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Exercise in College Aged Women and Academic Success

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By

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DEDICATION

To my dearest Yaakov Moshe,

This is for you.

I love you.

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Abstract

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By

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Doctor of Education, Educational Leadership and Policy Studies

Exercise has been found to decrease weight, improve sleep patterns and in general, to lead to an active and healthy lifestyle (Mayo Clinic, 2014). Along with the physical improvements that exercise can have, there are other benefits, including increased academic performance.

There is a large volume of research that looks at the benefits of exercise on

academic performance. Taras (2005), Trudeau and Shephard (2008) and Singh et al. (2012) have compiled reviews of the literature thoroughly investigating the relationship between physical activity and academic performance. They have concluded that there is a positive connection between the two. Other researchers have concluded that exercise contributes to other factors in academic success, such as concentration and memory.

However, there is minimal research that reflects upon the experiences of college-aged students who engage in physical activity. Therefore, the purpose of this study is to understand the experiences of college-aged female students who participated in an exercise intervention program titled Exercise for Academic Success and Excellence (EASE).

Eleven female participants engaged in the EASE program for approximately 12 weeks. The participants were directed to exercise for 150 minutes a week and submit weekly logs recording their experiences regarding exercise and academic performance during the duration of the intervention. The participants perceived physical, cognitive and emotional benefits and enhanced academic performance, regardless of grade point average increases. The students who experienced the most benefits, particularly in GPA were the students who met the minimum requirement to exercise (150 minutes per week). These trends imply that an on-campus exercise program that students are held accountable for may have prompted improvements in their academic success.

CHAPTER 1. STATEMENT OF THE PROBLEM

Introduction

For years, the effects of exercise on the physical body have been widely reported. When implemented regularly, exercise yields positive effects including weight control, better sleep patterns, and overall improved health conditions (Mayo Clinic, 2014). In addition, there are multiple other positive outcomes of exercise, including academic performance.

Whether it is in grade aged children or college students, exercise has been shown to elicit many benefits on academic performance. Taras (2005), Trudeau and Shephard (2008) and Singh et al. (2012) each compiled systematic reviews of the research literature investigating the relationship between physical activity and academic performance, and concluded that there is a positive connection between those who are physically active with academic success. Other researchers conclude that factors that contribute to academic success such as concentration and memory may also be improved with physical activity.

Research Problem and Purpose

There are numerous research studies investigating the effects of exercise on academic performance. However, there is only minimal research that examines the experiences of college-aged students who exercise. Therefore, it is the intention of the researcher to understand why this relationship exists by recording and analyzing the first hand experiences of students who participate in exercise programs, and to monitor the effect, if any, on their academic performance. Additionally, studying on-campus exercise programs and more particular, on-campus exercise programs for women will help to

enrich the data previously collected regarding academic performance and exercise.

Because of the minimal qualitative data on this topic, there is a great need to examine the experience of those who engage in exercise programs in order to understand the benefits they elicit from their involvement.

This is an important topic to understand as it relates to academic success: if students who engage in on-campus physical activity programs are more academically successful, it would be in the best interest of colleges and universities to promote this in hopes of having more students involve themselves in on-campus exercise programs. Additionally, it would justify the millions of dollars spent on on-campus programming such as student recreation centers and intramural programs.

The purpose of this phenomenological study was to understand the experiences of college-aged female students who participated in an exercise intervention program titled Exercise for Academic Success and Excellence (EASE). With the analysis of the collected data, the implications are that campus resources must be available for students to exercise and to be aware of available academic resources as well in order to improve their academic success. Another implication is that such programs should be available in order to incentivize students to participate in on-campus exercise programs. Once they begin and see the benefits, they will continue on their own.

Research Questions

For the intents and purpose of this research, the research questions are as follows:

- What are the experiences of female students who engage in an on-campus exercise program on a regular basis?
- How is their academic success affected by participation in a structured on-

campus exercise program?

Essentially, the researcher sought to investigate whether students who engage in physical exercise regimens had better academic success outcomes and why there is such a connection, if any. In this study, the researcher conducted individual interviews with students at a four-year baccalaureate granting institution in hopes of recording and understanding the experiences of the students. She then collected data through weekly logs provided by the students along with post-intervention interviews.

