in changing their health behaviors are needed. University campuses and health professionals must work together to create environments that allow students to make healthful choices.

Nutrition Related Interventions for College Students

Several studies have assessed the effectiveness of weight maintenance and nutrition programs among college students. Diet and behavioral therapy techniques have been used to promote weight loss among overweight college females and have shown a significant

decrease in body weight over the course of a 12-week intervention (Sloan, Tobias, Stapell, Twiss, & Beagle, 1976). Researchers found the provision of information on caloric consumption and weekly feedback on daily weight gain an easy, cost effective way to reduce weight gain among college freshman. However, this method may also have an adverse effect on students resulting in the development of an eating or weight disorder (Levitsky, Garay, Nausbaum, Neighbors, & DellaValle, 2006). Semester long courses that have combined nutrition education for weight control sessions with tri-weekly exercise sessions have shown to promote healthy weight-loss among college-aged females (Hudinburgh, 1984). Therefore, nutrition education programs and/or college nutrition courses can be used as effective tools to facilitate changes in dietary habits and weight loss in college students.

College Environment

Environmental factors, lifestyle preferences and cultural environments all contribute to the present obesity epidemic (Dehghan, Danesh, & Merchant, 2005). Research has shown that students who live on campus are more prone to weight gain than those who still live at home with their parents (Pliner & Saunders, 2008). Environmental stimuli such as "all-you-can-eat" campus resident cafeterias have been shown to contribute to weight gain among college freshman (Levitsky, Halbmaier, & Mrdjenovic, 2004).

Many communities have limited access to healthy affordable foods and greater access to prepackaged, high-energy dense foods (high caloric value) that are often more affordable and easier to locate within local grocery and convenient stores (CDC, 2011). Female college students within smaller rural university areas have shown to gain more weight within an academic year than females from larger urban universities (Provencher et al., 2008). Living away from home requires students to 'fend for themselves' for meals which may result in an

increase in eating out at restaurants, purchasing pre-packaged foods from the grocery store and fast food restaurants, rather than preparing a home cooked meal (Provencher et al., 2008). Most young adults entering college lack basic cooking skills and nutritional knowledge to be able to plan and prepare healthy meal options. Dormitory assignment and environment have also shown to significantly influence students' weight gain and eating behaviors during freshman year. Students assigned to dormitories with on-site dining halls that offer buffet style "all-you-can-eat" breakfast, lunch and dinner options were found to weigh more and perform less physical activity during their freshman year (Yakusheva, Kapinos, & Weiss, 2011). Those who live near neighborhood supermarkets are more likely to consume fresh fruits and vegetables and weigh less than those who are surrounded by fast food restaurants, once again demonstrating the impact built environments have on total well-being (Morland, Wing, Roux, & Poole, 2002; Yakusheva, Kapinos, & Weiss, 2011).

Social Environment

The transition into college creates a situation where regular daily contacts with traditional support systems (such as family and friends) are reduced. Coupled with an increased workload, new environments and responsibilities, college student can easily become victims of risky health behaviors including alcohol use, tobacco use, physical inactivity, and unhealthy dietary habits (Von Ah, Ebert, Ngamvitroj, Park, & Kang, 2003). Excessive alcohol use among college students is a wide-spread problem on many college campuses (Wechsler, Dowdall, Maenner, Hoyt-Gledhill, & Lee, 1998). Binge drinking has been associated with other risky health behavior such as smoking (Jones, Oetlmann, Wilson, Brener, & Hill, 2001) and risky sexual behaviors (Ichiyama & Kruse, 1998). Driving while impaired or under the influence increases one's risk of injuries due to inadequate seatbelt use

(Everett et al., 2001). Many young adults justify smoking as a means for dealing with life stressors (Mates & Allison, 1992). However, smoking has been known to lead to the development of various pulmonary and cardiovascular diseases (Von Ah, Ebert, Ngamvitroj, Park, & Kang, 2004). It is no surprise that college students universally fail to engage in daily physical activity and healthy dietary habits. The US Department of Health and Human Services (2000) reported the highest rate of decline in physical activity occurred in the early adulthood period between 18 and 24 years of age. A combination of these risky behaviors can greatly increase students' risk of becoming overweight or obese during college years.

Social support plays an important role in motivating oneself to engage in healthier habits. Participating in healthful practices can aid in decreasing the amount of stress individuals experience (Kiecolt-Glaser, Marucha, Mercado, Malarkey, & Glaser, 1995; Uchino, Holt-Lunstad, Uno, & Betancourt, 1999). Stress is unique to each individual and setting. But it has been suggested that there are two major types of stressors: those that are caused by *life events* and those that are *chronic strains* experienced regularly (Aneshensel & Phelan, 1999). An accumulation of a series of stressful life experiences can create an impact on one's well-being, while chronic strain in role overload can also have a detrimental effect on one's wellness (Hudd et al., 2000). Chronic stress has been associated with biochemical changes that promote weight gain (Bjorntorp, 1991; Drapeau, Therrien, Richard, & Trembley, 2003). Role conflict is common among college students who must learn to balance the competing demands of academics, develop new relationships, and become responsible for their own daily needs.

Parental influence and family environment during high school years greatly influences one's ability to balance new challenges once away from home. Both contribute

fully to the development of certain eating habits and health behaviors that are usually established once it becomes time to transition into college. It has been suggested that in order to ensure healthful dietary practices, nutrition education and good health behaviors should begin by early adolescence (Brunt, Rhee, & Zhong, 2008). Parents serve as role models to their child and play a critical role in behavior modification (Bennett & Sothern, 2009). For many, parents largely determined the availability of healthy and unhealthy foods in the home and the frequency of meals consumed from fast food restaurants (Bennett & Sothern, 2009).

Health behavior change can be challenging. Therefore, there needs to be a variety of social support and skill building programs to assist students in adopting healthier lifestyles and dietary habits. University health professionals should work together with university officials to create an environment that encourages students to make healthier dietary choices and engage in more daily physical activity on campus.

Academic Environment

Emerging research correlates physical activity, healthy eating and academic performance. Students who are predominantly inactive are more likely to have weight problems and poor eating habits along with psychosocial and social problems. Physical activity levels have typically decreased significantly among students undergoing examination stress (Steptoe, Wardle, Pollard, Canaan, & Davies, 1996). The American College Association's National College Health Assessment Survey (2008) found stress (33.9%), sleep difficulties (25.6%), concern for troubled friend or family member (18.8%), internet use/computer games (16.9), depression and anxiety (16.1%), and relationship difficulties (15.9%) to be among the top most commonly reported health impediments that impact students' academic performance (American College Health Association, 2009).

Students under high stress who habitually fail to consume an appropriate amount of healthful foods, such as fresh fruits and vegetables, suffer more frequently with symptoms of anxiety and depression (Kramer & Hillman, 2006). Prolonged symptoms of anxiety and depression can cause students to lose interest in school, become less committed to develop a good work ethic and ultimately fall behind in their coursework. Self-regulatory processes, including motivation to eat healthy and exercise, self-control/dietary restraint, and effective time management skills can assist in reducing students stress levels and increase academic performance (Lacaille, Dauner, Krambeer, & Pederson, 2011). Successful adjustment during the first year of college has been identified as a predictor for academic success (Van Heyningen, 1997), while withdrawal from college has been linked to adjustment difficulties (Gerdes & Mallinckrodt, 1994).

Psychosocial and Psychological Determinants

Within the past 25 years, behavioral problems among children and young adults have increased by 50% while emotional problems have risen by 70% (Warwick, Maxwell, Statham, Aggleton, & Simon, 2008). Young adults, ages 16-19yrs, are thought to be at greater risk of developing mental health problems due to stressful life situations (Hurry, Aggleton, & Warwick, 2000). Risk factors such as living in economically and socially deprived environments along with a family history of family difficulties have all identified as risk factors for mental health problems (Green, McGinnity, Meltzer, Ford, & Goodman, 2005). Several psychological and psychosocial disorders such as depression, decrease in self-esteem, self-concept, discrimination, excessive weight concern and eating disorders have been found to occur within overweight and obese children (Kumanyika et al., 2008). Adults who have been diagnosed with depression during their youth most commonly have a greater

BMI than adults who do not suffer from depression (Pine, Cohen, Gurley, Brook, & Ma, 2001).

The National College Health Assessment Survey (2006) reported about 54% of college students have sought and received health information at some point during their college experience. The two most commonly sought out topics have been fitness concepts and physical activity (26%). Other commonly reported topics have included sexually transmitted diseases (21%), alcohol and drug prevention (20%), and dietary/nutritional information (17%). The college and social environments can often influence college students' decisions to engage in risky health behaviors. Students are likely to increase alcohol consumption and/or experiment with drugs when "hanging out" with friends in social settings. Alcohol consumption has been found to contribute to weight gain and increase participation in risky behaviors among both male and female college students (LaCaille, Dauner, Krambeer, & Pederson, 2011). Proper education can provide students with the knowledge needed to encourage healthier habits while socializing with friends.

Summary

Health promotion involves the elimination of negative behaviors and the initiation of positive behaviors. Despite the vast amount of media attention the current obesity epidemic has received, rates of overweight and obese adults continue to rise. Adults continue to engage in unhealthy eating habits despite the abundant knowledge of the risk such behaviors have on overall health. Americans universally continue to develop excuses rather than set goals for behavior change. Life stressors can contribute to the development of mental blocks that prevent individuals from having the confidence in themselves to engage in healthier practices. The transition from high school to college presents many new challenges for young

adults. Therefore, university and college environments provide an ideal setting for the promotion and education of healthy lifestyle behaviors. Research has shown that young adults transition into college without basic exercise and nutrition education. Lack of time management and stress management skills can cause students to feel overwhelmed and increase risk of poor academic performance and adjustment. Students who struggle to develop new social relationships often feel lost and alone which can increase their risk of various mental health disorders such as depression, anxiety and suicide ideation. Lack of self-confidence, self-esteem and resources can assist in preventing students from developing and engaging in healthy behaviors. Successful behavior change can occur by identifying perceived barriers, setting realistic goals and developing a plan in which one travels through each stage of behavior change. Campus initiatives, courses and programs that are aimed at providing students with the information and resources needed to develop healthful practices can have a positive influence on students' adjustment to college. University physical activity courses require students to engage in a certain amount (minutes/week) of daily and weekly physical activity. These university courses encourage the development of social relationships through active learning environments. This study will investigate how participation in university physical activity courses may increase 1st and 2nd year undergraduate students' psychosocial adjustment to college.

Chapter III

Methodology

The purpose of this study was twofold: to identify how participation in physical activity may assist or hinder in students' academic, social, and personal-emotional adjustment to college life; and to assess how participation in physical activity may assist or hinder in students' attachment to the university or college experience. The review of literature identified a need for an increase in university programs, courses and seminars that educate college students on how to develop and maintain healthy active lifestyles within all domains of wellness (social, physical, emotional, intellectual, spiritual and occupational). Such programs and courses would assist college students in the transition from adolescence to adulthood, thereby reducing the risk for mental and physical illness. This chapter examined the methods that were used for this study and contains sections that address: study design, participant recruitment, study participants, approval, instrumentation, data analysis and significance of the study.

Study Design

The researcher used quantitative survey research methods to examine a) academic adjustment, b) social adjustment, c) personal-emotional adjustment, d) students' attachment to their university and e) daily physical activity levels, among two groups of undergraduate college students at the University of New Mexico (UNM) in Albuquerque, New Mexico.

Data Collection

The Student Adaptation to College Questionnaire (SACQ), the International Physical Activity Questionnaire (IPAQ) and a number of demographic questions were used in the design of the questionnaire for this study. There were two groups within this study. The

PENP group contained 1st and 2nd year undergraduate students who were enrolled in Physical Education for Non-Professional (PENP) physical activity courses. The Online group consisted of randomly selected 1st and 2nd undergraduate students who were not enrolled in PENP physical activity courses. The two populations were chosen to examine the relationship physical activity may have on 1st and 2nd year undergraduate students. There were a total of 288 participants within this study.

Participant Recruitment

Physical Education for Non-Professional (PENP) Participants. For the purpose of this study, the PENP group was identified as the "*physically active*" group. Contact with the PENP students began during the third week of each course. The last day to add or drop a PENP course is the second Friday of the semester; therefore, course rosters were finalized at this point. A total of twenty-nine PENP courses were used for this study over the course of 16 weeks. Courses included four beginning and intermediate swimming courses, twelve step aerobics, three basketball, two racquetball, two tennis and six jogging courses. Each course met three times per week (Monday, Wednesday, and Friday) and emphasized moderate-intensity aerobic activity for 50 minutes. Average enrollment for these courses was between 20-40 students.

The researcher emailed the Teaching Assistants of the chosen courses and requested participation at the beginning of the Fall 2012 semester. The Study Contact for this research study visited the PENP courses on a date and time determined by both the Teaching Assistant of the course and the researcher. The Study Contact read a provided script to the entire class outlining the purpose of the proposed research study, eligibility guidelines and questionnaire completion guidelines. The Study Contact then placed a stack of PENP questionnaires in the

center of the room, along with pencils and a plain unlabeled manila envelope. Students who completed the questionnaire were able to submit their email on the email sheet, located on the final page of the questionnaire, in order to be entered for an iPad. The Study Contact remained in the classroom for 10-20 minutes, allowing the eligible students to complete the questionnaire and be available to answer any questions the students may have had. There were no identifiers on the completed questionnaires; therefore, the Study Contact and the Principal Investigator did not know who completed the survey. The Teaching Assistants stepped out of the classroom while the Study Contact administered the questionnaires to the eligible participants. The Study Contact placed the email sheets into a plain labeled, "Participant Email Addresses," manila envelope and the completed questionnaires into the plain unlabeled manila envelope. The Study Contact delivered the envelopes with the completed questionnaires and email sheets to the Principal Investigator. By having the Study Contact deliver the questionnaire to the participants and by having the Teaching Assistants step out of the classroom, the Principal Investigator hoped to reduce any risk of coercion between the Teaching Assistants and student participants. A copy of the questionnaire used for the PENP group, Teaching Assistant Request and Study Contact script are available in the Appendices A-C.

Registrar general list serve participants (online). The second group of participants included a random selection of 1st and 2nd year undergraduate students who were not enrolled in a PENP physical activity course. The researcher contacted the Registrar's office at the beginning of the Fall 2012 semester and requested an email listserv of 500 students who met eligibility requirements for the study. The Registrar listserv request took approximately 3-4 weeks to be completed. The researcher then contacted the students requesting participation

via email at the beginning of October 2012. The email included the www.surveymonkey.com link with instructions on how to complete the questionnaire. The researcher continued to establish contact with the students once a week, for four weeks, with a friendly reminder notifying them of the survey and requesting their assistance (Dillman, 2007). An additional 600 email addresses were requested in November 2012 and were used due to a low response rate. A copy of the questionnaire used for the Online group and the Registrar Email Request form are available in Appendices D and E.

Study Participants

Only first and second year undergraduate students participated in the study in order to get an accurate look at adjustment to college life. Equal numbers of male and female participants were not necessary. Student athletes were excluded from the sample group due to training schedules and increased daily physical activity levels. First year international students were also excluded from the sample group due to duration of acclimation to life in America and university setting. Third and fourth year undergraduate students were excluded due to the number of years in attendance within the university environment.

Approval

Proposal for the research study was presented to the researcher's dissertation committee on June 19th, 2012. A copy of the committee approval form is available in Appendix F. Following dissertation committee approval, the researcher submitted all necessary documents to the University of New Mexico's Institutional Review Board (IRB) on July 16th, 2012. Initial Review Board Modifications were received on August 17th, 2012. The researcher completed all necessary modifications and received final IRB approval on September 4th, 2012. A copy of the Institutional Review Board Approval is available in

Appendix G. The researcher received permission from the PENP Coordinator and Teaching Assistants to perform data collection of the selected courses on September 17th, 2012. Approved data collection dates were September 28th, October 5th, November 9th and November 16th, 2012.

In order to replicate the Student Adaptation to College Questionnaire for hard copy and online use, the researcher had to request copyright permission from Western Psychological Services. The researcher submitted all necessary documents to Western Psychological Services to be able to purchase the Student Adaptation to College Questionnaire copyright license on September 12th, 2012. Copyright approval and licensing was received on September 25th, 2012. A copy of the Western Psychological Service contract and copyright license are available in Appendices I and J.

Instrumentation

This dissertation used both the Student Adaptation to College Questionnaire (SACQ) and the International Physical Activity Questionnaire (IPAQ) for data collection.

Student Adaptation to College Questionnaire (SACQ). The Student Adaptation to College Questionnaire (SACQ) was originally developed by Robert W. Baker, PhD and Bohdan Siryk, M.A. (1989) as a self-report instrument designed to measure students' adjustment to college. The SACQ may be used as an appropriate instrument for use with students at any time during their undergraduate years (Baker & Siryk, 1989; Beyers & Goossens, 2002), as it identifies how college students adapt to college life (Baker, 1986; Cooper & Robinson, 1988; Haemmerlie & Merz, 1991; Beyers & Goossens, 2002; Schmidt, 2005). The SACQ is a 67-item questionnaire with four subscales: academic adjustment, social adjustment, personal-emotional adjustment, and attachment. The academic adjustment

subscale is used to measure a student's success at coping with the various educational demands characteristic of the college experience. The social adjustment subscale contains items relevant to the interpersonal-societal demands of college. The personal-emotional subscale is designed to examine how a student is feeling psychologically and physically. The attachment subscale focuses on a student's satisfaction with the college experience in general and with the college he or she is attending in particular.

All items were organized into 12 critical clusters. Clusters represent different aspects of each subscale and were derived through logical analysis (Baker & Siryk, 1989). Within the academic adjustment domain there were four clusters which examined, (a) *motivation* (including reasons for attending college, defined academic goals, values college degree, and enjoyment of course work); (b) *application* (whether he or she keeps up to date with course work, does work as hard as he or she should, is motivated to study and class attendance); (c) *performance* (whether he or she finds academic work difficult, does not function well to exams, level of satisfaction with academic performance, whether he or she feels smart enough for course work, time dedicated to studying, enjoyment of writing papers for courses, whether he or she struggles with concentration when studying, and level of difficulty with starting homework); and (d) *academic environment* (whether he or she is satisfied with variety of courses, quality of courses, program of courses, professors and academic situation).

The social adjustment domain contained four clusters examining (a) *general information* (whether he or she fits in well with college environment, involvement with college social activities, adjusts well to college, number of social ties, level of satisfaction with social participation and social life); (b) *other people* (examines whether he or she is

meeting people and making friends, has informal contact with professors, relationship with roommates, feelings toward others at college, association with opposite sex, feels different from others in undesirable ways and whether he or she has good friends to talk about problems with); (c) *nostalgia* (level of loneliness and whether he or she is home sick); and (d) *social environment* (whether he or she is pleased about decision to attend this college, enjoys living in situation, satisfaction with extracurricular activities).

The personal-emotional adjustment domain contained only two clusters examining *psychological* (whether he or she feel tense or nervous, blue or moody, whether being independent has been easy, is able to control emotions, has thought about seeking psychological help recently, gets angry easily, whether thoughts get muddled too easily, worries about college expenses and whether or not he or she has trouble coping with college stress) and *physical* (whether he or she feels tired a lot lately, appetite, experiences several headaches, weight gain or lose, sleeping habits and whether he or she feels in good health).

The institutional attachment domain contained only two clusters examining *general information* (whether he or she is pleased to go to college, thinks a lot about dropping out of college permanently and whether he or she is thinking about taking time off from college) and *this college* (whether he or she is pleased about attending this college, would prefer to be at another college, expects to finish bachelor's degree and whether he or she is thinking about transferring to another college).

Students were instructed to select one of the 9 points ranging from the letters A through I. "A" represented the position furthest to the left in the response array (i.e., "applies very closely to me") and "I" represented the position furthest to the right (i.e., "doesn't apply to me at all"). The SACQ results were displayed in five basic scores: Full Scale score (all 67-

itmes) and the four subscale scores. Scores can be interpreted using raw scores, and percentile rank equivalents (Beyers & Goossens, 2002). The raw mean for each cluster was reported along with the raw score for each item in the cluster and a brief description of the items. Examination of the clusters assisted in identifying the quality of a student's adjustment to college. The higher the item raw score, the better the self-evaluate adjustment to college (Baker & Siryk, 1989).

Reliability of SACQ. Baker and Siryk (1984) used Cronbach's alpha, (α), to measure the internal consistency reliability of the SACQ. The original 52-itm SACQ reported α = .94 for three of the six administrations of the full scale, α= .93 for two and α =.92 for the sixth; a reliability of α =.80 is considered adequate for most research purposes (Baker & Siryk, 1984). Coeffiecent alpha values for the 52-item SACQ ranged from .82 to .87 for the Academic Adjustment subscale, .83 to .89 for the Social Adjustment subscale, .73 to .79 for the Personal-Emotional Adjustment subscale, and .84 to .88 for the general subscale. The 9-point scale format has been noted to enhance the difference between the results while also reducing the reliability of the results as compared to the more standard 5-point scale. Fifteen items were added to the original scale primarily to improve the reliability of the personal/emotional adjustment subscales, which in the original 52-item version reported correlation alpha values in the .70s. Coefficient alpha values of the revised 67-item SACQ for the first (N = 216) and second (N= 163) administrations of the scale ranged from .82 and .87 for the Academic Adjustment subscale, .88 and .89 for the Social Adjustment subscale, .82 and .79 for the Personal-Emotional Adjustment subscale, .89 and .86 for Attachment subscale and .91 to .92 for the Full Scale (Baker & Siryk, 1984; Baker & Siryk, 1986; Beyers & Goossens, 2002).

Cronbach's alpha is often used to identify how closely related a set of items are as a group. A "high" correlation provides evidence that the items measure an underlying construct. Exploratory factor analysis (EFA) is a form of 'data mining' typically used to search for consistent patterns of relationships among variables, assessing the dimensionality of the identified correlations (Costello & Osborne, 2005). Correlations between the four subscales have ranged from .36 to .87 with the higher values occurring in the comparison of the social adjustment and attachment subscales (Baker & Siryk, 1986). The authors expect a high correlation between these two subscales because they share common items. The range of correlations among the three subscales that do not share common items was .36 to .66 (Baker & Siryk, 1986).

Validity of SACQ. Statistically significant relationships have been found between the four SACQ subscales (academic-adjustment, social adjustment, personal-emotional adjustment, and attachment) and several criterion variables (Baker &Siryk, 1984; Baker & Siryk, 1985). Criterion-related and construct validity evidence has been presented in studies examining the relationship between the SACQ subscales and independent real-life behaviors and life outcomes (Beyers & Goossens, 2002). The criterion variables used included: *attrition*, *appeals for services from a psychological clinic*, *grade point average*, *election to an academic honor society*, *involvement in social activities* and *outcome of application for dormitory assistant position*. Each of these criterion variables represents important behaviors and accomplishments in the lives of college students (Baker & Siryk, 1984; Baker & Siryk, 1985; Baker & Siryk, 1986).

Pearson product-moment correlation coefficient, *r*, is often used to determine the strength of a linear relationship between two variables. Pearson product correlation

coefficient, *r*, can range from +1 to -1, with 0 indicating no relationship/or association between the two variables. A positive (direct) association indicates as the value of one variable increases so does the other. Conversely, a negative (inverse) association indicates as the value of one variable increases the other decreases (Coleman, Pittenger, & Runyon, 2000). To determine the magnitude of the correlation coefficient, Cohen (1998) designed some general guidelines that characterize correlations as "small", "medium" or "large" (Coleman, Pittenger, & Runyon, 2000).

Cohen's (1988) guidelines for Small, Medium and Large correlation coefficients (pg177):

	Coefficient, *r*	
Strength of Association	Positive	Negative
Small	.10 to .29	-0.1 to -0.29
Medium	.3 to .49	-0.3 to -0.49
Large	.5 to 1.0	-0.5 to -1.0

Many behavioral scientists use Cohen's guidelines. However, some scientists argue that Cohen's guidelines are incomplete and disagree with the values Cohen chose to use.

Significant positive correlations (.17 to .53, $p<.01$) have been found between academic adjustment and grade point average. No significant correlations have been reported between grade point average and social adjustment. However, the attachment and personal-emotional subscales have both reported negative and positive correlations in relation to grade point average (Baker & Siryk, 1984; Beyers & Goossens, 2002). There have been significant negative correlations (-.23 to -.34, $p<.01$) between the personal-emotional subscale and whether students had made contact with a campus psychological services center during their freshman year. The attachment subscale has been significantly correlated (-.27 to -.41, $p<.01$) with attrition (Baker & Siryk, 1984; Beyers & Goossens, 2002). Positive correlations

between the academic adjustment subscale and election to an academic honorary society; the social adjustment subscale and social activities; and the social adjustment subscale with applications for dormitory positions criterion variable have been identified (Baker & Siryk, 1984). Researcher notes the rule of "large numbers" may apply which states that given a large *N* (>50), coefficients can reach statistical significant but have negligible magnitude or meaningfulness (Bernoulli, 1713).

International Physical Activity Questionnaire (IPAQ). There are both short and long forms of the International Physical Activity Questionnaire (IPAQ). The items in the long IPAQ form have been structured to provide separate domain specific scores for walking, moderate-intensity and vigorous-intensity activity within each of the work, transportation, domestic chores and gardening and leisure-time domains. Computation of the total scores for the long form requires summation of the duration (in minutes) and frequency (days) for all the types of activities in all domains. Domain specific scores or activity specific sub scores can also be calculated. While domain specific scores require summation of the score for walking, moderate-intensity and vigorous-intensity activities within the specific domain, activity-specific scores require summation of the score for the specific type of activity across domains (Craig et al., 2010).

The short form is an instrument designed for population surveillance of physical activity and has been developed and tested for use in adults (age range 15-69 years). The International Physical Activity Questionnaire short form asks about three specific types of activity undertaken within four domains: leisure time physical activity, domestic and gardening activities, work-related physical activity and transport-related physical activity. The three specific types of activities that are assessed within the short form are walking,

moderate-intensity activities and vigorous-intensity activities. The items are structured to provide separate scores on walking, moderate-intensity and vigorous-intensity activity. Both the short and long forms calculate total score through the summation of the duration (in minutes) and frequency (days) of walking, moderate-intensity and vigorous-intensity activities in each activity category. Total physical activity levels will be expressed in min/week and compared to the CDC-ACSM physical activity recommendation of at least 150 minutes per week of moderate intensity physical activity (Craig et al., 2010).

Research has shown that both the short and long IPAQ instruments are acceptable measurement properties; at least as good as other comparable established self-reports (Craig et al., 2003; Craig et al., 2010). The short form of the 'last 7 days' recall has been recommended for national monitoring and surveillance systems. The long form is recommended for research purposes and is a recall of physical activity performed in the 'last 7 days'. The short form has been shown to account for all aspects of physical activity when compared to the long form with both producing repeatable data (Craig et al., 2003). For the purpose of this study, the researcher chose to use the short form of the IPAQ due to the length and time required to complete the survey.

Reliability of IPAQ. A study assessing the short and long forms of the IPAQ in twelve countries on six continents used the test-retest repeatability of the same IPAQ forms administered at two different times not more than 8 days apart for the 'last 7 days' recall form to assess reliability (Craig et al., 2003). Spearman rho correlation coefficient was used to assess magnitude (strength of the correlation) and direction (positive or negative) between two variables. Spearman rho correlation coefficients for all the IPAQ long forms ranged from 0.46 to 0.96, with most clustering around 0.80 indicating good repeatability of total

physical activity. Repeatability of the short form ranged from 0.66 to 0.96 with 75% of the total observed correlation coefficients above 0.65 (Craig et al., 2003). No major differences were found in the reliability between telephone administration and self-administration of the IPAQ (Craig et al., 2003). Results support use of the short and long form IPAQ 'last 7 days' to measure standard physical activity levels for prevalence studies around the world.

Validity of IPAQ. Craig et al. (2003) assessed both the short and long IPAQ forms in twelve countries on six continents and used both criterion and concurrent methods to assess the validity. The concurrent (inter-method) validity coefficients between both the short and long forms showed reasonable agreement at three different times during three different visits. During the first visit over half of the correlation coefficients were above 0.65 while the second visit had over 60% of the correlations above 0.65 and by the third visit all correlations were above 0.65. Results indicated that subjects who were administered the same IPAQ over three visits showed improvements over time in reliability and inter-method agreement (Craig et al., 2003). Researchers used CSA accelerometers to assess criterion validity against self-report long and short form IPAQ questionnaires. Results indicated a fair to modest agreement between the two measures. The criterion validity of the long and short forms appeared to be almost equivalent. However, a wider range of correlation values were associated with the long form (Craig et al., 2003). It has been suggested that the short form be used for national and regional prevalence studies for both practical reasons and the inability to distinguish the difference between the reliability and validity of the short and long IPAQ forms. The long form may be used for research purposes or for studies requiring more details on the separate domains of physical activity (Craig et al., 2003).

Data Analysis

In this dissertation study, multiple one-way ANOVA statistical analyses were used to investigate the following research questions:

Research Question 1: Is there a relationship between physically active and non-physically active students' academic adjustment scores?

Research Question 2: Is there a relationship between physically active and non-physically active students' social adjustment scores?

Research Question 3: Is there a relationship between physically active and non-physically active students' personal-emotional adjustment scores?

Research Question 4: Is there a relationship between physically active and non-physically active students' attachment to their college adjustment scores?

Research Question 5: Is there a relationship between physically active and non-physically active students' Full Scale adjustment scores?

Statistical Analysis

Statistical analysis for all data in this study was performed using SPSS 20.0 software. Descriptive statistics were calculated to provide basic information about the overall characteristics of the sample. Descriptive statistics included information for confounding variables: age, gender, ethnicity, years spent in college, housing (on/off campus), involvement in social or academic organizations, and years participated in Physical Education.

Research questions 1 through 5 were tested using multiple one-way Analysis of Variance (ANOVA) procedures to evaluate between group differences (physically active, PENP group, vs. non-physically active, Online group) across the four regions of adjustment

(academic, social, personal-emotional, and attachment). Cronbach's alpha, α, calculated the level of internal consistency for both the Student Adaptation to College Questionnaire (SACQ) and the International Physical Activity Questionnaire (IPAQ). Pearson product-moment correlation coefficient (Pearson *r*), calculated the magnitude and direction of association between of identified variables. Alpha was set at .05 to calculate means and standard deviations for each group. Effect size was calculated using Cohen's *d* (Cohen, 1988).

Significance of the Study

Research has shown new friends, new school, new home, and new responsibilities can make for a difficult transition into college for most young adults. College and universities are important and ideal settings for the promotion of regular exercise and weight maintenance strategies. University efforts to enhance health awareness and promote daily physical activity and healthful dietary behaviors are essential and should be incorporated into undergraduate curricula in order to assist students in the transition and adjustment into college life (Racette, Deusinger, Strube, Highstein, & Deusinger, 2008). College campuses offer the possibility of creating an environment that encourages physical activity and a healthy lifestyle.

An increased prevalence of physical inactivity and obesity among college students strongly suggests a need for programs designed to improve nutritional habits and increase daily physical activity (Ferrera, 2009). By revealing environmental factors that can affect weight related behaviors in young adults health education administrators and public policy officials can build a campus environment that best meets the current needs of the students, promoting life-long healthy lifestyle behaviors (Smelling, Korba, & Burkey, 2007; Kapinos

& Yakusheva, 2011). Adoption of a healthy lifestyle has been shown to help college students' deal more effectively and positively with daily stressors, thereby reducing risk of obesity related disorders (Ferrera, 2009).

Studies have indicated that interventions to promote student physical activity are still at an early stage and have only produced moderate effects. Research has lacked in multiple-level approaches (ie, personal, psychosocial and environmental levels) to examining physical activity behaviors in college students (Keating, Guan, Pinero, & Bridges, 2005). However, past investigations have provided the groundwork for examining the effects of nutrition and exercise interventions on the adoption and maintenance of healthy eating and increase physical activity in undergraduate college students (Ferrera, 2009).

Chapter IV

Results

The primary objectives of the research study were to identify differences between physically active and non-physically active students on: academic adjustment scores, social adjustment scores, personal-emotional adjustment scores, institutional attachment scores, and full score adjustment scores. In order to accomplish these objectives, the data collected were analyzed utilizing descriptive and multiple one-way Analysis of Variance (ANOVA) statistics. Data were collected via two instruments: Student Adaptation to College Questionnaire (SACQ) and the International Physical Activity Questionnaire (IPAQ).

Demographic Information

All demographic data of the volunteer participants were collected in the first section of the questionnaire. The student participant population included two groups of 1st and 2nd year undergraduate students: 1) physically active students who were enrolled in a Physical Education Non-Professionals (PENP) physical activity course that met three times per week during the Fall 2012 semester and 2) non-physically active students who were not currently and had not previously enrolled in a PENP course. There were 288 participants within the study, physically active (n = 151) and non-physically active (n = 137).

Response Rate

The student participants within the PENP group were administered the questionnaire for this research study via pencil and paper method. The questionnaire was only available to the students during the designated class time, which had been arranged with the researcher and the Teaching Assistant of the course. The Study Contact administered the questionnaires to the students. Response rate within this group was dependent upon the number of students

within each class that met inclusion criteria. Thirty-one PENP classes were invited to participate within the research study during the Fall 2012 semester; 29 of the classes accepted the researchers invitation and agreed to participate. Data collection for the classes occurred over three dates, two within the first 8 weeks of the semester and one during the 2nd 8 weeks of the semester. The Study Contact visited the following PENP classes: aerobic dance, basketball, racquetball, beginning swimming, intermediate swimming, advanced swimming, intermediate racquetball, and tennis. All PENP courses selected met three days a week and emphasized moderate-intensity aerobic activity for 50minutes.

The student participants within the Online group were administered the questionnaire via www.surveymonkey.com. The researcher requested 1,200 email addresses of 1st and 2nd year undergraduate students from the university Registrar's Office. Email addresses were requested at the beginning of the Fall 2012 semester. Students had to meet the following criteria: must be either a 1st or 2nd year undergraduate, enrolled during Fall 2012 semester, and students could not be currently or previously enrolled in a PENP course.

The email addresses were divided into groups of 300 students for a total of 4 groups. Following Dillman's protocol for online survey design, the researcher contacted each group of students four times, once a week for four weeks, with reminders asking for assistance (Dillman, 2007). All Online participants had access to the www.surveymonkey.com web link for four months (October – January). Of the 167 responders, 30 abandoned the survey, for a total of 137 (6.85%) useable surveys.

First and second year undergraduate international students and student athletes were excluded from both populations.

Description of Study Participants

All demographic data of the volunteer participants were collected in the first section of the questionnaire. There were 288 participants within the study, physically active (*n* = 151) and non-physically active (*n* = 137). Within the physically active group of participants 34.4% were male (*n*= 52) and 65.5% were female (*n*= 99). Forty-three point eight percent were male (*n*= 60) and 56.2% were female (*n* = 77) within the non-physically active group. The University of New Mexico Official Fall 2012 Enrollment Report did indicate a higher headcount of female (*n* = 11,699) undergraduate students than male (*n* = 9, 309). The age range of the participants differed within each group (PENP vs. Online). Table 4.1 outlines these differences.

Table 4.1 *Group vs. Age*

	PENP		Online	
Age of Participant	N	%	N	%
18-20yrs	145	96.0%	112	81.8 %
21-24yrs	2	1.3%	10	7.3%
25-28yrs	1	.7%	5	3.6%
29-31yrs	1	.7%	1	.7%
≥32yrs	2	1.3%	9	6.6%
Total	151	100%	137	100%

There was a higher percentage of 18-21yr old student participants within the PENP group than the Online group. However, there was a higher percentage of student participants greater than the age of 32 within the Online group than the PENP group. The Online group appears to have a wider spread of age range than the PENP group.

Descriptive Statistics for Demographic Variables (*N*=288)

The descriptive statistics generated within this study were collected for baseline data and for informational purposes. According to the University of New Mexico Official Fall 2012 Enrollment Report there were a total of 21, 008 undergraduate students enrolled at the beginning of the Fall 2012 semester. The Official Fall 2012 Enrollment Report indicated a total of 8, 531 First year (n = 4,204) and Second year (n = 4, 327) undergraduate students. Within this study there were a total of 288 participants. Participation within this study was completely voluntary and there were no identifying factors between the participants and questionnaire responses. All participants were 1st and 2nd year undergraduate students enrolled at the University of New Mexico during the Fall 2012 semester. Table 4.2 illustrates the various ethnicities in relation to group.

The University of New Mexico Official Fall 2012 Enrollment Report indicated that the majority of the undergraduate student population were Hispanic (42.96%), 38.29% were White, 6.38% were Native American, 3.05% were Asian and 2.73% were African American. Therefore, the student participant population mirrored the University Fall 2012 undergraduate student population in relation to ethnicity.