Research Tradition and Theory

For the purpose of this research, qualitative research methods were implemented. According to Creswell (2009), the purpose of qualitative research is to explore a central phenomenon, to ask participants broad and general questions and to collect a detailed view of participants in the form of words or images (Creswell, 2009). The phenomenological approach in qualitative research is one that is commonly referenced. Edmund Husserl first articulated phenomenology in the late nineteenth to twentieth century (Stanford, 2003). This research tradition is fitting in this circumstance because in the phenomenological tradition, the researcher suspends his or her beliefs in order to investigate, describe and further understand the experiences of the subjects who are part of the research (Giorgi, 1985). This can be done through multiple processes, such as participant observation, interviewing and collection of artifacts and texts.

Theoretical Framework

One theory that helped guide this research is that of the Theory of Planned Behavior (Ajzen, 1985), which explains behavior based on intent and ability, ‘will and skill,’ so to speak. It has been used to predict a person’s intention to engage in activities

such as smoking and drinking. By understanding why people engage in activities, exercise in this case, it can help researchers to understand what can be done in order to further incentivize people to exercise in order to improve their health and other outcomes, such as academic performance.

Another theory that helped to understand the experiences of the research participants is Self-Determination Theory. Self-Determination Theory (SDT), developed by Edward Deci and Richard Ryan in 1994, is a theory that describes our natural tendencies and intrinsic motivations to behave in healthy ways. SDT assumes that: 1) people are inherently motivated to internalize the regulation of uninteresting though important activities; (2) there are two different processes through which such internalization can occur, resulting in qualitatively different styles of self-regulation; and (3) the social context influences which internalization process and regulatory style occur. Two types of internalization are introjection and integration. Introjection requires taking in a value or a process but understanding that it is not one's own. Integration, however, is where this process is one's core sense of self. In this situation, introjection achieves a sense of internal control and integration results in self-determination.

Methodology

In order to understand the experiences of students who participate in on campus exercise programs and their academic success, pre- and post-intervention interviews were administered to eleven pre-screened females who met the inclusion criteria. These females filled out demographic information as well and agreed to participate in an on-campus exercise program. Interviews were conducted in a location in which the participant felt comfortable. For the duration of the program, which consisted of one

academic semester, the researcher sent out weekly logs to the participants for them to log their exercise and academic performance for the week. The reason for two interviews is to know the students' point of view before participating in the EASE Program and then after. The interviews lasted anywhere between 20-45 minutes.

In order to analyze the information, the data were recorded and transcribed through transcription software. To rule out researcher bias, the questions addressed to the participants were asked in a non-directional fashion. The questions were open-ended and not direct the participants to any specific answers.

Limitations and Delimitations

Limitations of this study are that not every student's experiences can be recorded and analyzed. Only a set amount of students from the four-year university were interviewed and their responses analyzed. Additionally, although as difficult as it may be, the researcher found it difficult to cast aside all biases. The hopes of the researcher were that this will not be reflected in the quality of writing and research responses.

Some delimitations of this program included a small sample size of interviewees, which would not represent the entire student population at the specific four-year university selected for the research. Additionally, the location of this research is in an area where many people value exercise; therefore, the data may not accurately reflect that of the general population.

Organization of Dissertation Proposal

In the following chapters the reader can expect to read the literature review, methodology results and discussion. Chapter Two, Literature Review, explains what scholars have discovered while conducting research similar to this topic. The literature

reviewed examines the effects of exercise on academic performance of children and college students, brain functioning, cognitive processes and mental health and well-being. Chapter Three, Methodology, discusses the process of data collection from start to finish, including participant recruitment and the conduction of multiple interviews with students who shared their experiences with exercise and academic performance. Chapter Four, Results, investigates and analyzes the data collected. Chapter Five, Conclusions, draws conclusions, discussed findings and compares the research with previously published peer-reviewed quantitative studies. It addresses limitations and makes recommendations for future research.

CHAPTER 2. LITERATURE REVIEW

Background

The effects of exercise on academic performance have been widely studied. Researchers have completed reviews of the literature and examined relationships among measures of physical exercise and academic performance for children and adolescents, and college-age students. Taken together, findings suggest that there is a positive connection between physical activity and academic success.

Taras (2005), Trudeau and Shephard (2008) and Singh et al. (2012) each compiled systematic reviews of the research literature investigating the relationship between physical activity and academic performance. Taras' (2005) review yielded 14 articles examining the association between physical activity and academic performance in school-aged children. His review determined that physical education programs in a school setting are important for the development of mental health, social skills and reducing risk-taking behaviors in children. Trudeau and Shephard (2008) examined 17 articles that investigated the relationship between academic performance and school-based physical activity programs. This review indicated that even by taking away time from other subjects to implement physical activity programs in schools, it would not be hindering academic performance. The most comprehensive of the reviews, Singh et al. identified 844 articles, which examined the relationship between physical activity and academic performance. This review included both longitudinal and intervention studies. Although Singh et al. (2012) concluded that too few high quality studies have been published, the authors "found strong evidence of a significant positive relationship between physical activity and academic performance."

This chapter summarizes specific studies that examined the connection between physical activity and academic success. The chapter begins with discussion of the effects of exercise on the academic performance of children and adolescents, and then moves to a similar discussion for college-aged students. The chapter includes the effects of exercise on neurobiological functioning, cognitive processing and psycho-social behavior and concludes with a description of the theoretical frameworks that guided the study. In order to properly understand these studies, one must first define and understand what physical activity and academic performance are, and the variety of ways they are measured.

According to the World Health Organization, physical activity is “any bodily movement produced by skeletal muscles that requires energy expenditure.” Exercise is defined as planned, repetitive and structured activity with the goal of improving cardiopulmonary fitness and is typically expressed in terms of frequency, duration and intensity of that physical activity (McAuley, 1995). Exercise intensity is how much energy is expended when exercising (The President’s Council). While this definition is relatively concrete, researchers examine different forms and assess different aspects of physical activity. Researchers often measured physical activity by the FITT principle: frequency, intensity, time and type of exercise implemented. Ahamed (2007) determined physical fitness levels through the use of a questionnaire, the Physical Activity Questionnaire for Children (PAQ-C), which is a self-reported questionnaire designed to assess 7 days worth of physical activity level from moderate to vigorous range. Coe (2006) used another form of a questionnaire, the 3DPAR, which asks participants about the previous day’s activities for three consecutive days using recall. Metabolic equivalent

values, or MET, were matched with each activity. In the same study, body mass index, which is a variable that determines healthy weight in average individuals, was used to determine physical fitness.

Academic performance is equally difficult to define and is sometimes used interchangeably with academic success and/or student success. Coe (2006) looked at individual grades of core classes, such as mathematics, English and world history. Dwyer (1983) looked at overall reading and arithmetic scores while others (Ahamed, 2007; Coe, 2006) tested achievement scores on standardized tests such as the Canadian Achievement Test (CAT-3) or the Metropolitan Achievement Test.

Exercise and the Academic Success of Children and Adolescents

The effects of exercise on academic performance have been said to start at a young age, inclining many researchers to investigate the effects of exercise on children. Support for a positive relationship between physical activity and academic performance in school age children is suggested in correlational studies by Morales (2011), Garcia (2014), Davis (2011), Castelli and Buck (2007), and Grissom (2005). Morales (2011) conducted research in Spain, with 284 third year secondary school children. In this research, students took the International Physical Activity Questionnaire to assess their physical activity levels. Their academic performance was then compared to their questionnaire. Results showed that there was a positive relationship between the amount of physical activity and the academic performance of the students.

Garcia (2014) gave 160 Swedish high school students a regulatory mode questionnaire, where they were to self-report exercise and physical activity behaviors. Academic achievement was measured through the students' grades in Swedish, English,

math and physical education. The results reported were that the academic achievement of the students who participated positively correlated to higher levels of physical activity and exercise behavior.

In an article by Catherine Davis (2011), the associations of fitness and weight with academic performance and achievement were studied. This study looked at children, ages 7 to 11 with a total of 170 students participating. The participants' fatness and fitness along with psychological cognition and behavior were evaluated compared to their academic achievement. The study showed that the children who were more fit had better cognition and academic performance along with better behavior than the other students who were not fit. Prior studies, such as those of Castelli and Buck (2007), show similar results in that those who exhibit better body weight and higher levels of fitness succeed academically as well.