Table 4.2 *Group vs. Ethnicity*

	PENP		Online	
Ethnicity	n	%	n	%
Hispanic or Latino	71	47.0%	61	44.5%
Asian	5	3.3%	8	5.8%
Native American	12	7.9%	10	7.3%
Black or African American	8	5.3%	4	2.9%
White	50	33.1%	44	32.1%
Other	5	3.3%	10	7.3%
Total	151	100%	137	100%

The student participants within both groups were asked to indicated whether they currently lived on-campus, off-campus with Parents or off-campus without Parents. Forty-one percent of the participants, lived off-campus with parents (n = 118). One-hundered and six of the participants lived on the Univeristy of New Mexico campus (36.8%) and 64 of the student participant population lived off-campus without parents (22.2%). Table 4.3 outlines the differences between group (PENP vs. Online) and housing.

Table 4.3 *Group vs. Housing*

	PENP		Online	
Housing	N	%	N	%
On-Campus	60	39.7%	46	33.6%
Off-Campus with Parents	61	40.4%	57	41.6%
Off-Campus without Parents	30	19.9%	34	24.8%
Total	151	100%	137	100%

Participants were asked to indicate in which years of K-12 education they had participated in Physical Education. The years participated in Physical Education were broken down according to grade (6^{th}-12^{th}). Data in relation to years participated in Physical Education may be found in Table 4.4.

Table 4.4 *Group vs. Years Participated in Physical Education*

	PENP		Online	
Year Participated in PE	N	%	N	%
6th grade	126	83.4%	113	82.5%
7th grade	130	86.1%	112	81.1%
8th grade	121	80.1%	96	70.1%
9th grade	141	93.4%	119	86.9%
10th grade	83	55%	67	48.9%
11th grade	82	54.3%	53	38.7%
12th grade	81	53.6%	47	34.3%
Total	155	100%	137	100%

Percent results indicate that students enrolled in a PENP course that met 3 times per week participated in more years of Physical Education (PE) than students within the Online group. A majority of the students participated in Physical Education in middle school, while less participated during their high school years.

Student participants within this research study were asked whether they participated in Aerobic Activity (ex: cardiovascular activity, running, jogging, aerobics, biking, etc). Students were given the option to answer either "yes" or "no". One-hundred and thirty-five student participants (89.4%) within the PENP group indicated "yes" while only 101 of the Online student participant group (73.7%) indicated "yes" to participating in aerobic activity. The student participants were then asked to indicate either "yes" or "no" to whether they participated in aerobic activity 3-5days per week for 30-45 minutes according to the American College of Sport Medicine guidelines for cardiovascular health. One-hundred and twenty-eight student participants (84.8%) within the PENP group indicated "yes" and 55 of the Online student participant group (59.9%) indicated "yes" to participating in aerobic activity 3-5days per week for 30-45 minutes. The data support the assumption that student participants within the PENP group participated more often in aerobic physical activity than those within the Online group. Table 4.5 and Table 4.6 illustrate the differences between group and participation in Aerobic Activity.

Table 4.5 *Group vs. Participates in Aerobic Activity*

	PENP		Online	
Participates in Aerobic Activity	N	%	N	%
Yes	135	89.4%	101	73.7%
No	16	10.6%	36	26.3%
Total	151	100%	137	100%

Table 4.6 *Group vs. Participates in Aerobic Activity 3-5days/wk for 30-45mins*

	PENP		Online	
Participates in Aerobic Activity (days/wk)	N	%	N	%
Yes	128	84.8%	55	40.1%
No	23	15.2%	82	59.9%
Total	151	100%	137	100%

Data Analysis

The researcher used both the Student Adaptation to College Questionnaire (SACQ) and the International Physical Activity Questionnaire (IPAQ) for data collection. Multiple one-way ANOVA statistical analyses were used to estimate significance among five research questions. The reported data includes the omnibus *F*, the *p*-value, the means scores and standard deviations of the groups, and Cohen's *d*. Results from the statistical analyses can be found below according to research question.

Research Question 1: Is there a relationship between physically active and non-physically active students' academic adjustment scores?

Results RQ_1: Statistical significance was found between physically active and non-physically active students' academic adjustment scores, F (1, 287) 4.840, p = .029. Levene's test of homogeneity indicated a p-value greater than .05 (.809). Therefore, the assumption of homogeneity was met. Mean scores between the groups identified the PENP group (M= 101.99, SD = 16.01) as having a higher level of academic adjustment than the Online group (M = 97.91, SD= 15.35). Cohen's d was .259, indicating a low effect size and difference between group mean scores.

Research Question 2: Is there a relationship between physically active and non-physically active students' social adjustment scores?

Results RQ_2: Statistical significance was found between physically active and non-physically active students' social adjustment scores, F (1, 287) = 36.400, p = .000. Levene's test of homogeneity indicated a p-value greater than .05 (.085). Therefore, the assumption of homogeneity was met. Mean scores between the groups identified the PENP group (M = 89.255, SD = 16.629) as having a lower level of social adjustment than the Online group (M = 101.81, SD = 18.68). Cohen's d was .711, indicating a large effect size and difference between group mean scores.

Research Question 3: Is there a relationship between physically active and non-physically active students' personal-emotional adjustment scores?

Results RQ_3: No statistical difference was found between physically active and non-physically active students' personal-emotional adjustment scores, F (1, 287) = .545, p = .461. Levene's test of homogeneity indicated a p-value greater than .05 (.645). Therefore, the assumption of homogeneity was met. There was not enough difference between the PENP group (M = 78.29, SD = 18.71) and the Online group (M = 76.62, SD = 19.65) mean scores

to identify any significance. Cohen's *d* was .870, indicating a large and meaningful effect size and difference between group mean scores.

Research Question 4: Is there a relationship between physically active and non-physically active students' attachment to their college adjustment scores?

Results RQ_4: No statistical difference was found between physically active and non-physically active students' attachment scores, F (1, 287) = 1.124, p = .290. Levene's test of homogeneity indicated a p-value greater than .05 (.447). Therefore, the assumption of homogeneity was met. There was not enough difference between the PENP group (M = 34.50, SD = 6.22) and the Online group (M = 35.27, SD = 6.09) mean scores to identify any significance. Cohen's *d* was .125, indicating a small effect size and difference between group mean scores.

Research Question 5: Is there a relationship between physically active and non-physically active students' Full Scale adjustment scores?

Results RQ_5: No statistical difference was found between physically active and non-physically active students' full scale scores, F (1, 287) = 2.655, p = .104. There was not enough difference between the PENP group (M = 307.41, SD = 40.34) and the Online group (M = 315.29, SD = 41.65) mean scores to identify any significance. Levene's test of homogeneity indicated a p-value greater than .05 (.359). Therefore, the assumption of homogeneity was met. Cohen's *d* was .192, indicating a small effect size and difference between group mean scores.

Pearson product-moment correlation coefficient (Pearson r), was calculated to identify the magnitude and direction of the association between two identified variables. The magnitude is reflected by the size of the correlation coefficient. The closer the correlation is

to -1 or +1 the stronger the correlation. If the correlation is 0 or closer to zero, then there is no association between the two variables. The direction of the correlation identifies how to the two variables are related. If the correlation is positive, then the two variables have a positive relationship (as one variable increases, so does the other variable); if the correlation is negative, then the two variables have a negative relationship (as one variable increases, the other variable decreases). Findings for both the Student Adaptation to College Questionnaire (SACQ) and the International Physical Activity Questionnaire (IPAQ) are illustrated within Table 4.7 and Table 4.8 below.

Table 4.7 *Pearson r Student Adaptation to College Questionnaire (SACQ)*

		Academic Adjustment	Social Adjustment	Personal-Emotional Adjustment	Attachment
Academic Adjustment	Pearson Correlation	**1**	**.279****	**.472****	**.298****
	Sig. (2-tailed)		.000	.000	.000
	N	288	288	288	288
Social Adjustment	Pearson Correlation	**.279****	**1**	**.081**	**.155****
	Sig. (2-tailed)	.000		.168	.008
	N	288	288	288	288
Personal-Emotional Adjustment	Pearson Correlation	**.427****	**.081**	**1**	**.388****
	Sig. (2-tailed)	.000	.168		.000
	N	288	288	288	288
Attachment	Pearson Correlation	**.298****	**.155****	**.388****	**1**
	Sig. (2-tailed)	.000	.008	.000	
	N	288	288	288	288

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4.8 *Pearson r International Physical Activity Questionnaire (IPAQ)*

		IPAQ1	IPAQ1a	IPAQ2	IPAQ2a	IPAQ3	IPAQ3a	IPAQ4
IPAQ 1	Pearson Correlation	**1**	**.528****	**.335****	**.256****	**.114**	**.095**	**-.079**
	Sig. (2-tailed)		.000	.000	.000	.053	.109	0.18
	N	288	288	288	288	288	288	288
IPAQ1a	Pearson Correlation	**.528**	**1**	**.285****	**.378****	**.111**	**.110**	**-.049**
	Sig. (2-tailed)	.000		.000	.000	.060	.063	.409
	N	288	288	288	288	288	288	288
IPAQ2	Pearson Correlation	**.335****	**.285****	**1**	**.494****	**.181****	**.109**	**-.107**
	Sig. (2-tailed)	.000	.000		.000	.002	.064	.069
	N	288	288	288	288	288	288	288
IPAQ2a	Pearson Correlation	**.256****	**.378****	**.494****	**1**	**.152****	**.220****	**.020**
	Sig. (2-tailed)	.000	.000	.000		.010	.000	.731
	N	288	288	288	288	288	288	288
IPAQ3	Pearson Correlation	**.114**	**.111**	**.181****	**.182****	**1**	**.285****	**.193****
	Sig. (2-tailed)	.053	.060	.002	.010		.000	.001
	N	288	288	288	288	288	288	288
IPAQ3a	Pearson Correlation	**.095**	**.110**	**.109**	**.220****	**.285****	**1**	**-.026**
	Sig. (2-tailed)	.109	.063	.064	.000	.000		.657
	N	288	288	288	288	288	288	288
IPAQ4	Pearson Correlation	**-.079**	**-.049**	**-.107**	**.020**	**.193****	**-.026**	**1**
	Sig. (2-tailed)	.180	.409	.069	.731	.001	.657	
	N	288	288	288	288	288	288	288

**. Correlation is significant at the 0.01 level (2-tailed).

Cronbach's alpha was calculated to measure level of internal consistency, or how closely related a set of items is. A Cronbach's alpha of .70-.95 is identified as having an acceptable level of internal consistency (Tavakol & Dennick, 2011). Table 4.9 and 4.10

indicates the level of internal consistency for both the Student Adaptation to College Questionnaire (SACQ) and the International Physical Activity Questionnaire (IPAQ).

Table 4.9 *Student Adaptation to College Questionnaire (SACQ) Cronbach's alpha*

Reliability Statistics

Cronbach's Alpha	N of Items
.760	67

Table 4.10 *International Physical Activity Questionnaire (IPAQ) Cronbach's alpha*

Reliability Statistics

Cronbach's Alpha	N of Items
.562	7

Summary

Data analysis was performed using SPSS 20.0. A larger number of female student participants were identified within both the PENP and Online groups. A majority of the student participant population was between the ages of 18-20 years and of Hispanic or Latina ethnicity. A majority of both the PENP and Online student participants lived off campus with parents. Students within the PENP group participated in more years of Physical Education (6^{th}-12^{th} grade) than students within the Online group. A majority of the students within both the PENP and Online group reported participating in aerobic activity. However, significantly more students within the PENP participated in aerobic activity 3-5days per week than the Online group. Statistical significance was found between physically active and non-physically active students' Academic and Social Adjustment scores. No statistical

significance was found between physically active and non-physically active students Personal-Emotional, Institutional attachment and Full Scale scores. Cohen's *d* identified a small effect size and difference between mean scores for the Academic, Institutional attachment and Full Scale domains. However, a large and meaningful effect size was reported for both the Social and Personal-Emotional domains. Pearson *r* indicated both positive and negative correlations in relation to the magnitude and direction of the correlation within both the Student Adaptation to College Questionnaire (SACQ) domains (academic, social, personal-emotional, and attachment) and International Physical Activity Questionnaire (IPAQ). Cronbach's alpha for the Student Adaptation to College Questionnaire (SACQ) reported an acceptable (.760) level of internal consistency while the International Physical Activity Questionnaire (IPAQ) reported a low (.562) level of internal consistency.

Chapter V

Discussion

Psychosocial wellness concerns how well students are equipped to handle the demands for independent functioning that accompany the college transition. This includes the ability to develop an academic schedule, negotiate a new and often complex social world, as well as develop the internal motivation needed to wake up at a reasonable time, attend classes and keep up with assignments (Mattanah, Hancock, & Brand, 2004). How well and to what degree students are able to effectively meet the demands and challenges of college has been labeled as *adjustment*.

The current study examined the relationship between physical activity and students' academic, social, personal-emotional adjustment and institutional attachment to college. Two groups of participants were sampled (*N*= 288): PENP (physically active) and Online (non-physically active). Five research questions guided the study and the data were analyzed using multiple one-way *ANOVA* via SPSS 20.0. The following chapter discusses the results of these analyses in relation to demographic insight into physical activity levels, research question, limitations, and recommendations for future research.

Demographic Insight into Physical Activity Levels *(N* =288*)*

It is well known that regular physical activity plays a crucial role in the maintenance of one's physical, physiological and psychological wellbeing (Haskell et al., 2007; Bonomi & Westerterp, 2012). The National College Health Assessment (American College Health Association, 2007) found that only 19 percent of college students report meeting the recommended amount of moderate-intensity daily physical activity. Students who are predominantly inactive are more likely to have weight problems and poor eating habits along

with psychosocial and social problems. High school physical education is not mandatory at most schools. However, the percentage of high school students participating in high school physical education has risen slightly over the past years (Pate et al., 2006). The University of New Mexico Core Curriculum does not require students to enroll in Physical Education for Non-Professional (PENP) courses. The program offers students a wide variety of physical activity courses that meet either three times per week for 50 minutes or twice a week for an hour and 15 minutes. Students within the PENP group of this study, per course requirements engaged in aerobic activity 3 days per week for 50 minutes, thereby meeting the American College of Sports Medicine requirements for cardiovascular activity. Therefore, it was appropriate to find more student participants within the PENP group who participating in aerobic activity 3-5 days per week for 30-45 minutes than within the Online group. Though 73.7% of the Online group reported participating in aerobic activity, only 59.9% reported engaging in aerobic activity 3-5 days per week for 30-45 minutes. This information illustrates that the Online group did participate in physical activity, however, not according to the American College of Sports Medicine requirements of days/week or duration.

A contributing factor to the difference in physical activity levels could be that student participants within the PENP group clearly participated in more years of physical education throughout middle school and high school than the Online group participants. It has been hypothesized that students who engage in more years of physical education at the elementary and high school level or participate in sport programs during this time, develop stronger self-regulation and initiation skills when it comes to maintaining a physically active lifestyle after graduation (Gilinsky, 2011). Therefore findings in this study could be used to support the notion that years participated in physical education could be an influencing factor in students

enrolling in a university PENP course during the 1st and 2nd year of their undergraduate studies.

Research Questions

For the Student Adaptation to College Questionnaire (SAQC), level of adjustment was based on a 9-point Likert scale that ranged from "(1) applies very closely to me" to "(9) does not apply to me at all."

Research Question 1: Is there a relationship between physically active and non-physically active students' academic adjustment scores?

The first-year transition into college may be one of the most difficult challenges college students face. It is important that students become socially and academically integrated into their new environment in order to have a successful college experience. Results from the study found that statistically significant differences existed between the PENP and Online group student participant's academic levels of adjustment to college. Current research indicates that as students perform more physical activity, an increase in academic self-efficacy occurs which in turn leads to an improvement in academic achievement (Gilinsky, 2011). An increase literature supports the relationship between physical activity and academic achievement in elementary and high school students. Student participants within the physically active group, PENP, reported a higher level of adjustment to the academic demands of college than the Online participants (Gilinsky, 2011; Chomitz, et al., 2009; Coe, et al., 2006; Datar & Sturm, 2006; Grissom, 2005; Tomporowski, 2003; Dwyer et al., 2001; Falkner et al., 2001;) . Therefore, study findings support the literature that suggests students who engage in regular, vigorous physical activity may experience a greater level of academic achievement.

In order for college students to succeed in college, they must learn how to negotiate life with higher levels of independence, initiation and self-regulation (Chemers, Hu, & Garcia, 2001). Students who consciously make the choice and put forth the effort to engage in physical activity may have a higher level of self-regulation than those who struggle to be physically active on their own. The same conscious effort must be put forth in order for students to reach academic goals. Students with low self-efficacy may struggle with attending class, note taking, and studying; which in turn may make students feel that they are not good enough or smart enough for college. Students who are under high levels of stress habitually fail to consume an appropriate amount of healthful foods, which can increase one's risk of developing symptoms of anxiety and depression (Kramer & Hillman, 2006). Stress-eating is a common habit among college students who are struggling academically, socially and emotionally with the transition into college. Consequently many students may find themselves gaining weight during the first and second year of college, which in turn may impact their self-esteem, self-efficacy and self-concept.

An increase in academic self-regulation may result in an increase in student academic self-efficacy (Gilinsky, 2011). Faculty may be able to assist students by providing them with the knowledge, skills, attention and motivation needed to overcome perceived academic barriers. However, a concern in need of further research is whether students lack the academic skills or whether they perceive themselves to lack the appropriate study skills needed to be successful in college. University and course initiatives should aim to improve students' academic self-efficacy through the development and promotion of organization skills, note taking, study guide building, and group work skills. Various student programs such as writing studios and course tutors exist to aid students with the academic presented by

college. However, many students are not aware of such programs. In order to help raise awareness, faculty and course instructors could promote the various available academic resources and programs during class time.

Research Question 2: Is there a relationship between physically active and non-physically active students' social adjustment scores?