JB Grissom (2005) set out to test the connection between standardized testing and physical fitness levels. This is by far the largest sample size of data found. With over 954,000 students of different age groups tested, a correlation was found between displayed levels of physical fitness and academic success. This research studied the effects of the FITNESSGRAM® physical fitness test compared to math and reading scores on the California Stanford 9 exams. An interesting finding in this study was a difference in the effect of fitness on the academic performance of males and females. This study indicates there is a higher correlation for female students than male students and for those in higher socioeconomic status. The subjects tested in this research were in the 5th, 7th and 9th grade.

Several studies in the field of exercise and academic performance have been

intervention studies, where researchers implement an exercise program in order to study the effects of such a program on academic outcomes. Dwyer (1996) and the SHAPE program of South Australia, which began in 1985, added 1.25 hours a day of endurance training to a group of 519 ten-year olds. In just 14 weeks, physical work capacity had increased and body fat decreased as well. Along with this, the scholastic ability of the children was rated from 1-5 on a scale by the principal of the school. The schools that had higher scholastic rating were also associated with physical fitness, capacity and activity. Dwyer (1996) concludes that a connection between physical activity and academic performance is plausible.

Coe (2006) examined 214 6th grade students, randomly assigning them to physical activity either in the 1st or 2nd semester of the school year. The students who had engaged in some of met the Healthy People 2010 Guidelines for Physical Activity (60 minutes daily) had significantly higher grades than those who did not engage in any vigorous activities in either semester.

In a study conducted by Ahamed (2007) intervention teachers delivered 47 more minutes of physical activity per week than was usual practice. Researchers recommended an additional 15 minutes of physical per day, which would total 75 additional minutes per week. Some activities included skipping, hip hop dancing, chair aerobics, playground circuits and resistance band training. Ahamed (2007) concluded that schools that have additional time dedicated to physical activity to not see decreases in academic performance. The researchers concluded that this model is feasible to increase levels of physical activity while still maintaining academic performance. Gao and colleagues (2009) studied 208 urban children, ages 10-12 years old, who participated in a 30-minute

exercise session three times a week. The researchers determined that children's engagement in aerobic exercise had a significantly positive effect on their math grades over time.

Finally, in a study by Ardoy (2013), it was shown that students who engage in multiple sessions of exercise (approximately four per week) at a high intensity will show improvements in cognitive performance and academic achievement, as measured by school grades. Other forms of exercise such as resistance training can also improve academic achievement in youth (Harveson, 2016).

Taken together, these studies suggest a strong relationship between exercise and academic success; however, this relationship is not well known. Specifically, a systematic review conducted by Allender (2006) aimed to understand the motivations behind participating in physical activity and sport among adults and children. Of the 24 papers that met inclusion criteria from the original 1200 that were found, it was determined that the participants engaged in physical activity for factors such as body shape (Cockburn, 2002), new social networks (Crone, 1998), enjoyment (Mulvihill, 2000) and health benefits (Crone, 1999). However, no research had listed academic performance as a motivational factor for participation in sports and physical activity.

Exercise and the Academic Success of College Aged Students

Although most of the published literature regarding exercise and student academic performance has been reported for children and adolescents, the college age population has also been studied, however, minimally.

Bellar (2014) found that the academic achievement of 740 college aged nursing and kinesiology students who participated in physical exercise was positively associated

with higher academic success. Specifically, there was a significant difference in the grade point averages between nursing and kinesiology students who did and nursing and kinesiology students who did not engage in regular exercise, particularly aerobic activity.

Similarly, Keating (2013) studied the relationship between the frequency of strength training and grade point average. Keating's sample included 1125 university students. The students were White (57.0%), Asian (20.5%) and Latino (17.2%), and 61.5% were female. They were all undergraduate students and 95.1% were full time students with the average age being 22.21 years old. Strength training was self-reported by the number of weekly days of strength exercise, which included the number of days the participant performed at least 30 minutes each week. Exercise frequency, GPA and demographic information were collected and analyzed. Results suggested that those who engaged in the weekly strength training exercise program displayed a higher grade point average than those who did not.

In another effort to understand the relationship between exercise and academic performance, Huang and colleagues (2009) collected data from 137 undergraduate students who were majoring in physical education. These researchers found that the relationship between physical fitness and academic performance was statistically significant. Physical fitness was measured by a 1.5 mile run, a sit and reach test, BMI, grip test, push ups and curl up. Academic performance was measured by GPA. A positive correlation was found between physical fitness and GPA at the time physical fitness was measured.