Students may struggle with the various demands of college. However, students with low social adjustment skills are likely to miss out on one critical aspect of the college experience, the development of friendships and social networks. Results from the current study reported statistically significant differences between the PENP and Online group levels of social adjustment. Demographic information revealed a slightly higher age population within the Online group, and the Online group was found to be socially adjusting better to the various demands of college life. Although older adults report to have smaller social networks than younger adults, the number of individuals to whom they are emotionally close does not differ. Social support serves as a buffering mechanism that allows students to make a smoother transition into college life (Crede & Niehorster, 2012). However, the ability to make friends does not come easily to all. Those who struggle with shyness, or perhaps low levels of self-concept and self-esteem may find it difficult to approach others in the dorm halls, cafeteria or classroom. Psychological and psychosocial disorders such as depression, decreased in self-esteem and self-concept, discrimination, excessive weight concern and eating disorders have been found to occur within individuals who are overweight and obese (Kumanyika et al., 2008). Negative school experiences, such as bullying, can lead students to develop smaller social groups and withdraw from positive aspects of college life. Individuals with smaller social networks may experience a reduction in one's mental and emotional

health and wellbeing. However, research found that older adult's skillful management of their social ties reduces the negative consequences associated with smaller social networks. Reduction in contact with traditional support systems (such as family and friends) can greatly impact a first year student's level of social adjustment. While older adults seem to purposely choose to decrease the size of their social networks, the decrease is likely to be more positive than the decrease students experience during the transition from high school to college.

Social support can come from a variety of sources, including parents, friends, peers, as well as university faculty and staff. Learning how to work cooperatively with others in large and small groups, while learning how to appropriately resolve interpersonal problems, are all part of the college experience. Social skills combined with one's perceived level of social support have been found to predict certain aspects of adjustment in college students, including satisfaction with college and life in general (Riggio, Watring, & Throckmorton, 1993). The positive correlation identified between students' social adjustment and institutional attachment scores supports existing literature. The various environmental challenges an institution offers can significantly contribute to a student's level of social adjustment. Interventions that encourage students to participate in extracurricular activities, such as involvement in a social or academic student organization or association or campus recreation, may improve social skills among first-year college students (Brooks & DuBois, 1995; Feldt, Graham, & Dew, 2011).

Social support from university faculty and staff is more likely to have a larger impact on a student's academic adjustment while social support from family and peers is more likely to help students' social and personal-emotional adjustment. By simply approaching and talking with students, dormitory residential advisors, faculty, staff and peers have the ability

to give a struggling student the impression that 'someone cares'. This in turn may help some students come out of their shell of shyness and perhaps reach out to develop more social relationships.

Research Question 3: Is there a relationship between physically active and non-physically active students' personal-emotional adjustment scores?

Students in higher education have been reported to have increased symptoms of mental ill health when compared with age-matched controls (Warwick, Maxwell, Statham, Aggleton & Simon, 2008). However, no statistical differences were found between the PENP and Online groups personal-emotional adjustment to college scores. Students with low personal-emotional adjustment scores may experience higher levels of stress and distress within several aspects of the college experience, including studying, academic performance and social integration (Feldt, Graham, & Dew, 2011). The positive correlation identified between students' academic and personal-emotional adjustment scores adds to the research that supports the relationship between a student's academic achievement and level of personal-emotional adjustment.

There is evidence that aerobic and resistance exercise may be used to treat symptoms of depression and anxiety (Fox, 1999). Therefore, the slightly higher mean score of student participants within the PENP group may be due to the fact that these students were participating in aerobic activity 3-5 days per week. This finding could add to existing literature that supports the influence physical activity may have on one's mental wellbeing. Personal-emotional adjustment reflects the degree to which students experience stress, anxiety, and/or depression to the demands of college life. Individuals with low self-efficacy may not feel able to complete some tasks or reach certain goals. Therefore, an increase in the

level of personal-emotional adjustment may assist in increasing one's self-efficacy and self-esteem and decrease the risk of depression and other symptoms of psychological distress. There have been inconsistencies in literature understanding the connection between personal-emotional adjustment and parental attachment. Therefore, this may be an avenue for future research.

Research Question 4: Is there a relationship between physically active and non-physically active students' institutional attachment to their college adjustment scores?

Students with low institutional attachment scores are likely to perceive that the institution of choice is not a good fit for them or their needs. Students who experience low institutional attachment often end up withdrawing from school. No statistical differences were found between the PENP and Online group institutional attachment scores. Survey questions in the subgroup focused on how well a student liked the college or university they attended. The perception of an institution being a poor fit could be due to the lack of knowledge of campus resources and available support opportunities. The Online group reported a slightly higher mean score than the PENP group, indicating that those within the Online group had a higher institutional attachment to the University of New Mexico than those within the PENP group. Positive correlations were identified between institutional attachment and academic, social and personal-emotional adjustment. These findings support past research that found institutional attachment to interact with role balance capabilities which can assist in predicting students' report of depression (Lopez, & Fons-Scheyd, 2008). Students level of institutional attachment could be dependent upon how well students adjust to making new friends, course work and college life in general. Students who demonstrate a higher institutional attachment to the university or college they attend are most likely

adjusting better academically, socially, personally and emotionally. However, students who struggle socially to make friends may not be utilizing the various university opportunities and functions that encourage the development of new relationships. Those who struggle academically may also have trouble attending class, studying, or organizing notes. Many graduate/teaching assistants assigned to teach university courses have office hours to help students who perhaps may not have made it class or need help with note taking skills. Students who are not adjusting well to college may not utilize the various opportunities their institution has to offer.

Research Question 5: Is there a relationship between physically active and non-physically active students' Full Scale adjustment scores?

Full Scale scores report how well and to what degree students are able to effectively adapt to the various challenges of a new environment. No statistical differences were found between the PENP and Online group Full scale adjustment scores. However, the Online group reported a slightly higher mean score than the PENP group indicating that those within the Online group overall were adjusting better to college life than those within the PENP group. This could be due to the difference between the mean scores within each domain and group. Students face many changes, challenges and opportunities as they transition from high school and home life to college life. Regardless of whether students leave a college or university voluntarily or involuntarily, poor adjustment levels play a factor in some way. The level, to which students are able to adjust varies greatly upon the student. It has been reported that 85% of students leave college voluntarily (Martin, Swartz-Kulstad, & Madson, 1999; Tinto, 1993). These students may struggle with being away from family, familiar friends, academics workloads, activities of daily living or the challenges of a new

environment (Tinto, 1993). If used appropriately, the Student Adaption to College Questionnaire full scale scores may identify academically/emotionally at-risk students, and their overall satisfaction with college.

Limitations

Through the course of the study, the researcher identified three limitations. First, data were only collected for one semester. The SACQ was initially designed to be given to students at the beginning (Fall) and end (Spring) of the 1st and 2nd year of their undergraduate studies. The purpose of the study was to determine the relationship between a student's level of physical activity and adjustment to college. Therefore, in order to identify a stronger difference in overall adjustment and physical activity level, it may be necessary to collect data at the beginning of the Fall semester and then again from the same students at the end of the Spring semester.

Second, the current study included both freshman (1st) and sophomore (2nd) undergraduate students. Cronbach's alpha for the Student Adaptation to College Questionnaire (SACQ) reported an acceptable level of internal consistency among the four domains. However, a recent confirmatory factor analysis by Feldt, Graham and Dew (2011) found the SACQ to be a poor fit of measurement for college sophomores. It was suggested that, in order to make the instrument more inclusive, some items should be deleted and items that address coping efforts, financial strain, romantic relationships and family issues be added to help broaden the scope of the survey.

Third, the International Physical Activity Questionnaire (IPAQ) reported a low level of internal consistency among the set of questions. The self-report recall method of the questionnaire may impact the accuracy of results. Therefore, pairing the IPAQ instrument

with interview sessions (i.e. triangulation of data methods) may increase the accuracy of students 7-day physical activity recall.

Recommendations for Future Research

The Student Adaptation to College Questionnaire was expanded to 67 items in 1985 after an initial study in 1984 provided evidence that the general subscales were predictive of attrition and seeking service of a counseling center. In 1986, Baker and Siryk found significant increases in subscale scores following an interview-based intervention for students who had low SACQ subtest scores during their first semester of college. Although the interviews did not specifically address the academic, social or emotional needs of the students, the interviews apparently provided students with the impression that "someone cares." This perception was found to account for the increase in students subscale adjustment scores.

Therefore, recommendations for future research would be to partner the Student Adaption to College Questionnaire with focus group sessions that occur throughout the first or second semester of college. Focus groups would be designed as mini-seminars that would address the transition into college and daily struggles students encounter academically, socially, personally and emotionally. Sessions would provide students with the opportunity to build social connections, explore the campus grounds, and learn about the various student services the university has to offer.

A recent meta-analysis review of adjustment college literature found the four adjustment types (academic, social, personal-emotional and institutional attachment) to be strongly correlated with each other. The strongest correlation was present between social adjustment and institutional attachment (Crede & Niehorster, 2011). Therefore, focus group

sessions that encourage student interaction while exploring and investigating the various dimensions of college life may raise students' level of social adjustment and institutional attachment. The data collected from the various focus group sessions could be used to develop a university required transition course tailored to aid student adjustment.

Another avenue for future research would be to further examine the relationship between student adjustment and faculty involvement. Perceptions of negative environments have been found to contribute to students dropping out of college. Since students spend a majority of their time in the classroom, further examination of the influence faculty can have on a student's adjustment and college experience may be of importance.

A final avenue for future research would be to design a cohort study with incoming freshman, with an ongoing "preventive" intervention component, tested over 4 years with a sample of self-identified "at-risk" students. It seems that we know the "risk factors" however; the question is can we do anything about then over a developmental period of time?

Conclusion

The primary role of an institution of higher learning is to provide students with professional growth and development. However, students who struggle to adjust to the academic demands of college are at an increased risk of withdrawing from school. It may be proposed then that faculty may not only play a vital role in a student's growth and development as a professional, but also in a student's overall adjustment to college life. Students who feel they are able to interact with their college faculty and get to know their instructors are not only more likely to have a higher level of institutional attachment and are also more likely to graduate from college (Johnson, 1997). Faculty who create an inclusive

environment within their classroom may provide students with the opportunity to perhaps seek out guidance, ask questions, or voice concerns.

For many college students, the transition into college presents a dramatic lifestyle change. Moving from a comfortable, well-known environment to an environment full of unknowns can be a challenge for many. Students who do not socially adjust well to a new environment may begin to withdraw from many of the positive aspects of college life. This withdrawal may lead to a lack of personal contact with fellow classmates and faculty (Wilder, 1983). University instructors can encourage the establishment of relationships and social networks within their classrooms by engaging students in group work, pair and share sessions and course activities.

The benefits of a physically active lifestyle are well documented. Students who engage in the recommended levels of daily physical activity may decrease their risk of various mental and physical health issues. To help aid with the stressors present during college transition, university instructors may want to encourage students to engage in physical activity at the university fitness facility, participate in campus recreation and student health fitness programs, or enroll in a PENP style course. The results of the study support the association between physical activity and academic and social adjustment to college.

Appendices

Appendix A

PENP Participant Questionnaire

1. Are you a 1st or 2nd year undergraduate student at the University of New Mexico? YES or NO
    a. If answered 'no' you are not eligible to participate within this study. Thank you for your time.

2. Are you currently enrolled in a PENP physical activity course? YES or NO
    a. If answered 'yes' you *ARE* eligible to participate within this study!

3. Have you enrolled for a PENP course in the past? YES or NO

4. Is this your first time enrolling in a PENP course? YES or NO

5. Are you an International Student? YES or NO
    a. If answered 'yes' you are not eligible to participate within this study. Thank you for your time.

6. Are you currently a Student Athlete? YES or NO
    a. If answered 'yes' you are not eligible to participate within this study. Thank you for your time.

If you are eligible to participate within this study, please continue to the next page.

Thank you.

University of New Mexico

Informed Consent Cover Letter for Anonymous Surveys

STUDY TITLE
Physical Activity and Psychosocial Adjustment Among 1st and 2nd year undergraduate students

Vanessa Mikan, doctoral candidate, and Dr. Gloria Napper-Owen from the Department of Health, Exercise and Sport Sciences are conducting a research study. The purpose of the study is to determine whether the amount of physical exercise and activity predicts how well you are adjusting to college life, in terms of academic performance, emotional, physical and mental health You are being asked to participate in this study because you have met all qualifications.

Your participation will involve completing the following questionnaire. The survey should take about 10-20 minutes to complete. Your involvement in the study is voluntary, and you may choose not to participate. There are no names or identifying information associated with this survey. The survey includes questions such as "*I am finding academic work at college difficult*" "*I've put on (or lost) too much weight recently*", *"I wish I were at another college or university"* and "*I haven't been mixing too well with the opposite sex lately*." You will also be asked to identify how often (minutes/days per week) in the last 7 days you have engaged in a variety of physical activities, including walking and moderate to vigorous activities.You can refuse to answer any of the questions at any time. There are no known risks in this study, but some individuals may experience discomfort when answering questions. Upon the completion of the questionnaire, your email address will be requested and stored to be used in a raffle for an iPad at the end of the Fall 2012 semester. All data will be kept for 3 years in a locked file in the Principal Investigator's office and then destroyed.

The findings from this project will provide information on how physical activity impacts 1st and 2nd year undergraduate students adjustment to college life. If published, results will be presented in summary form only.

If you have any questions about this research project, please feel free to call Vanessa Mikan, doctoral candidate, at (512)627-2108. If you have questions regarding your legal rights as a research subject, you may call the UNM Human Research Protections Office at (505) 272-1129.

By submitting this questionnaire, you will be agreeing to participate in the above described research study.

Thank you for your consideration.

Sincerely,

Vanessa Quintanilla Mikan
PhD Candidate
Department of Health, Exercise and Sport Sciences

Demographic Information

1. Age:
   a. 18-20yrs b. 21-24yrs c. 25 -28yrs d.29-31yrs e. >32yrs

2. Gender:
   a. Male b. Female

3. Ethnicity:
   a. Hispanic or Latino b. Asian c. Native American

   d. Black or African American e. White f. Other

4. Years Enrolled in College:
   a. 1yr b. 2yrs c. 3yrs d. 4yrs e. 5yrs

5. Housing:
   a. On campus b. Off campus with Parents c. Off Campus without parents

6. Are you currently involved in a social or academic organization?

   a. Social Organization B. Academic Organization c. Other d. Not involved

7. Which years did you participate in Physical Education? (circle all that apply)

   a. 6^{th} grade b. 7^{th} grade c. 8^{th}grade d. 9^{th} grade e. 10^{th} grade

   f. 11^{th} grade g. 12^{th} grade

8. Do you participate in any outdoor recreational physical activities? (circle all that apply)

   a. Hiking b. mountain biking c. trail running d. mountain climbing
   e. skiing/snowboarding f. horseback riding h. water sports i. other

9. Do you participate in aerobic activity (ex: cardiovascular activity, running, jogging, aerobics, biking, etc)
   a. YES b. NO

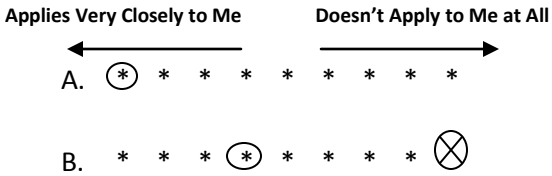
10. Do you participate in aerobic activity 3-5days per week for 30-45mins (ACSM guidelines)?
    a. YES b. NO

Student Adaptation to College Questionnaire (SACQ)

Robert W. Baker, Ph.D. and Bohdan Siryk, M.A

Instructions: The 67 statements within this section describe various college experiences. Read each one and decide how well it applies to you at the recent time (within the past few days). For each statement *circle the asterisk at the point that the continuum that best represents how close the statement applies to you.* Circle only one asterisk for each statement. To change an answer, draw an X through the incorrect response and circle the desired response.

Example: In the example below on the right, **Item A** applied very closely, and **Item B** was changed from "doesn't apply at all" to "applies somewhat."



		Applies Very Closely to Me							Doesn't Apply to Me at All	
1.	I feel that I fit in well as part of the college environment	*	*	*	*	*	*	*	*	*
2.	I have been feeling tense or nervous lately	*	*	*	*	*	*	*	*	*
3.	I have been keeping up to date with my academic work	*	*	*	*	*	*	*	*	*
4.	I am meeting as many people, and making as many friends as I would like at college	*	*	*	*	*	*	*	*	*
5.	I know why I am in college and what I want out of it	*	*	*	*	*	*	*	*	*
6.	I am finding academic work at college difficult	*	*	*	*	*	*	*	*	*
7.	Lately I have been feeling blue and moody a lot	*	*	*	*	*	*	*	*	*
8.	I am very involved with social activities in college	*	*	*	*	*	*	*	*	*
9.	I am adjusting well to college	*	*	*	*	*	*	*	*	*
10.	I have not been functioning well during examinations	*	*	*	*	*	*	*	*	*
11.	I have felt tired much of time lately	*	*	*	*	*	*	*	*	*
12.	Being on my own, taking responsibility for myself has not been easy	*	*	*	*	*	*	*	*	*
13.	I am satisfied with the level at which I am performing academically	*	*	*	*	*	*	*	*	*
14.	I have had informal, personal contacts with college professors	*	*	*	*	*	*	*	*	*
15.	I am please now about my decision to go to college	*	*	*	*	*	*	*	*	*
16.	I am please now about my decision to attend this college in particular	*	*	*	*	*	*	*	*	*
17.	I'm not working as hard as I should at my course work	*	*	*	*	*	*	*	*	*
18.	I have several close social ties at college	*	*	*	*	*	*	*	*	*
19.	My academic goals and purposes are well defined	*	*	*	*	*	*	*	*	*
20.	I haven't been able to control my emotions very well lately	*	*	*	*	*	*	*	*	*
21.	I'm not really smart enough for the academic work I am expected to be doing now	*	*	*	*	*	*	*	*	*
22.	Lonesomeness for home is a source of difficulty for me now	*	*	*	*	*	*	*	*	*
23.	Getting a college degree is very important to me	*	*	*	*	*	*	*	*	*
24.	My appetite has been good lately	*	*	*	*	*	*	*	*	*