According to Douglas (1995), only 38% of college students participate in vigorous physical activity with only another 20% participating in moderate physical

activity, on a regular basis. This is a drastic decline from the 65% of high school students who participate in vigorous physical activity and 26% who participate in moderate physical activity (Grunbaum et al., 2001). However, Lui (2009) concludes that college aged students, particularly those who live on campus, are in fact interested in engaging in physical activity. Lui (2009) studied 119 students who lived on a 700-acre campus that provided on-campus exercise facilities to students. Along with recording their daily physical activity levels, the students wore a physical activity monitor, which recorded steps and calories. The study shows that those who live on campus meet recommended weekly physical activity levels.

Exercise and Neurobiological Functioning

Exercise does not only affect the muscles, bones and blood, but exercise has been known to physiologically alter the brain in multiple ways, (Ratey, 2008; Sattelmair, 2009). Exercise affects neurobiological function by inducing widespread adaptations and improving learning and memory (Dishman, 2006).

For example, exercise assists to deliver energy such as glucose and oxygen to the brain. It also helps to balance neurotransmitters, our brain's chemicals that help regulate our mind's functions along with our behaviors. Exercise also is known to improve memory by strengthening dendrite connections, which are responsible for our brain's retention of information. Exercise also initiates neurogenesis, the growth process of new brain cells (Hopkins, 2010). Additionally, it has been proven to improve cognitive function by increasing the production of neurotrophins, proteins that are classified as mediators of neural survival (Ploughman, 2008). This can occur with prolonged low intensity exercise.

Exercise and Cognitive Processing

Given these findings it is not surprising that studies have examined the relationship between physical activities and cognitive processing variables shown to be important components of academic performance and success. These components include concentration, memory, executive functioning, and classroom attention.

Caterino and Polak (1999) tested the effects of exercise on grade school children's concentration levels. Fifty-four school children, grades second through fourth, were divided into two groups: the first group, which was considered to be the physical activity group, stretched and walked for 15 minutes. The second group, which was categorized as having no physical activity did not exercise at all. Both groups were then given the Woodcock-Johnson Test of Concentration. The group that had participated in physical activity prior to the test had shown significantly better performance on the concentration test.

.Memory has been shown to improve from even a single acute bout of exercise (Budde, 2012; Soga, 2015; Gu, 1992; Cooper, 2012; Hillman, 2009). There have been several studies that have aimed to look at the relationships between executive functioning, memory and physical activity. Although measured differently, both Budde (2012) and Cooper (2012) found positive relationships between exercise and executive function. According to Stroth (2009), Hogan (2013), and Welk (2010), students who were more fit showed higher scores on executive functioning as measured by the Eriksen Flanker paradigm. This test assesses the ability to suppress inappropriate responses, which is associated with successful cognition. Another study by Fu (2014) indicates that memory can be improved after six weeks of moderate physical activity. Raspberry (2011)

and Lees (2013) have also indicated that acute bouts of exercise have been shown to improve and facilitate classroom attention.

Ultimately, Li (2017) has concluded that exercise, no matter how limited, improves academic performance and cognitive function while minimizing sedentary behavior. Harveson (2016) suggests that exercise regardless of type, aerobic or resistance training, improves cognition for students who do, over students who do not exercise at all.

Exercise and Psychological Behaviors

Engagement in physical activity has also been shown to result in mental health benefits (Morgan & Goldston, 1987; Taylor, Sallis & Needle, 1985), including improved self-image (Fox & Corbin, 1989), increase in self-confidence, improvements in quality of sleep (Reid, 2010), energy level, mood (Raglin & Morgan, 1985) and decreases in tension (deVries, 1987; Wilfley, 1986), stress levels, anxiety (Schwartz, Davidson & Goleman, 1978), depression (Doyle, Chambless & Beutler, 1983;) and hostility. Studies have led some to suggest that exercise is an antidepressant and anti-anxiety alternative to prescription medication (Byrne, 1993). And according to the American College of Sports Medicine (ACSM), exercise decreases anxiety and depression (ACSM, 2001, pg. 10

A study by Annesi (2017) concluded that mood in college aged students can improve when students take instructional physical activity courses. In this study, 84 students were assessed. Of these 84, 52 were in the treatment group having been enrolled in university physical activity courses while the remainder were in a comparison group and not presently enrolled in university physical activity courses. The students who were in the treatment group had significantly more reduction in negative mood. The authors

conclude that, “results provided an improved understanding of the effects of university-based instructional PA courses and how they might be leveraged to improve students' mental health and possibly contribute to their academic success.”

In a study by Berger (2014), 55 college-aged students were tested for their mood via the Profile of Mood States Inventory (POMS). After a small 15-minute bout of running, the participants took the POMS again. The study suggests that as little as 15 minutes of exercise can contribute to improved mood in college-aged students.

Although the following studies were conducted with individuals older than college age, all report positive relationships between exercise and psychological health and well-being. According to Wilfley (1986), an exercise program consisting of three times a week for 60 minutes each time for a total of eight weeks reduced tension in a study consisting of 46 males and 37 females with an average age of 43 years old. It must be mentioned that this study, however, only considered people of higher age, as opposed to the college population.

In a study by Blumenthal et al. (1989), 101 individuals with a median age of 67 years old were studied to see the behavioral effects of cardiovascular activity. After participation in a 4-month program for an involved time of 45 minutes a session, 3 sessions per week, the authors were able to see a reduced amount of depression in the 50 male participants. Norris (1990) studied the correlation between those who were physically fit with job related stress variables. 77 males were selected for participation in the study. Norris's objective was to study the effects of aerobic and anaerobic training on psychological well-being. Participants trained 3 times a week for ten weeks. Those who

had better 1.5 mile run times had exhibited less job related stress through a survey and also showed general health improved and overall life situation improvement.

In another study by Blumenthal and Williams (1982), 16 middle-aged individuals were studied to investigate the relationship between psychological changes and aerobic exercise. The participants would walk or jog at 70-85% of their maximum heart rate for 45 minutes, 3 times a week for ten weeks. Their mood was measured via the Profile of Mood States (POMS) test and anxiety was measured via State-Trait Anxiety Inventory (STAI) test. In the study, aerobic exercise had shown both variables to improve.

According to McAuley and Rudolph (1995), a longer exercise program is more likely to elicit better psychological results. A 12-month progressive aerobic exercise program by Shephard (1985) resulted in mood improvements tested by POMS Mood Scale Questionnaire. Ewart's study (1983) concluded that forty adult males who participated in a ten-week program three times a week involving aerobic circuit weight training and cardiovascular exercise led to psychological benefits, gains in self-efficacy and improved moods.

Theoretical Framework

Theoretical frameworks direct research studies by helping to explain, predict and understand phenomenon. Sometimes, they may challenge the acquired knowledge and other times, they may extend the existing knowledge. Having a theoretical framework helps to guide the research process.

There are two theoretical frameworks that helped to structure this study and understand its findings. One theory that helps to explain the positive impact of exercise on psychological components and the motivation to exercise is the Theory of Planned

Behavior. The Theory of Planned Behavior was created by Icek Azjen in 1985. It was initially known as The Theory of Reasoned Action in 1980 by Martin Fishbein and Azjen and was set out to predict a person's intention to engage in a specific behavior at a specific time and place. It has been used to predict a variety of health behaviors such as smoking, drinking, and breastfeeding. The theory explains that achievement of these behaviors depends on both motivation (intention) and ability (behavioral control). It indicates that there are three types of beliefs such as behavioral, normative and control. This theory consists of six different constructs that represent a person's control over such behavior. These constructs are attitudes, behavioral intentions, subjective norms, social norms, perceived power and perceived behavioral control. These six constructs are described below:

Attitudes: the degree to which a person has a favorable or unfavorable evaluation of the behavior

Behavioral intentions: the motivational factors that influence the behavior. The stronger the intention to perform the behavior, the more likely the person will perform the behavior.

Subjective norms: the belief that people approve or disapprove of the behavior a person is engaged in

Social norms: customary acceptance in a group or people in a large cultural scene.

Perceived power: the perceived presence of components that can either facilitate or impede the performance of the behavior.

Perceived behavioral control: a person's perception of how easy or difficult the behavior is.