		Applies Very Closely to Me ←								Doesn't Apply to Me at All →
25.	I haven't been very efficient in the use of my study time lately	*	*	*	*	*	*	*	*	*
26.	I enjoy living in a college dormitory (Please omit if you do not live in a dormitory any university housing should be regarded as a dormitory)	*	*	*	*	*	*	*	*	*
27.	I enjoy writing papers for courses	*	*	*	*	*	*	*	*	*
28.	I have been having a lot of headaches lately	*	*	*	*	*	*	*	*	*
29.	I really haven't had much motivation for studying lately	*	*	*	*	*	*	*	*	*
30.	I am satisfied with the extracurricular activities available at college	*	*	*	*	*	*	*	*	*
31.	I've given a lot of thought lately to whether I should ask for help from Psychological/ Counseling Services Center or form a psychotherapist outside of college	*	*	*	*	*	*	*	*	*
32.	Lately I have been having doubts regarding the value of a college education	*	*	*	*	*	*	*	*	*
33.	I am getting along very well with my roommate(s) at college (Please omit if you do not have a roommate)	*	*	*	*	*	*	*	*	*
34.	I wish I were at another college or university	*	*	*	*	*	*	*	*	*
35.	I've put on (or lost) too much weight recently	*	*	*	*	*	*	*	*	*
36.	I am satisfied with the number and variety of courses available at college	*	*	*	*	*	*	*	*	*
37.	I feel that I have enough social skills to get along well in the college setting	*	*	*	*	*	*	*	*	*
38.	I have been getting angry too easily lately	*	*	*	*	*	*	*	*	*
39.	Recently I have had trouble concentrating when I try to study	*	*	*	*	*	*	*	*	*
40.	I haven't been sleeping very well	*	*	*	*	*	*	*	*	*
41.	I'm not doing well enough academically for the amount of work I put in	*	*	*	*	*	*	*	*	*
42.	I am having difficulty feeling at ease with other people at college	*	*	*	*	*	*	*	*	*
43.	I am satisfied with the quality or the caliber of courses available at college	*	*	*	*	*	*	*	*	*
44.	I am attending classes regularly	*	*	*	*	*	*	*	*	*
45.	Sometimes my thinking gets muddled up too easily	*	*	*	*	*	*	*	*	*
46.	I am satisfied with the extent to which I am participating in social activities at college ...	*	*	*	*	*	*	*	*	*
47.	I expect to stay at this college for a bachelor's degree	*	*	*	*	*	*	*	*	*
48.	I haven't been mixing too well with the opposite sex lately	*	*	*	*	*	*	*	*	*
49.	I worry a lot about my college expenses	*	*	*	*	*	*	*	*	*
50.	I am enjoying my academic work at college	*	*	*	*	*	*	*	*	*
51.	I have been feeling lonely a lot at college lately	*	*	*	*	*	*	*	*	*
52.	I am having a lot of trouble getting started on homework assignments	*	*	*	*	*	*	*	*	*
53.	I feel I have good control over my life situation at college	*	*	*	*	*	*	*	*	*
54.	I am satisfied with my program of courses for this semester/quarter	*	*	*	*	*	*	*	*	*
55.	I have been feeling in good health lately	*	*	*	*	*	*	*	*	*
56.	I feel I am very different from other students at college in ways that I don't like	*	*	*	*	*	*	*	*	*
57.	On balance, I would rather be home than here	*	*	*	*	*	*	*	*	*
58.	Most of the things I am interested in are not related to any of my course work at college	*	*	*	*	*	*	*	*	*
59.	Lately I have been giving a lot of thought to transferring to another college	*	*	*	*	*	*	*	*	*
60.	Lately I have been giving a lot of thought to dropping out of college altogether and for good	*	*	*	*	*	*	*	*	*
61.	I find myself giving considerable thought to taking time off from college and finishing later	*	*	*	*	*	*	*	*	*
62.	I am very satisfied with the professors I have now in my courses	*	*	*	*	*	*	*	*	*
63.	I have some good friends or acquaintances at college with whom I can talk about any problems I may have.....	*	*	*	*	*	*	*	*	*

		Applies Very Closely to Me ←								Doesn't Apply to Me at All →
64.	I am experiencing a lot of difficulty coping with stresses imposed upon me in college	*	*	*	*	*	*	*	*	*
65.	I am quite satisfied with my social life at college	*	*	*	*	*	*	*	*	*
66.	I'm quite satisfied with my academic situation at college	*	*	*	*	*	*	*	*	*
67.	I feel confident that I will be able to deal in a satisfactory manner with future challenges here at college	*	*	*	*	*	*	*	*	*

International Physical Activity Questionnaire (IPAQ)

We are interested in finding out about the kinds of physical activities that people do as part of their everyday lives. This is part of a large study being conducted at the University of New Mexico. You answers will help us to understand the physical activity levels of 1st and 2nd year undergraduate students.

The questions are about the time you spent being physically active in the **last 7 days**. They include questions about activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise or sport.

Your answers are important.

Please answer each question even if you do not consider yourself to be an active person.

THANK YOU FOR PARTICIPATING!

In answering the following questions,

- **Vigorous** physical activities refer to activities that take hard physical effort and make you breathe much harder than normal.
- **Moderate** activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal.

1. During the last 7 days, on how many days did you do **vigorous** physical activities like heavy lifting, digging, aerobics, or fast bicycling?
   a. 1-2 days/wk b. 3-4days/wk c. 5-7days/wk

How much time in total did you usually spend on one of those days doing *vigorous* physical activity?

   b. 10-20mins b. 20-30mins c. 30-40mins

2. Again, think only about those physical activities you did for at least 10 minutes at a time. During the last 7 days, on how many days did you do **moderate** physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking.
   a. 1-2 days/wk b. 3-4days/wk c. 5-7days/wk

How much time in total did you usually spend on one of those days doing *moderate* physical activity?

b. 10-20mins b. 20-30mins c. 30-40mins

3. During that last 7 days, on how many days did you **walk** for at least 10mins at a time? This includes walking at work or at home, walking to travel from place to place, and any other walking that you did solely for recreation, sport, exercise or leisure.

a. 1-2 days/wk b. 3-4days/wk c. 5-7days/wk

How much time in total did you usually spend *walking* on one of those days?

b. 10-20mins b. 20-30mins c. 30-40mins

4. During the last 7 days, how much time in total did you usually spend **sitting** on a week day?

a. 10-20mins b. 20-40mins c. 1-2hrs d. 3-4hrs

e. >5hrs

This is the end of the questionnaire, thank you for participating

Appendix B

Teaching Assistant Email Request

I am contacting you to ask for your permission and assistance with my dissertation data collection. I have been approved by IRB to go forth and am eager to start getting some numbers.

The purpose of the study is to see whether the amount of physical exercise and activity predicts how well students are adjusting to college life, in terms of academic performance, emotional, physical and mental health.

I am contacting ya'll because you teach a MWF aerobic-based course. Only 1st or 2nd year undergraduates are eligible to participate within this study. Student athletes and international students are not eligible to participate. Those who volunteer to participate within this research study will be entered in a raffle of an iPad at the end of the Fall 2012 semester.

Participation is completely voluntary and will involve completing my questionnaire that takes approximately 10-15minutes to complete; though I have found students to finish it closer to 7-8 minutes. Students may choose not to participate. There are no names or identifying information associated with this survey.

My Study Contact, Maggie Siebert, will be performing my data collection in order to keep me blinded during the study. To avoid coercion the TA's will be asked to step out of the classroom while students fill out the questionnaires.

Maggie and I are looking at the following dates: September 28th, October 5th, November 9th and November 16th.

There are several classes we'd like to visit however, most classes overlap on time. Therefore, I ask you, what time would be best for Maggie to visit your class? First 10 mins of class? 30 mins in? or 10mins before the end of class?

Courses to be Assess:

Troy Morgan: PENP 101-001 (8am), PENP 103-001 (10am), PENP 168-001 (9am) and PENP 168-003 (1pm)

Scott O'Connor: PENP 101-003 (11am) and PENP 152-003 (1pm)

Ceyda Mumcu: PENP 102-001 (9am) and PENP 161-002 (10am)

Colin Carriker: PENP 143-001 (11am) and PENP 144-001 (10am)

Doug Manning: PENP 152-001 (10am) and PENP 152-002 (11am)

Erin Damour: PENP 158-001 (8am)

Michelle Kulovitz: PENP 158-003 (10am), PENP 158-004 (11am) and PENP 161-003 (12pm)

ShanShan Qiao: PENP 158-005 (1pm) and PENP 158-006 (2pm)

Rosie Lanphere: PENP 161-001 (9am)

Lucas Laguttuta: PENP 168-002 (10am)

Ceyda Mumcu: PENP 162-002 (10am) and PENP 162-003 (11am)

Min Hyun Kim: PENP 154-003 (1pm)

Erin Damour: PENP 159-001 (8am)

Michelle Kulovitz: PENP 159-003 (10am) and PENP 159-004 (11am)

ShanShan Qiao: PENP 159-005 (1pm) and PENP 159-006 (2pm)

Troy Purdom: PENP 162-001 (9am)

Please let me know which date will work best with your lesson plans. When you reply back, please just cut and paste your name and course times from above with what time Maggie should visit your class.

Once I receive all responses I will email out the final schedule.

I thank ya'll greatly for your help with this!

Peace.

Vanessa Mikan

Appendix C

Study Contact Script

This class has been asked to participate within a research study being conducted by a doctoral candidate within the Health, Exercise and Sport Sciences Dept. The purpose of the study is to see whether the amount of physical exercise and activity predicts how well you are adjusting to college life, in terms of academic performance, emotional, physical and mental health.

If you are a 1st or 2nd year undergraduate, and not currently a student athlete or international student, you are eligible to participate within this research study. Those who volunteer to participate within this research study will be entered in a raffle of an iPad at the end of data collection.

Your participation is completely voluntary and will involve completing the following questionnaire (show questionnaire to students). You may choose not to participate. There are no names or identifying information associated with this survey.

The survey should take about 10-20 minutes to complete. The survey includes questions such as "*I am finding academic work at college difficult*," or "*I've put on (or lost) too much weight recently*" and "*I haven't been mixing too well with the opposite sex lately*." You will also be asked to identify how often (minutes/days per week) in the last 7 days you have engaged in a variety of physical activities, including walking and moderate to vigorous activities. You can refuse to answer any of the questions at any time. There are no known risks in this study, but some individuals may experience discomfort when answering questions.

Upon the completion of the questionnaire, please a submit your email address on the provided sheet to be entered in a raffle for an iPad at the end of the Fall 2012 semester. Do not write your email or name on the provided questionnaire. (Show students email address sheet).

The Teaching Assistant will step out of the classroom for 10-20minutes while those who are eligible and would like to participate can complete the following questionnaire. I, the Study Contact, am willing to answer any questions you may have while completing the questionnaire.

Class will begin after the completion of the questionnaires, so please do not leave the classroom.

The researcher would like you to know that all data will be kept for 3 years in a locked file in the Principal Investigator's office and then destroyed. Her name and contact information is provided on the Informed Consent. Please take the Informed Consent with you upon completion of the questionnaire.

Thank you.

Appendix D

Online Participant Questionnaire

1. Are you a 1st or 2nd year undergraduate student at the University of New Mexico? YES or NO
    a. If answered 'no' you are not eligible to participate within this study. Thank you for your time.

2. Are you currently enrolled in a PENP physical activity course? YES or NO
    a. If answered 'yes' you are *not* eligible to participate within this study.

3. Have you taken a PENP physical activity course in the past 2 semesters? YES or NO
    a. If answered 'yes' you are *not* eligible to participate within this study.

4. Are you an International Student? YES or NO
    a. If answered 'yes' you are not eligible to participate within this study. Thank you for your time.

5. Are you currently a Student Athlete? YES or NO
    a. If answered 'yes' you are not eligible to participate within this study. Thank you for your time.

If you are eligible to participate within this study, please continue to the next page.

Thank you.

University of New Mexico

Informed Consent Cover Letter for Anonymous Surveys

STUDY TITLE
Physical Activity and Psychosocial Adjustment Among 1st and 2nd year undergraduate students

Vanessa Mikan, doctoral candidate, and Dr. Gloria Napper-Owen from the Department of Health, Exercise and Sport Sciences are conducting a research study. The purpose of the study is to determine whether the amount of physical exercise and activity predicts how well you are adjusting to college life, in terms of academic performance, emotional, physical and mental health You are being asked to participate in this study because you have met all qualifications.

Your participation will involve completing the following questionnaire. The survey should take about 10-20 minutes to complete. Your involvement in the study is voluntary, and you may choose not to participate. There are no names or identifying information associated with this survey. The survey includes questions such as "*I am finding academic work at college difficult*" "*I've put on (or lost) too much weight recently*", *"I wish I were at another college or university"* and "*I haven't been mixing too well with the opposite sex lately*." You will also be asked to identify how often (minutes/days per week) in the last 7 days you have engaged in a variety of physical activities, including walking and moderate to vigorous activities.You can refuse to answer any of the questions at any time. There are no known risks in this study, but some individuals may experience discomfort when answering questions. Upon the completion of the questionnaire, your email address will be requested and stored to be used in a raffle for an iPad at the end of the Fall 2012 semester. All data will be kept for 3 years in a locked file in the Principal Investigator's office and then destroyed.

The findings from this project will provide information on how physical activity impacts 1st and 2nd year undergraduate students adjustment to college life. If published, results will be presented in summary form only.

If you have any questions about this research project, please feel free to call Vanessa Mikan, doctoral candidate, at (512)627-2108. If you have questions regarding your legal rights as a research subject, you may call the UNM Human Research Protections Office at (505) 272-1129.

By submitting this questionnaire, you will be agreeing to participate in the above described research study.

Thank you for your consideration.

Sincerely,

Vanessa Quintanilla Mikan
PhD Candidate
Department of Health, Exercise and Sport Sciences

Demographic Information

1. Age:
   b. 18-20yrs b. 21-24yrs c. 25 -28yrs d.29-31yrs e. >32yrs

2. Gender:
   a. Male b. Female

3. Ethnicity:
   a. Hispanic or Latino b. Asian c. Native American

   d. Black or African American e. White f. Other

4. Years Enrolled in College:
   a. 1yr b. 2yrs c. 3yrs d. 4yrs e. 5yrs

5. Housing:
   a. On campus b. Off campus with Parents c. Off Campus without parents

6. Are you currently involved in a social or academic organization?

   a. Social Organization B. Academic Organization c. Other d. Not involved

7. Which years did you participate in Physical Education? (circle all that apply)

   a. 6^{th} grade b. 7^{th} grade c. 8^{th}grade d. 9^{th} grade e. 10^{th} grade

   f. 11^{th} grade g. 12^{th} grade

8. Do you participate in any outdoor recreational physical activities? (circle all that apply)

   a. Hiking b. mountain biking c. trail running d. mountain climbing
   e. skiing/snowboarding f. horseback riding h. water sports i. other

9. Do you participate in aerobic activity (ex: cardiovascular activity, running, jogging, aerobics, biking, etc)
   a. YES b. NO

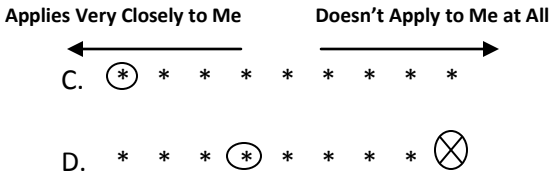
10. Do you participate in aerobic activity 3-5days per week for 30-45mins (ACSM guidelines)?
    a. YES b. NO

Student Adaptation to College Questionnaire (SACQ)

Robert W. Baker, Ph.D. and Bohdan Siryk, M.A

Instructions: The 67 statements within this section describe various college experiences. Read each one and decide how well it applies to you at the recent time (within the past few days). For each statement *circle the asterisk at the point that the continuum that best represents how close the statement applies to you.* Circle only one asterisk for each statement. To change an answer, draw an X through the incorrect response and circle the desired response.

Example: In the example below on the right, **Item A** applied very closely, and **Item B** was changed from "doesn't apply at all" to "applies somewhat."



		Applies Very Closely to Me							Doesn't Apply to Me at All	
1.	I feel that I fit in well as part of the college environment	*	*	*	*	*	*	*	*	*
2.	I have been feeling tense or nervous lately	*	*	*	*	*	*	*	*	*
3.	I have been keeping up to date with my academic work	*	*	*	*	*	*	*	*	*
4.	I am meeting as many people, and making as many friends as I would like at college	*	*	*	*	*	*	*	*	*
5.	I know why I am in college and what I want out of it	*	*	*	*	*	*	*	*	*
6.	I am finding academic work at college difficult	*	*	*	*	*	*	*	*	*
7.	Lately I have been feeling blue and moody a lot	*	*	*	*	*	*	*	*	*
8.	I am very involved with social activities in college	*	*	*	*	*	*	*	*	*
9.	I am adjusting well to college	*	*	*	*	*	*	*	*	*
10.	I have not been functioning well during examinations	*	*	*	*	*	*	*	*	*
11.	I have felt tired much of time lately	*	*	*	*	*	*	*	*	*
12.	Being on my own, taking responsibility for myself has not been easy	*	*	*	*	*	*	*	*	*
13.	I am satisfied with the level at which I am performing academically	*	*	*	*	*	*	*	*	*
14.	I have had informal, personal contacts with college professors	*	*	*	*	*	*	*	*	*
15.	I am please now about my decision to go to college	*	*	*	*	*	*	*	*	*
16.	I am please now about my decision to attend this college in particular	*	*	*	*	*	*	*	*	*
17.	I'm not working as hard as I should at my course work	*	*	*	*	*	*	*	*	*
18.	I have several close social ties at college	*	*	*	*	*	*	*	*	*
19.	My academic goals and purposes are well defined	*	*	*	*	*	*	*	*	*
20.	I haven't been able to control my emotions very well lately	*	*	*	*	*	*	*	*	*
21.	I'm not really smart enough for the academic work I am expected to be doing now	*	*	*	*	*	*	*	*	*
22.	Lonesomeness for home is a source of difficulty for me now	*	*	*	*	*	*	*	*	*
23.	Getting a college degree is very important to me	*	*	*	*	*	*	*	*	*