Another theory that helps guide the interpretation of the findings is the Self-Determination Theory (SDT). Developed by Edward Deci and Richard Ryan in 1994, SDT is a theory that describes our natural tendencies and intrinsic motivations to behave in healthy ways. Additionally, a study conducted by the same authors indicated that whether or not participants adhered to exercise was based on enjoyment, competence and social interaction, not so much physical appearance (Ryan, 1997). Many research studies have been conducted looking at how SDT has played a part in exercise. For example, Teixeira (2012) concludes that intrinsic motivation, a component of SDT plays a large part in predicting long-term adherence to an exercise program. The overall idea of the Self-Determination Theory is that of being able to control something and be in charge.

There are six mini-theories, as Deci and Ryan describe, that collectively comprise the overall Self-Determination Theory. The six subcategories of SDT are: I) Cognitive Evaluation Theory II) Organismic Integration Theory III) Causality Orientations Theory IV) Basic Psychological Needs Theory V) Goal Contents Theory VI) Relatedness.

The Cognitive Evaluation Theory is primarily focused on intrinsic motivation, which is a motivational system that focuses on behavior that is done for its own sake. With the Cognitive Evaluation Theory, the social context of motivation may be what drives someone to be successful or to partake in an event. This includes how rewards, ego and interpersonal controls impact motivation and interest (Deci, 1985). This theory is particularly relevant in sports, education and the arts as it reinforces and supports intrinsic motivation.

The second theory of SDT deals primarily with extrinsic motivation and its many forms and consequences. Extrinsically motivated behavior comes from external factors

outside of the behavior itself. This can be categorized as internalization, which is the active attempt to transform an extrinsic motivation into personal values.

As Deci and Ryan explain, “the more internalized the extrinsic motivation, the more autonomous the person will be when enacting the behaviors.” Additionally, the external environment, such as a social one, can increase or stall extrinsic motivation. This theory supports the notion that autonomy and relatedness are critical for motivation. The third theory, Causality Orientations Theory, looks at how people tend to orient in an environment and regulate their behavior. This looks at how someone may act when they see the value and interest in either what is happening or their surrounding.

The Basic Psychological Needs Theory, the fourth component of SDT discusses the concept of how psychological needs and their relationship to health and well-being evolve. If something will support or negate whatever needs proposed, well-being and health will be impacted. This part of SDT theory argues that autonomy, competence and relatedness are imperative to well-being and health. The Goal Contents Theory looks at how intrinsic and extrinsic goals impact motivation and wellness. The last mini-theory of SDT Relationships Motivation Theory (RMT) looks at how relatedness, or a development and maintenance of close personal relationships is one of the three basic psychological needs. RMT indicates that the highest quality relationships have all three of these needs.

Definition of Academic Success

There are many forms of definitions for the term “academic success” which may be interchangeable with the terms “academic performance” and “student success.” Many authors use the outcome measure of grade point average (GPA) to determine student success (Daley, 2000; Field, 2001; Tremblay, 2000; Daley, 2000) while others use grades

(Nelson, 2006), perception of academic performance (Pate, 1996), self-reported school performance (Sigfudsdottir, 2006), academic self-esteem (Tremblay, 2000), reading and math scores (Dollman, 2006) and exam scores (Yu, 2006). For purposes of this study, academic success was quantitatively measured using GPA.

Academic success has been and continues to be defined through various ways. For the purposes of this study, *academic success* will be defined as a student's self perception of her academic performance. It may be that students do not see an improvement in academic success as an increase in grade point average; rather an ability to complete a course or the opportunity to take more units in a semester while still passing all classes. This is where it becomes important to understand that each student, especially in a qualitative study or interview, is a separate case and must be treated accordingly. *Academic success* will also be defined similarly to the definition of the campus on which the study will take place. In this particular case the campus defines academic success as an improvement in multiple areas such as grade point average, retention, persistence and graduation rates. This definition was developed when the four-year institution studied the effects of the new student recreation center built in 2012 on academic success factors in students.

Research Purpose and Question

As reviewed in this chapter there is an extensive body of research that quantitatively links exercise and physical activity with academic success. However, there is a lack of qualitative research addressing this same topic. Primarily, in complementing the quantitative research, a qualitative study has the potential to explain the connection between physical activity and academic performance. Students who share their

experiences while exercising may help explain the successful academic performance of students who are physically active. If there is in fact a positive connection and experience for college students who engage in on campus exercise programs, the results from this study would further supply grounds for implementing such programs.