		Applies Very Closely to Me							Doesn't Apply to Me at All	
24.	My appetite has been good lately	*	*	*	*	*	*	*	*	*
25.	I haven't been very efficient in the use of my study time lately	*	*	*	*	*	*	*	*	*
26.	I enjoy living in a college dormitory (Please omit if you do not live in a dormitory any university housing should be regarded as a dormitory)	*	*	*	*	*	*	*	*	*
27.	I enjoy writing papers for courses	*	*	*	*	*	*	*	*	*
28.	I have been having a lot of headaches lately	*	*	*	*	*	*	*	*	*
29.	I really haven't had much motivation for studying lately	*	*	*	*	*	*	*	*	*
30.	I am satisfied with the extracurricular activities available at college	*	*	*	*	*	*	*	*	*
31.	I've given a lot of thought lately to whether I should ask for help from Psychological/ Counseling Services Center or form a psychotherapist outside of college	*	*	*	*	*	*	*	*	*
32.	Lately I have been having doubts regarding the value of a college education	*	*	*	*	*	*	*	*	*
33.	I am getting along very well with my roommate(s) at college (Please omit if you do not have a roommate)	*	*	*	*	*	*	*	*	*
34.	I wish I were at another college or university	*	*	*	*	*	*	*	*	*
35.	I've put on (or lost) too much weight recently	*	*	*	*	*	*	*	*	*
36.	I am satisfied with the number and variety of courses available at college	*	*	*	*	*	*	*	*	*
37.	I feel that I have enough social skills to get along well in the college setting	*	*	*	*	*	*	*	*	*
38.	I have been getting angry too easily lately	*	*	*	*	*	*	*	*	*
39.	Recently I have had trouble concentrating when I try to study	*	*	*	*	*	*	*	*	*
40.	I haven't been sleeping very well	*	*	*	*	*	*	*	*	*
41.	I'm not doing well enough academically for the amount of work I put in	*	*	*	*	*	*	*	*	*
42.	I am having difficulty feeling at ease with other people at college	*	*	*	*	*	*	*	*	*
43.	I am satisfied with the quality or the caliber of courses available at college	*	*	*	*	*	*	*	*	*
44.	I am attending classes regularly	*	*	*	*	*	*	*	*	*
45.	Sometimes my thinking gets muddled up too easily	*	*	*	*	*	*	*	*	*
46.	I am satisfied with the extent to which I am participating in social activities at college	*	*	*	*	*	*	*	*	*
47.	I expect to stay at this college for a bachelor's degree	*	*	*	*	*	*	*	*	*
48.	I haven't been mixing too well with the opposite sex lately	*	*	*	*	*	*	*	*	*
49.	I worry a lot about my college expenses	*	*	*	*	*	*	*	*	*
50.	I am enjoying my academic work at college	*	*	*	*	*	*	*	*	*
51.	I have been feeling lonely a lot at college lately	*	*	*	*	*	*	*	*	*
52.	I am having a lot of trouble getting started on homework assignments	*	*	*	*	*	*	*	*	*
53.	I feel I have good control over my life situation at college	*	*	*	*	*	*	*	*	*
54.	I am satisfied with my program of courses for this semester/quarter	*	*	*	*	*	*	*	*	*
55.	I have been feeling in good health lately	*	*	*	*	*	*	*	*	*
56.	I feel I am very different from other students at college in ways that I don't like	*	*	*	*	*	*	*	*	*
57.	On balance, I would rather be home than here	*	*	*	*	*	*	*	*	*
58.	Most of the things I am interested in are not related to any of my course work at college	*	*	*	*	*	*	*	*	*
59.	Lately I have been giving a lot of thought to transferring to another college	*	*	*	*	*	*	*	*	*
60.	Lately I have been giving a lot of thought to dropping out of college altogether and for good	*	*	*	*	*	*	*	*	*
61.	I find myself giving considerable thought to taking time off from college and finishing later	*	*	*	*	*	*	*	*	*
62.	I am very satisfied with the professors I have now in my courses	*	*	*	*	*	*	*	*	*
63.	I have some good friends or acquaintances at college with whom I can talk about any problems I may have	*	*	*	*	*	*	*	*	*

		Applies Very Closely to Me							Doesn't Apply to Me at All
64.	I am experiencing a lot of difficulty coping with stresses imposed upon me in college ….	*	*	*	*	*	*	*	*
65.	I am quite satisfied with my social life at college ……	*	*	*	*	*	*	*	*
66.	I'm quite satisfied with my academic situation at college ……	*	*	*	*	*	*	*	*
67.	I feel confident that I will be able to deal in a satisfactory manner with future challenges here at college ……	*	*	*	*	*	*	*	*

International Physical Activity Questionnaire (IPAQ)

We are interested in finding out about the kinds of physical activities that people do as part of their everyday lives. This is part of a large study being conducted at the University of New Mexico. You answers will help us to understand the physical activity levels of 1st and 2nd year undergraduate students.

The questions are about the time you spent being physically active in the **last 7 days**. They include questions about activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise or sport.

Your answers are important.

Please answer each question even if you do not consider yourself to be an active person.

THANK YOU FOR PARTICIPATING!

In answering the following questions,

- **Vigorous** physical activities refer to activities that take hard physical effort and make you breathe much harder than normal.
- **Moderate** activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal.

1. During the last 7 days, on how many days did you do **vigorous** physical activities like heavy lifting, digging, aerobics, or fast bicycling?
   b. 1-2 days/wk b. 3-4days/wk c. 5-7days/wk

How much time in total did you usually spend on one of those days doing *vigorous* physical activity?

   c. 10-20mins b. 20-30mins c. 30-40mins

2. Again, think only about those physical activities you did for at least 10 minutes at a time. During the last 7 days, on how many days did you do **moderate** physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking.
   a. 1-2 days/wk b. 3-4days/wk c. 5-7days/wk

How much time in total did you usually spend on one of those days doing *moderate* physical activity?

b. 10-20mins b. 20-30mins c. 30-40mins

3. During that last 7 days, on how many days did you **walk** for at least 10mins at a time? This includes walking at work or at home, walking to travel from place to place, and any other walking that you did solely for recreation, sport, exercise or leisure.

a. 1-2 days/wk b. 3-4days/wk c. 5-7days/wk

How much time in total did you usually spend *walking* on one of those days?

b. 10-20mins b. 20-30mins c. 30-40mins

4. During the last 7 days, how much time in total did you usually spend **sitting** on a week day?

a. 10-20mins b. 20-40mins c. 1-2hrs d. 3-4hrs

e. >5hrs

This is the end of the questionnaire, thank you for participating!

Appendix E

Registrar Email Request

NAME : vanessa mikan
EMAIL : vmikan@unm.edu

REQUEST DETAILS : The researcher will follow quantitative survey research design methods to examine a) academic adjustment, b) social adjustment, c) personal-emotional adjustment, d) attachment and e) daily physical activity levels. This study will have a total of 500 participants. There are two groups within this research study. For the first group, the researcher will request a email list serve of 1st and 2nd yr undergraduates who are not enrolled in a PENP course from the Registrar's Office at the beginning of September 2012. The researcher will then email the students requesting participation within the study. The questionnaire will be attached to the email via www.surveymonkey.com. Students will have two weeks to complete the questionnaire. The researcher will contact the students twice; an initial contact at the beginning of the 1st week and then a follow-up at the beginning of the 2nd week. At the end of the questionniare, students will be asked to submit their e

mail address for the raffling of an iPad at the end of the Fall 2012 semester. The second group of students will be 1st or 2nd yr undergraduates who are enrolled in a PENP physical activity class that meets three times per week.

PHONE # : 512 627 2108

DEPARTMENT/COLLEGE : Health, Exercise and Sport Sciences
DEPARTMENT CHAIR : Dr. Seidler
FACULTY/STAFF NAME : Dr. Gloria Napper-Owen
DATA FOR DEPT ONLY? : Yes-Internal Only
CENSUS OR POINT-N-TIME? : Point-in-Time Data Needed
AGGREGATE(A) OR UNIT-RECORD(U) : U
UNIT-RECORD JUSTIFICATION : Student email addresses will be used for dissertation data collection. The researcher will use the student email addresses to send out a link for access to reseracher's questionnaire on surveymonkey.com.

HOW DATA TO BE STORED : All student email addresses will be stored on an IRB approved laptop that requires the researcher's username and password
WHO HAS ACCESS TO DATA : Only the principal investigator will have access to student's email addresses.
HOW WILL DATA BE DESTROYED : All data will be kept and stored in a locked cabinet located in the principal investigators office for 3 years and then destroyed.
WHO WILL DESTROY DATA : the principal investigator will be inc harge of all shredding and deleting of study data after 3 years.
WHEN WILL DATA BE DESTROYED : Three years from data collection date.

INFO REQUESTED BEFORE? : N
DATA NEEDED : Student Data Needed,
,
,

STUDENT DATA REQUESTED : , , , Email, : , !st and 2nd year undegraduate student who are NOT enrolled in a PENP activity course

Appendix F

Dissertation Proposal Approval Form

THE UNIVERSITY OF NEW MEXICO
HEALTH, EXERCISE & SPORTS SCIENCES

PROPOSAL HEARING - REPORT OF RESULTS

DATE: 6/19/12

CANDIDATE: Vanessa Mikan

DISSERTATION COMMITTEE CHAIRPERSON: Dr. Gloria Napper-Owen
Committee Members:
Dr. Glenn Hushman
Dr. Len Kravitz
Dr. Phillip Duryea

TITLE OF DISSERTATION PROPOSAL:
Physical Activity and Psychosocial Adjustment Among 1st and 2nd year Undergraduate Students.

ACTION OF COMMITTEE:

_____ 1. Approved with no change.

__✓__ 2. Approved with changes. (see attached memo)

_____ 3. Not approved.

ASSENTING OPINION	DISSENTING OPINION
Gloria Napper-Owen	
Elias Duryea	

COMMENTS:

Todd L. Gaddis — 6/20/12
Health, Exercise and Sport Sciences, Chair — Date:

Appendix G

IRB Approval

THE UNIVERSITY of
NEW MEXICO

Main Campus Institutional Review Board
Human Research Protections Office
MSC08 4560
1 University of New Mexico~Albuquerque, NM 87131-0001
http://hsc.unm.edu/som/research/HRRC/

04-Sep-2012

Responsible Faculty: Gloria Napper-Owen
Investigator: Vanessa Quintanilla Mikan
Dept/College: Health Exercise & Sports Science

SUBJECT: IRB Approval of Research - Initial Review
Protocol #: 12-361
Project Title: Physical Activity and Psychosocial Adjustment Among 1st and 2nd year undergraduate students
Type of Review: Expedited Review
Approval Date: 04-Sep-2012
Expiration Date: 03-Sep-2013

The Main Campus Institutional Review Board has reviewed and approved the above referenced protocol. It has been approved based on the review of the following:

1. Study application submitted 09/04/12.

2. Informed consent version 090412.

3. Questionnaires 1 and 2 with consent cover letters version 090412.

4. Recruitment script submitted 09/04/12.

5. Protocol submitted 09/04/12.

Consent Decision:
Amended consent(s) attached.
HIPAA Authorization Addendum not applicable

If a consent is required, we have attached a date stamped consent that must be used for consenting participants during the above noted approval period.

If HIPAA authorization is required, the HIPAA authorization version noted above should be signed in conjunction with the consent form.

As the principal investigator of this study, you assume the following responsibilities:

- CONSENT: To ensure that ethical and legal informed consent has been obtained from all research participants.

- RENEWAL: To submit a progress report to the IRB at least 45 days prior to the end of the approval period in order for this study to be considered for continuation.
- ADVERSE EVENTS: To report any adverse events or reactions to the IRB immediately.
- MODIFICATIONS: To submit any changes to the protocol, such as procedures, consent/assent forms, addition of subjects, or study design to the IRB as an Amendment for review and approval.
- COMPLETION: To close your study when the study is concluded and all data has been de-identified (with no link to identifiers) by submiting a Closure Report.

Please reference the protocol number and study title in all documents and correspondence related to this protocol.

Sincerely,

J. Scott Tonigan, PhD
Chair
Main Campus IRB

*Under the provisions of this institution's Federal Wide Assurance (FWA00004690), the Main Campus IRB has determined that this proposal provides adequate safeguards for protecting the rights and welfare of the subjects involved in the study and is in compliance with HHS Regulations (45 CFR 46).

Appendix H

IRB Approved Consent Form

University of New Mexico

Informed Consent Cover Letter for Anonymous Surveys

STUDY TITLE
Physical Activity and Psychosocial Adjustment Among 1st and 2nd year undergraduate students

Vanessa Mikan, doctoral candidate, and Dr. Gloria Napper-Owen from the Department of Health, Exercise and Sport Sciences are conducting a research study. The purpose of the study is to determine whether the amount of physical exercise and activity predicts how well you are adjusting to college life, in terms of academic performance, emotional, physical and mental health
. You are being asked to participate in this study because you have met all qualifications.

Your participation will involve completing the following questionnaire. The survey should take about 10-20 minutes to complete. Your involvement in the study is voluntary, and you may choose not to participate. There are no names or identifying information associated with this survey. The survey includes questions such as "*I am finding academic work at college difficult*" "*I've put on (or lost) too much weight recently*", "*I wish I were at another college or university*" and "*I haven't been mixing too well with the opposite sex lately*." You will also be asked to identify how often (minutes/days per week) in the last 7 days you have engaged in a variety of physical activities, including walking and moderate to vigorous activities. You can refuse to answer any of the questions at any time. There are no known risks in this study, but some individuals may experience discomfort when answering questions. Upon the completion of the questionnaire, your email address will be requested and stored to be used in a raffle for an iPad at the end of the Fall 2012 semester. All data will be kept for 3 years in a locked file in the Principal Investigator's office and then destroyed.

The findings from this project will provide information on how physical activity impacts 1st and 2nd year undergraduate students adjustment to college life. If published, results will be presented in summary form only.

If you have any questions about this research project, please feel free to call Vanessa Mikan, doctoral candidate, at (512) 627-2108. If you have questions regarding your legal rights as a research subject, you may call the UNM Human Research Protections Office at (505) 272-1129.

By submitting this questionnaire, you will be agreeing to participate in the above described research study.

Thank you for your consideration.

Sincerely,

Vanessa Quintanilla Mikan
PhD Candidate
Department of Health, Exercise and Sport Sciences

HRPO #: 12-361	Page 1 of 1	Version: 090412
APPROVED: 09/04/12	OFFICIAL USE ONLY	EXPIRES: 09/03/13

UNM | Human Research Protections Office

The University of New Mexico Institutional Review Board (HRRC/MCIRB)

Appendix I

Western Psychological Services (WPS) Contract

wps®
Western Psychological Services
A Division of Manson Western Corporation
625 Alaska Avenue
Torrance, CA 90503-5124
www.wpspublish.com

July 17, 2012

Vanessa Quintanilla Mikan
Doctoral Candidate
Health, exercise and Sports Science Dept. MSC 04 2610
1University of New Mexico
Albuquerque, NM 87131-1251

Re: *Student Adaptation to College Questionnaire (SACQ)*

Hello Vanessa –

In follow-up to your email of 13Jul'12, supported by Dr. Gloria Napper-Owen's letter of the same date, this serves to provide terms that will permit you to adapt the format of the SACQ for administration and scoring via a secure, password-protected, on-line environment, for sole application within your registered scholarly study, "Physical Activity and Psychosocial Adjustment Among 1st and 2nd Year Undergraduate Students."

Western Psychological Services will authorize you to adapt and arrange for delivery of SACQ material as described – parallel with and consistent to the entire prevailing item set and using prevailing response categories – including your administering the scale a specific number of times within the project, and your creating a scoring-only computerized key for tabulation of item responses, as based on our proprietary hand-scoring key. Our authorization is for the sole purpose of conducting the above-described study, and not for continued or commercial use, and is subject to satisfaction of the following conditions:

(1) You must purchase from WPS a non-exclusive license for the anticipated number of SACQ administrations.

(2) The license fee for this described use of the SACQ will be based on prevailing prices for the hand-scored SACQ Test Form (W-228A), less 20% Research Discount. Note that we license this instrument in units of twenty-five (25) with one hundred (100) minimum licensed uses; shipping and handling fees are not applicable to licensing fees (e.g., 500 total adapted SACQ administrations @ $45.00/25 = $900.00 x 80% = $720.00 total license fee).

(3) The license fees must be prepaid in U.S. dollars drawn on a U.S. bank or by international money order (Visa, MasterCard, American Express and Discover Cards are accepted and swiftest), and are non-refundable. To ensure proper handling of your licensing arrangements, and to guarantee the rate in condition 2 above, please send the payment to my attention with a signed copy of this letter, within the next sixty (60) days. *Allow the emphasis that you must contact WPS Rights and Permissions to arrange payment of your license fees; please do not contact WPS Customer Service for this purpose.*

(4) Each reprint (or viewing) of the SACQ material must bear – such as on each screen of SACQ item presentation – the required copyright notice that will be provided to you by WPS. WPS maintains its proprietary rights to all material directly sourced from our copyrighted material as contained within SACQ research adaptations.

(5) With specific regard to the on-line administration, access to the SACQ items must be granted only by a secured password that you provide solely to participants in the study.

(6) You agree to provide WPS with one copy of all articles (including research reports, convention papers, journal submissions, theses, etc.) that report on the SACQ use in your research. The articles should be marked to the attention of WPS Rights and Permissions. WPS reserves the right to cite or reference the data included in such reports; you will of course receive proper acknowledgment if we use your research results.

(7) WPS acknowledges that you will need to adapt our copyrighted scoring key for the purpose of computerized evaluation of responses to your research instrument -- and you have our authorization to do so provided you agree to destroy the adapted key following completion of your research. Also, documentation for your computerized adaptation of the SACQ key must bear the required copyright notice that will be provided to you by WPS.

(8) You acknowledge that – by undertaking a licensed modification in format and/or content of WPS's proprietary, formally published material – you assume full and sole responsibility for the WPS content used within your study and related results determined as a result of the investigation. You further agree to indemnify WPS, its assignees and licensees, and hold each harmless from and against any and all claims, demands, losses, damages, liabilities, costs, and expenses, including legal fees, arising out of the use of WPS-published material from which your uses shall derive.

and

(9) This agreement shall be governed by the laws of the State of California, in the County of Los Angeles. If any portion of this agreement that may be deemed as unenforceable or otherwise not applicable, all remaining clauses and content herein shall remain in full force.

Upon receipt of your license payment with signature to this letter (see below), WPS will send to you the required copyright notice (see conditions #4 and #7), and we'll issue and send to you a license to create the online adaptation and to administer and score it the specified number of times.

NOTE: To source the administration instructions, item content, and scoring guidelines needed for your customized application, please refer to the SACQ Manual. In case you do not have (or have direct access to) the SACQ Manual (W-228B), this message serves for the next 60 days as your authorization to purchase one at 20% Research Discount (and note that discounted orders cannot be completed over our website); if you have questions about ordering the Manual, contact WPS Customer Service at 800/648-8857 or 424/201-8800, weekdays 7:30am to 4:30pm Pacific.

WPS appreciates your research interest in the SACQ, as well as your consideration for its copyright. Please feel free to contact me if you have any questions. I look forward to your reply.

Sincerely yours,

Fred Dinkins

Digitally signed by Fred Dinkins
DN: cn=Fred Dinkins, o, ou, email=fdinkins@wpspublish.com, c=US
Date: 2012.07.17 13:30:34 -07'00'

Fred Dinkins
WPS Rights and Permissions Specialist

FD:fd

I agree to the terms stated herein.

_____ _____

Date **Vanessa Quintanilla Mikan, University of New Mexico**

Appendix J

WPS Copyright License

wps®
Western Psychological Services
A Division of Manson Western Corporation
625 Alaska Avenue
Torrance, CA 90503
www.wpspublish.com

September 25, 2012

Vanessa Quintanilla Mikan
Doctoral Candidate
University of New Mexico
Health Exercise, and Sports Science Dept. MSC 04 2610
1 University of New Mexico
Albuquerque, NM 87131-1251

Re: *Student Adaptation to College Questionnaire (SACQ)*

Hello Vanessa –

WPS has processed your license for a specific web-based application of *SACQ* material. By surface mail, you will soon receive a paid-in-full WPS invoice/receipt, which will serve as your license to adapt the format of the *SACQ* items and scoring key and administer the instrument via a secure, password-protected on-line environment, permitting adaptation, administration and scoring of the instrument up to five hundred (500) times total. This authorization is for sole use in your registered scholarly study, "Physical Activity and Psychosocial Adjustment Among 1st and 2nd Year Undergraduate Students"-- subject to the provisions of terms and conditions provided to you on July 17, 2012.

With reference to condition (4) of WPS's July 17 terms letter, please affix the following copyright notice in its entirety, on the screen of item presentation, to each reprint/viewing of the *SACQ*:

> Material from the *SACQ* copyright © 1989, 1999 by Western Psychological Services. Format adapted by V. Mikan, University of Mew Mexico, for specific, limited research use under license of the publisher, WPS, 625 Alaska Avenue, Torrance, California 90503, U.S.A. (rights@wpspublish.com). No additional reproduction, in whole or in part, by any medium or for any purpose, may be made without the prior, written authorization of WPS. All rights reserved.

On behalf of WPS, I hope the *SACQ* well serves your study, and look forward in due course to learning of your research results.

Sincerely yours,

Fred Dinkins

Digitally signed by Fred Dinkins
DN: cn=Fred Dinkins, o, ou, email=fdinkins@wpspublish.com, c=US
Date: 2012.09.25 15:47:09 -07'00'

Fred Dinkins
WPS Rights and Permissions Specialist
e-mail: fdinkins@wpspublish.com

FD:fd

References

American College Health Association. (2007). American College Health-Association National College Health Assessment spring 2006 reference group data report (abridged). *The Journal of American College Health, 55*, 195-206.

Anderson, D., Shapiro, J., & Lundgren, J. (2003). The freshman year of college as a critical period for weight gain: an initial evaluation. *Eating Behaviors, 4*(4), 363-367.

Aneshensel, C. & Phelan, J. (1999). *Handbook of the Sociology of Mental Health*. New York: Springer Science & Business Media.

Baker, R., & Siryk, B. (1984). Measuring adjustment to college. *Journal of Counseling Psychology*, *31*, 179-189.

Baker, R., & Siryk, B. (1986). Exploratory intervention with a scale measuring adjustment to college. *Journal of Counseling Psychology*, *33*, 31-38.

Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological Review*, *84*(2), 191-215.

Behrens, T., & Dinger, M. (2003). A preliminary investigation of college students' physical activity patterns. *American Journal of Health Studies*, *18*, 169-172.

Bennett, B., & Sothern, M. (2009). Diet, exercise, behavior: the promise and limits of lifestyle change. *Seminars in Pediatric Surgery*, *18*(2), 152-158.

Benton, S., Robertson, J., Tseng, W., Newton, F., & Benton, S. (2003). "Changes in counseling center client problems across 13 years." *Professional Psychology: Research and Practice*, *34*(1), 66-72.

Bernoulli, J. (1713). Ars Conjectandi: Usum & Applicationem Praecedentis Doctrinae in Civilibus, Moralibus & Oeconomicis. Chapter 4. (Translated into English by Oscar Sheynin).

Beyers, W., & Goossens, L. (2002). Concurrent and predictive validity of the student adaptation to college questionnaire in a sample of European freshman students. *Educational and Psychological Measurement, 62*(3), 527-538.

Bhui, K., & Bhugra, D. (2002). Explanatory models for mental distress: implications for clinical practice and research (editorial). *British Journal of Psychiatry*, *181*, 6-7.

Bjorntorp, P. (1991). Visceral fat accumulation: the missing link between psychosocial factors and cardiovascular disease. *Journal of Internal Medicine, 230*, 195-201.

Blichfeldt, B., & Gram, M. (2013). Lost in transition? Student food consumption. *Higher Education, 65*, 277-289

Bonomi, A., & Westerterp, K. (2012). Advances in physical activity monitoring and lifestyle interventions in obesity: a review. *International Journal of Obesity*, *36*, 167-177.

Boyle, J., & LaRose, B. (2008). Personal beliefs, the environment and college student's exercise and eating behaviors. *American Journal of Health Studies*, *23*(4), 195-200.

Bray S., & Born, H. (2004). Transition to university and vigorous physical activity: Implications for health and psychological wellbeing. *Journal of American College of Health*, *52*, 181-188.

Brooks, J., & DuBois, D. (1995). Individual and environmental predictors of adjustment during the first year of college. *Journal of College Student Development*, *36*, 347-360.

Brownell, K., & Wadden, T. (1984). Confronting obesity in children: behavioral and psychological factors. *Pediatrics Annual*, *13*, 473-478.

Brownell, K., & Wadden, T. (1992). Etiology and treatment of obesity: understanding a serious, prevalent and refractory disorder. *Journal of Consulting and Clinical Psychology*, *60*, 505-517.

Brownson, R., Baker, E., Housemann, R., Brennan, L., & Bacak, S. (2001). Environmental and policy determinants of physical activity in the United States. *American Journal of Public Health, 91*(12), 1995-2003.

Bruche, H. (1975). Emotional aspects of obesity in children. *Pediatrics Annual*, *4*, 91-99.

Brunt, A., Rhee, Y., & Zhong, L. (2008). Differences in dietary patterns among college students according to body mass index. *Journal of American College Health, 56*(6), 629-634.

Bryant, R., & Dundes, L. (2005). Portion distortion: A study of college students. *The Journal of Consumer Affairs*, *39*, 399-408.

Brynteson, P., & Adams, T. (1993). The effects of conceptually based physical education programs on attitudes and exercise habits of college alumni after 2 to 11 years of follow-up. *Research Quarterly for Exercise Sport*, *64*(2), 208-212.

Buckworth, J. (2001). Exercise adherence in college student: issues and preliminary results. *Quest, 53*(2), 335-345.

Butler, S., Black, D., Blue, C., & Gretebeck, R. (2004). Change in diet, physical activity, and body weight in female college freshman. *American Journal of Health Behavior, 28*(1), 24-32.

Buxton, K., Wyse, J., & Mercer, T. (1996). How applicable is the stages of change model to exercise behavior? A review. *Health Education Journal*, *55*(2), 239-257.

Calfas, K. Sallis, J., Nichols, J., Sarkin, J., Johnson, M., Caparosa, S., Thompson, S., Gehrman, C., & Alcaraz, J. (2000). Project GRAD: Two-year outcomes of a randomized controlled physical activity intervention among young adults. *American Journal of Preventative Medicine*, *18*(1), 28-37.

Carskadon, M. (1990). Patterns of sleep and sleepiness of adolescents. *Pediatrician, 17*, 5-12.

Caspersen, C., Christenson, G., & Pollard, R. (1986). Status of the 1990 physical fitness and exercise objectives-evidence from NHIS 1985. *Public Health Reports, 101*(6), 587-592.

Chomitz, V., Slining, M., McGowan, R., Mitchell, S., Dawson, G., & Hacker, K. (2009). Is there a relationship between physical fitness and academic achievement? Positive results from public school children in northeastern United States. *Journal of School Health*, *79*(1), 30-37.

Cluskey, M., & Grobe, D. (2009). College weight gain and behavior transitions: male and female differences. *Journal of the American Dietetic Association, 109*(2), 325-329.

Coe, D., Pivarnik, J., Womack, C., Reeves, M., & Malina, R. (2006). Effect of physical education and activity levels on academic achievement in children. *Medicine & science in Sports & Exercise, 38*(8), 1515-1519.

Coleman, K., Pittenger, D., & Runyon, R. (2000). *Fundamentals of behavioral statistics*. 9th Edition. New York: McGraw-Hill.

Costello, A., & Osborne, J. (2005). Best practices in expoloratory factor analysis: four recommendations for getting the most from your analysis. *Practical Assessment, Research & Evaluation, 10*(7), 1-9.

Craig, C. Marshall, A., Sjostrom, M., Bauman, A., Booth, M., Ainsworth, B., Pratt, M.,Ekelund, U., Yngve, A., Sallis, J., & Oja, P. (2003). International physical activity questionnaire: 12-country reliability and validity. *Medicine and Science in Sports and Exercise, 35*, 1381-1395.

Craig, C., vander Ploeg, H., Tudor-Locke, C., Marshall, A., Hagstromer, M., Sjostrom, M., & Bauman, A. (2010). Reliability and validity of the international physical activity questionnaire for assessing walking. *Research Quarterly for Exercise and Sport, 81*(1), 97-101.

Crede, M., & Niehorster, S. (2012). Adjustment to college as measure by the student adaptation to college questionnaire: a quantitative review of its structure and relationship with correlates and consequences. *Educational Psychology Review, 24*, 133-165.

Cusatis, D., & Shannon, B. (1996). Influences on adolescent eating behavior. *Journal of Adolescent Health*, *18*(1), 27-34.

D'Alonzo, K., Stevenson, J., & Davis, S. (2004). Outcomes of a program to enhance exercise self-efficacy and improve fitness in Black and Hispanic college-aged women. *Research in Nursing and Health*, *24*, 357-369.

Dallman, M., Pecoraro, N., Akana, S., la Fleur, S., Gomez, F., Houshyar, H., Bell, M., Bhatnagar, S., Laugero, K., & Manalo, S. (2003). Chronic stress and obesity: a new view of "comfort food". *Proceedings of the National Academy of Sciences of the United States of America, 100*(20), 11696-11701.

Daniels, S., Arnett, D., Eckel, R., Gidding, S., Hayman, L., Kumanyika, S., Robinson, T., Scott, B., Jeor, S., & Williams, C. (2005). Overweight in children and adolescents: pathophysiology, consequences, prevention and treatment. *Circulation, 111*, 1999-2012.

Datar, A., & Sturm, R. (2006). Childhood overweight and elementary school outcomes. *International Journal of Obesity, 30*(9), 1449-1460.

DeBate, R., Sargent, R., & Topping, M. (2001). Racial and gender differences in weight status and dietary practices among college students. *Adolescence, 36*(144), 819-833.

Dehghan, M., Danesh-Akhtar, N., & Merchant, A. (2005). Childhood obesity, prevalence and prevention. *Nutrition Journal, 4*(24), 1-8.

Desai, M., Miller, W., Staples, B., & Bravender, T. (2008). Risk factors associated with overweight and obesity in college students. *Journal of American College Health*, *57*(10)*,* 109-114.

Dietz, W., & Gortmaker, S. (2001). Preventing obesity in children and adolescents. *Annual Review of Public Health*. *22*, 337-353.

Dillman, D. (2007). *Mail and Internet Surveys: the Tailored Design Method*. 2nd Edition. Hoboken: John Wiley & Sons Incorporated.

Dowda, M., Ainsworth, B., Addy, C., Saunders, R., & Riner, W. (2001). Environmental influences, physical activity, and weight status in 8- to 16-year-olds. *Archives of Pediatrics & Adolescent Medicine*, *155*(6), 711-7.

Drapeau, V., Therrien, F., Richard, D., & Tremblay, A. (2003). Is visceral obesity a physiological adaptation to stress? *Panminerva Medica, 45*(3), 189-195.

Dunn, A., Trivedi, M., & O'Neal, H. (2001). Physical activity dose-response effects on outcomes of depression and anxiety. *Medicine & Science in Sports & Exercise*, *33*(6), S587-S597.

Dwyer, T., Sallis, J., Blizzard, L., Lazarus, R., & Dean, K. (2001). Relation of academic performance to physical activity and fitness in children. *Pediatric Exercise Science, 13*(3), 225-237.

Economos, D., Hildebrant, M., & Hyatt, R. (2008). College freshman stress and weight change: differences by gender. *American Journal of Health Behavior*, *32*(1), 16-25.

Everett, S., Shults, R., Barrios, L., Sacks, J., Lowry, R., & Oeltmann, J. (2001). Trends and subgroup difference in transportation-related injury risk and safety behaviors among high school students, 1991-1997. *Journal of Adolescent Health, 28*(3), 228-234.

Falkner, N., Neumark-Sztainer, D., Story, M., Jeffery, R., Beuhring, T., & Resnick, M. (2001). Social, educational, and psychological correlates of weight status in adolescents. *Obesity Research, 9*(1), 32-42.

Feldt, R., Graham, M., & Dew, D. (2011). Measuring adjustment to college: construct validity of the student adaption to college questionnaire. *Measurement and Evaluation in Counseling and Development*, *44*(2), 92-104.

Ferrara, C. (2009). The college Experience: physical activity, nutrition, and implications for intervention and future research. *Journal of Exercise Physiology*, *12*(1), 23-35.

Fiedler-Jenkins, C. (2010). Can health behaviors and motives predict college students' self-esteem? *PSI CHI Journal of Undergraduate Research*, *15*(3), 143-149.

Finkenor, M., & Byrd-Bredbenner, C. (2000). Nutrition intervention group program based on preaction-stage oriented change processes of the transtheoretical model promotes long-term reduction in dietary fat intake. *Journal of American Dietetic Association*, *100*, 335-342.

Fisher, S., & Hood, B. (1987). The stress of the transition to university: A longitudinal study of psychological disturbance, absent-mindedness and vulnerability to homesickness. *British Journal of Psychology*, *78*, 425-441.

Fox, K. (1999). The influence of physical activity on mental well-being. *Public Health Nutrition, 2(3A)*, 411-418.

Gerdes, H., & Mallimckrodt, B. (1994). Emotional, social, and academic adjustment to college student: A longitudinal study of retention. *Journal of Counseling and Development*, *72*, 281-288.

Gilinsky, N. (2011). Physical activity and self-regulatory capabilities: examining relationships with academic self-efficacy and academic outcomes. *Chronicle of Kinesiology & Physical Education in Higher Education*, *22*(1), 7-14.

Gillath, O., Johnson, D., Selcuk, E., & Teel, C. (2011). Comparing old and young adults as they cope with life transitions: the links between social network management skills and attachmen style to depression. *Clinical Gerontologist, 34*, 251-265.

Girdano, D., Everly, G., & Dusek, D. (2009). *Controlling Stress and Tension*, 8th Edition. San Francisco: Benjamin Cummings.

Goel, M., McCarthy, E., Phillips, R., & Wee, C. (2004). Obesity among US immigrant subgroups by duration of residence. *Journal of American Medical Association*, *292*(23), 2860-2867.

Goldfine, B., & Nahas, M. (2009). Incorporating health-fitness concepts in secondary physical education curricula. *Journal of School Health*, *63*(3)*,* 142-146.

Green, H., McGinnity, A., Meltzer, H., Ford, T., & Goodman, R. (2005). Mental health of children and young people in great Britain. Basingstoke: Palgrave Macmillan.

Gregg, E., Cheng, Y., Cadwell, B., Imperatore, G., Williams, D., Flegal, K., Narayan, K., & Williamson, D. (2005).Secular trends in cardiovascular disease risk factors according to body mass index in US adults. *Journal of American Medical Association*, *293*(15), 1861-1918.

Grissom, J. (2005). Physical fitness and academic achievement. *Journal of Exercise Physiology Online, 8*(1), 11-25.

Gropper, S., Newton, A., Harrington, P., Simmons, K., Connell, L., & Ulrich, P. (2011). Body composition changes during the first two years of university. *Preventive Medicine*, *52*(1), 20-22.

Haines, D., Davis, L., Rancour, P., Robinson, M., Neel-Wilson, T., & Wagner, S. (2007). A pilot intervention to promote walking and wellness and to improve the health of college faculty and staff. *Journal of American College Health*, *55*(4), 219-225.

Hajhosseini, L., Holmes, T., Mohamadi, P., Goudarzi, V., McProud, L., & Hollenbeck, C. (2006). Changes in body weight, body composition and resting metabolic rate (RMR) in first-year university freshman students. *Journal of the American College of Nutrition, 25*(2), 123-127.

Harbour, V., Behrens, T., Kim, H., & Kitchens, C. (2008). Vigorous physical activity and depressive symptoms in college students. *Journal of Physical Activity and Health*, *5*(4), 516-526.

Haskell, W., Lee, I., Pate, R., Powell, K., Blair, S., Franklin, B., Macera, C., Heath, G., Thompson, P., & Bauman, A. (2007). Physical activity and public health: updated recommendation for adults from the American College of Sports Medicine and the American Heart Association. *Medicine & Science in Sports & Exercise, 39*(8), 1423-1434.

Hicks, R., Fernandez, C., & Pellegrini, R. (2001). Striking changes in the sleep satisfaction of university students over the last two decades. *Perceptual and Motor Skills, 93*(2), 660.

Hill, J., Wyatt, H., Reed, G., & Peters, J. (2003). Obesity and the environment: where do we go from here? *Science*, *299*(5608), 853-855.

Himmelgreen, D., Escamilla-Pérez, R., Martinez, D., Bretnall, A., Elles, B., Peng, Y., & Bermúdez, A. (2004). The longer you stay, the bigger you get: length of time abd language use in the U.S. are associated with obesity in Puerto Rican women. *American Journal of Physical Anthropology*, *125*(1), 90-96.

Hivert, M., Langlois, M., Berard, P., Cuerrier, J., & Carpenteir, A. (2007). Prevention of weight gain in young adults through a seminar-based intervention program. *International Journal of Obesity*, *31*(8), 1262-1269.

Hovell, M., Mewborn, C., Randle, Y., & Johnson-Fowler, S. (1985). Risk of excess weight gain in university women: a three-year community controlled analysis. *Addictive Behaviors, 10*(1), 15-28.

Hudd, S., Dumlao, J., Erdmann-Sager, D., Murray, D., Phan, E., Soukas, N., & Yokozuka, N. (2000). Stress at college: effects of health habits, health status, and self-esteem. *College Student Journal, 34*, 217.

Hudiburgh, N. (1984). A multidisciplinary approach to weight control. *Journal of the American Dietetic Association*, *84*(4), 447-450.

Hurry, J., Aggleton, P., & Warwick, I. (2000). Young People and Mental Health. Chichester, UK: Wiley.

Ichiyama, M., & Kruse, M. (1998). The social context of binge drinking among private university freshman. *Journal of Alcohol and Drug Education, 44*, 18-33.

Jones, D., Harel, Y., & Levinson, R. (1992). Living arrangements, knowledge of health risks, and stress as determinants of health-risk behaviors among college students. *The Journal of American College Health*, *41*(2), 43-48.

Jones, S., Oetlmann, J., Wilson, T., Brener, N., & Hill, C. (2001). Binge drinking among undergraduate college students in the United States: implications for other substance use. *Journal of American College Health, 50*(1), 33-38.

Kandiah, J., Yake, M., Jones, J., & Meyer, M. (2006). Stress influences appetite and comfort food preferences in college women. *Nutrition Research, 26*(3), 118-123.

Kaplan, M., Huguet, N., Newsome, J., & McFarland, B. (2004). The association between length of residence and obesity among Hispanic immigrants. *American Journal of Preventive Medicine*, *27*(4), 323-326.

Keating, X., Guan, J., Castro Pinero, J., & Bridges, D. (2005). A meta-analysis of college students' physical activity behaviors. *Journal of American College Health*, *54*(2), 116-125.

Kiecolt-Glaser, J., Marucha, P., Mercado, A., MArlarkey, W., & Glaser, R. (1995). Slowing the wound healing by psychological stress. *The Lancet, 346*(8984). 1194-1196.

Killen, J., Telch, M., Robinson, T., MacCoby, N., Taylor, C., & Farquhar, J. (1988). Cardiovascular disease risk reduction for tenth graders: a multiple-factor school-based approach. *The Journal of the American Medical Association*, *260*, 1728-1733.

Kohl, H., & Hobbs, K. (1998). Development of physical activity behaviors among children and adolescents. *Pediatrics*, *101*(3 Pt 2), 549-554.

Kramer, A., & Hillman, C. (2006). Aging, physical activity, and neurocognitive function. *Psychobiology of physical activity* (pp. 45-49). Champaign, IL: Human Kinetics.

Kumanyika, S., Obarzanek, E., Stettler, N., Bell, R., Field, A., Fortmann, S., Franklin, B., Gillman, M., Lewis, C., Poston, M., Stevens, J., & Hong, Y. (2008). Population-based prevention of obesity. The need for comprehensive promotion of healthful eating, physical activity and energy balance: a scientific statement from American Heart Association Council on epidemiology and prevention, interdisciplinary committee for prevention (Formerly the Expert Panel on Population and Prevention Science). *Circulation*, *118*, 428-464.

Kwan, M., Arbour-Nicitopoulos, K., Lowe, D., Taman, S., & Faulkner, G. (2010). Student reception, sources and believability of health-related information. *Journal of American College Health*, *58*(6), 555-562.

LaBrie, J., Ehret, P., Hummer, J., & Prenovost, K. (2012). Poor adjustment to college life mediates the relationship between drinking motives and alcohol consequences: a look at college adjustment, drinking motive and drinking outcomes. *Addictive Behaviors*, *37*(4), 379-386.

Lacaille, L., Dauner, K., Krambeer, R., & Pederson, J. (2011). Psychosocial and environmental determinants of eating behaviors, physical activity and weight change among college students: a qualitative analysis. *Journal of American College Health, 59*(6), 531-538.

Lent, R. (2004). Toward a unifying theoretical and practical perspective on well-being and psychosocial adjustment. *Journal of Counseling Psychology, 51*, 482-509.

Leslie, E., Sparling, P., & Owen, N. (2001). University campus settings and the promotion of physical activity in young adults: lessons from research in Australia and the USA. *Health Education*, *101*(3*)*, 116-125.

Leveille, S., Wee, C., & Lezzoni, L. (2005). Trends in obesity and arthritis among baby boomers and their predecessors, 1971-2002. *American Journal of Public Health*, *95*(9), 1607 -13.

Levitsky, D., Halbmaier, C., & Mrdjenovic, G. (2004). The freshman weight gain: model for the study of the epidemic of obesity. *International Journal of Obesity*, *28*, 1435-1442.

Levitsky, D., Garay, J., Nausbaum, M., Neighbors, L., & DellaValle, D. (2006). Monitoring weight daily blocks the freshman weight gain: a model for combating the epidemic of obesity. *International Journal of Obesity*, *30*, 1003-1010.

Lohman, T., Going, S., & Metcalfe, L. (2004). Seeing ourselves through the obesity epidemic. *President's Council of Physical Fitness and Sports Research Digest, 5*(3), 1-8.

Long, S. (1976). Academic attachment: predicting students' affective reactions to the university. *Research in Higher Education*, *5*, 233-241.

Lopez, F., & Fons-Scheyd, A. (2008). Role balance and depression among college students: The moderating influence of adult attachment orientations. *Journal of College Counseling*, *11*(2*)*, 133-146.

Luzzo, D., Hasper, P., Albert, K., Biddy, M., & Martinelli Jr., E. (1999). Effects of self-efficacy-enhancing interventions on the math/science self-efficacy and career interest, goals and actions of career undecided college students. *Journal of Counseling Psychology*, *46*(2), 233-243.

Malinauskas, B., Aeby, V., Overton, R., Aeby-Carpenter, T., & Heidal-Barber, K. (2007). A survey of energy drink consumption patterns among college students. *Nutrition Journal, 6*(35). 1-7.

Marcus, B., Eaton, C., Rossi, J., & Harlow, L. (1994). Self-efficacy, decision-making, and stages of change: an integrative model of physical exercise. *Journal of Applied Social Psychology*, *24*(6), 489-508.

Marcus, B., Rakowski, W., & Rossi, J. (1992). Assessing motivational readiness and decision making for exercise. *Health Psychology*, *11*(4), 257-261.

Marcus, B., Rossi, J., Selby, V., Niaura, R., & Abrams, D. (1992). The stages and processes of exercise adoption and maintenance in a worksite sample. *Health Psychology*, *11*(6), 386-395.

Marcus, B., & Simkin, L. (1994). The Transtheoretical model: applications to exercise behavior. *Medicine & Science in Sports and Exercise*, *26*(11), 1400-1404.

Marshall, S., & Biddle, S. (2001). The transtheorietical model of behaviors change: a meta-analysis of application to physical activity and exercise. *Annals of Behavioral Medicine*, *23*(4), 229-246.

Martin, W., Kulstad-Swartz, J., & Madson, M. (1999). Psychosocial factors that predict the college adjustment of first-year undergraduate student: implication for college counselors. *Journal of College Counseling, 2*, 121-133.

Mates, D., & Allison, K. (1992). Sources of stress and coping response of high school students. *Adolescence, 27*, 461-474.

Mattanah, J., Hancock, G., & Brand, B. (2004). Parental attachment, separation individuation, and college student adjustment: a structural equation analysis of mediational effects. *Journal of Counseling Psychology, 51*, 213-225.

Matvienko, O., Lewis, D., & Schafer, E. (2001). A college nutrition science course as an intervention to prevent weight gain in female college freshman. *Journal of Nutrition Education*, *33*, 95-101.

Merriam-Webster Online Dictionary. (2012). "Self-esteem." Retrieved April 8, 2012, from http://merriam-webster.com/dictionary/self-esteem

Merriam-Webster Online Dictionary. (2013). "Self-motivation." Retrieved March 22, 2013, from http://merriam-webster.com/dictionary/self-motivation

Morland, K., Wing, S., Roux, A., & Poole, C. (2002). Neighborhood characteristics associated with the location of food stores and food service places. *American Journal of Preventive Medicine, 22*(1), 23-29.

Nahas, M., Goldfine, B., & Collins, M. (2003). Determinants of physical activity in adolescents and young adults: the basis for high school and college physical education to promote active lifestyles. *Physical Educator*, *60*(1), 42-56.

Nigg, C., & Courneya, K. (1998). Transtheoretical model: Examining adolescent exercise behavior. *Journal of Adolescent Health*, *22*(3), 214-224.

Ogden, C., Flegal, K., Carroll, M., & Johnson, C. (2002). Prevalence and trends in overweight among US children and adolescents, 1999-2000. *Journal of American Medical Association*, *288*(14), 1728-1732.

Ogden, C., Carroll, M., Curtin, L., McDowell, M., Tabak, C., & Flegal, K. (2006). Prevalence of overweight and obesity in the United States, 1999-2004. *Journal of American Medical Association*, *295*(13), 1549-1555.

Ogden, C., Carroll, M., Curtin, L., Lamb, M., & Flegal, K. (2010). Prevalence of high body mass index in US children and adolescents, 2007-2008. *The Journal of the American Medical Association*, *303*(3), 242-249.

Pate, R., Davis, M., Robinson, T., Stone, E., McKenzie, T., & Young, J. (2006). Promoting physical activity in children and youth: a leadership role for schools: a scientific statement from the American Heart Association Council on Nutrition, Physical Activity, and Metabolism (Physical Activity Committee) in collaboration with the Councils on cardiovascular Disease in the Young and Cardiovascular Nursing. *Circulation*, *114*(11), 1214-1224

Piko, B. (2000). Perceived social support from parents and peers: which is the stronger predictor of adolescent substance use? *Substance Use and Misuse*, *35*, 617-630.

Pine, D., Cohen, P., Gurley, D., Brook, J., & Ma, Y. (1998). The risk of early adulthood anxiety and depressive disorders in adolescents with anxiety and depressive disorders. *Archives of General Psychiatry, 55*, 56-64.

Pliner, P., & Saunders, T. (2008). Vulnerability to freshman weight gain as a function of dietary restraint and residence. *Physiology & Behaviors, 93*(1-2), 76-82.

Poirier, P., Giles, T., Bray, G., Hong, Y., Stern, J., Sunyer-Pi, X., & Eckel, R. (2006). Obesity and cardiovascular disease: pathophysiology, evaluation and effect of weight loss. An Update of the 1997 American Heart Association scientific statement of obesity and heart disease from the obesity committee of the council on nutrition, physical activity and metabolism. *Circulation*, *113*, 898-918.

Powers, S., Dodd, S., & Jackson, E. (2011). *Total Fitness and Wellness, Media Update*, 5th Edition. San Francisco: Benjamin Cummings.

Prochaska, J., & DiClemente, C. (1982). Transtheoretical therapy: Toward a more integrative model of change. *Psychotherapy: Theory, Research & Practice*, *19*(2), 276-288.

Prochaska, J., & DiClemente, C. (1983). Stages and processes of self-change of smoking: towards an integrative model of change. *Journal of Consulting and Clinical Psychology*, *51*, 390-395.

Provencher, V., Polivy, J., Wintre, M., Pratt, M., Pancer, S., Lefcovitch, S., & Adams, G. (2009). Who gains or who loses weight? Psychosocial factors among first-year university students. *Physiology & Behaviors, 96*(1), 135-141.

Racette, S., Deusinger, S., Strube, M., Highstein, G., & Deusinger, R. (2005). Weight changes, exercise, and dietary patterns during freshman and sophomore years of college. *Journal of American College Health*, *53*(6), 245-251.

Riggio, R., Watring, K., & Throckmorton, B. (1993). Social skills, social support, and psychological adjustment. *Personality and Individual Differences*, *15*, 275-280.

Sallis, J., Calfas, K., Nichols, J., Sarkin, J., Johnson, M., Thompson, S., & Alcaraz, J. (1999). Evaluation of university course to promote physical activity. *Research Quarterly for Exercise Sport*, *70*(1), 1-10.

Salmela-Aro, K., & Nurmi, J. (2007). Self-esteem during university studies predict career 10 years later. *Journal of Vocational Behavior*, *70*, 463-477.

Sarkin, J., Marshall, S., Larson, K., Sallis, J., & Calfas, K. (1998). A comparison of recruitment methods to a health promotion program for university seniors. *Preventive Medicine*, *27*, 562-571.

Sax, G. (1997). *Principles of educational and psychological measurement and evaluation*. 4th Edition. Belmont: Wadsworth.

Sax, L., Bryant, A., & Gilmartin, S. (2004). A longitudinal investigation of emotional health among male and female first-year college students. *Journal of the First-Year Experience*, *16*, 39-65.

Seaward, B. (2006). *Managing stress: principles and strategies for health and wellbeing*. Boston, MA: Jones & Bartlett Learning Publishing.

Shephard, R., & Bouchard, C. (1994). Principal components of fitness: relationship to physical activity and lifestyle. *Canadian Journal of Applied Physiology, 19*(2), 200-214.

Shim, S., & Ryan, A. (2012). What do student want socially when they arrive at college? Implications of social achievement goals for social behaviors and adjustment during the first semester of college. *Motivation and Emotion, 36*, 504-515.

Sibley, B., & Etnier, J. (2003). The relationship between physical activity and cognition in children: a meta-analysis. *Pediatric Exercise Science*, *15*, 243-256.

Sjoberg, R. Nilsson, K., & Leppert, J. (2005). Obesity, shame, and depression in school-aged children: a population-based study. *Pediatrics*, *126*(3), 389-392.

Skinner, J. (1991). Changes in students' dietary behavior during a college nutrition course. *Journal of Nutrition Education*, *23*(2), 72-75.

Slava, S., Laurie, D., & Corbin, C. (1984). Long-term effects of a conceptual physical education program. *Research Quarterly for Exercise Sport*, *55*(2), 161-168.

Sloan, C., Tobias, D., Stapell, D., Twiss, H., & Beagle, W. (1976). A weight control program for students using diet and behavior therapy. *Journal of the American Dietetic Association*, *68*, 466-468.

Sothern, M. (2004). Obesity prevention in children: physical activity and nutrition. *Nutrition*, *20*(7-8*)*, 704-708.

Sothern, M., Gordon, S., & Almen von, K. (2006). *Handbook of Pediatric Obesity: Clinical management*. Boca Raton, FL: Taylor & Francis Group.

Smith, S., Clark, L., Cooper, R., Daniels, S., Kumanyika, S., Ofili, E., Quinones, M., Sanchez, E., Saunders, E., & Tiukinhoy, S. (2005). Discovering the full spectrum of cardiovascular disease. Minority Health Summit, 2003. Report of the obesity, metabolic syndrome and hypertension writing group. *Circulation*, *111*, e134-e139.

Spencer, L., Wharton, C., Moyle, S., & Adams, T. (2007). The transtheoretical model as applied to dietary behavior and outcomes. *Nutrition Research Review*, *20*, 46-73.

Steptoe, A., Wardle, J., Pollard, T., Canaan, L, & Davies, G. (1996). Stress, social support and health related behavior: a study of smoking, alcohol consumption and physical exercise. *Journal of Psychosomatic Research, 41*(2), 171-180.

Strauss, R., Rodzilsky, D., Burack, G., & Colin, M. (2001). Psychosocial correlates of physical activity in healthy children. *Archives of Pediatrics & Adolescent Medicine*, *155*, 897-902.

Strauss, R. (2000). Childhood obesity and self-esteem. *Pediatrics*, *105*(1), e15.

Strout, E. (2007). The obesity epidemic comes to campuses. *The Chronicle of Higher Education*, *54*(4), A1.

Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity. (2001, 2007). Retrieved on April 8, 2012, from http://www.surgeongeneral.gov/topics/obesity/.

Tavakol, M., & Dennick, R. (2011). Making sense of cronbach's alpha. International *Journal of Medical Education, 2*, 53-55.

The American College Health Association. (2009). American college health association-national college health assessment spring 2008 reference group data report (abridged). *Journal of American College Health*, *57*(5), 477-488.

The Center of Disease Control Division of Nutrition, Physical Activity and Obesity. Retrieved April 8, 2012, from http://cdc.gov/obesity/index.html.

Togo, P., Osler, M., Sørensen, T., & Heitmann, B. (2001). Food intake patterns and body mass index in observational studies. *International Journal of Obesity and Related Metabolic Disorders, 25*(12), 1741-1751.

Tomporowski, P. (2003). Cognitive and behavioral responses to acute exercise in youths: A review. *Pediatric Exercise Science, 15*(4), 348-359.

Uchino, B., Holt-Lunstad, J., Uno, D., & Betancourt, R. (1999). Social support and age related difference in cardiovascular function: an examination of potential mediators. *Annals of Behavioral Medicine, 21*, 135-142.

U.S. Bureau of Labor Statistics. (2011). College enrollment and work activity of 2010 high school graduates. Retrieved on April 8, 2012, from www.bls.gov/news.release/pdf/hsgec.pdf

Van Heyningen, J. (1997). Academic achievement in college students: What factors predict success? *Dissertation Abstracts International Section A: Humanities & Social Sciences*, *58*(6-A), 2076.

Vella, C., & Kravitz, L. (2002). Gender differences in fat metabolism. IDEA Health & Fitness Source: www.unm.edu/~lkravitz/Article/genderdifferences.html

Von Ah, D., Ebert, S., Ngamvitroj, A., Park, N., & Kang, D. (2004). Predictors of health behaviors in college students. *Journal of Advanced Nursing*, *48*(5), 463-474.

Wang, C., & Castaneda-Sound, C. (2008). The role of generational status, self-esteem, academic self-efficacy, and perceived social support in college students' psychological wellbeing. *Journal of College Counseling*, *11*(2), 101-118.

Wansink, B., Cheney, M., & Chan, N. (2003). Exploring comfort food preference across age and gender. *Physiology & Behavior, 79*(4-5), 739-747.

Warwick, I., Maxwell, C., Statham, J., Aggleton, P., & Simon, A. (2008). Supporting mental health and emotional well-being among younger students in further education. *Journal of Further and Higher Education*, *32*(1), 1-13.

Wechsler, H., Dowdall, G., Maenner, G., Hoyt-Gledhill, J., & Lee, H. (1998). Changes in binge drinking and related problems among American college students between 1993 and 1997. *Journal of American College Health, 47*, 57-68.

Weisberg, S. (2002). Societal change to prevent obesity. *The Journal of the American Medical Association, 288*(17), 2176.

Woosley, S. (2003). How important are the first few weeks of college?: The long term effects of initial college experience. *College Student Journal*, *37*, 201-207.

Yakusheva, O., Kapinos, K., & Weiss, M. (2011). Peer effects and the freshman 15: evidence form a natural experiment. *Economics & Human Biology, 9*(2), 119-132.

Zagorsky, J., & Smith, P. (2011). The freshman 15: a critical time for obesity intervention or media myth? *Social Science Quarterly*, *92*(5), 1389-1407.

Zarb-Vella, R., & Elgar, F. (2009). The 'freshman 5': a meta-analysis of weight gain in the freshman year of college. *Journal of American College Health, 58*(2), 161-166.