For the intents and purpose of this research, the primary research question that will be investigated is as follows: what are the experiences of female college-aged students who engage in an on-campus exercise program on a regular basis? Secondly, the researcher looks to investigate if female students who engage in physical exercise regimens have better academic success outcomes. At this point in the research, it is unknown what variables will be defined as academic success. In this study, the researcher will conduct individual interviews with students at a four-year baccalaureate granting institution in hopes of recording and understanding the experiences of the students. After an extensive search of studies conducted to investigate the significance of physical activity and academic performance, it has been concluded that no research thus far has studied the experiences of women who participate in physical activity and what relation their participation has on academic performance. It is the purpose of this research study to address this void.

CHAPTER 3. METHODS

Purpose

The purpose of this research study was to understand the experiences of college-aged female students who participated in a regular exercise program in a university setting. It was important to the researcher that the experiences of students going through an on-campus exercise program were recorded and understood to see the reasons for changes in the participants' academics throughout the semester in which they were involved in the program. The researcher wanted to see if there was a direct correlation between being involved in an on-campus exercise program and improvements in academic performance.

Research Questions

For the purpose of this study, the research questions that were investigated are as follows:

- What are the experiences of female students who engage in an on-campus exercise program on a regular basis?
- How is their academic success affected by participation in a structured on-campus exercise program?

Research Tradition

The phenomenology approach in qualitative research is one that is commonly referenced. Phenomenology was first articulated by Edmund Husserl in the late nineteenth to twentieth century. This research tradition is fitting in this circumstance because in the phenomenological tradition, the researcher suspends his or her beliefs in order to investigate, describe and further understand the experiences of the subjects who

are part of the research (Giorgi, 1985). This can be done through multiple processes, such as participant observation, interviewing and collection of artifacts and texts. For purposes of this study, the researcher interviewed students who regularly engage in on-campus exercise programs in order to better understand their experiences as they relate to academic success. Additionally, grade point averages were collected in order to track any progress a student made during their involvement in the exercise program.

Part of the phenomenological research tradition is to “bracket” the researcher’s thoughts as they attempt to understand the experiences of their interview subjects. To bracket is to conceal any of the experiences or thoughts of the researcher conducting the investigation. Although this may seem difficult as the researcher is the individual who will be analyzing the work, the questions will be examined based on the perspectives of the participants who are studied. This was particularly applicable in this situation as it forced me to submerge my personal thoughts and experiences with on-campus college exercise programs in order to truly grasp the experiences of the interviewees.

According to Bloomberg and Volpe (2016), the researcher is the writer in phenomenological writing and he or she focuses on describing what all the participants have in common in relation to the phenomenon being studied. The researcher reflects on essential themes that constitute the nature of the experience investigated (pg. 49). Although some may understand it as simply a description, phenomenological studies are more an interpretive process that interprets the meanings. The researcher formulates descriptions of the experiences of the participants in a textural and structural description to elicit an overall explanation of the phenomenon studied.

Although this research tradition seems quintessential for the investigation, there

are some challenges. The main one, which will be further expanded upon by the researcher, is that this approach requires a deeper understanding of the philosophy of the participants' experiences. Additionally, it can be difficult for a researcher to "bracket" his or her experiences in order to draw unbiased conclusions from the data. However, it is imperative that such phenomenological experiences are continuously documented in order to further the research quality of such research traditions. The researcher also collected some demographic information in the form of questionnaires from the participants. Conclusively, it was the hope of the researcher to properly and fully investigate the topic at hand in the phenomenological manner in order to best describe the experiences of female students who engage in on-campus exercise programs.

Research Setting

This research study was conducted at a large, urban, public, four-year institution located in Southern California. The university has almost 40,000 students who attended in 2017, with approximately 84% of students being undergraduate students while the others, master and doctorate level students. The university offers 68 baccalaureate degrees, 47 credentials, 58 master's degrees and 2 doctorates for a total of 175 degrees. The institutional profile is similar to the community in which it resides, with 49.5% white, 26% Latino and 14.5% Asian students (US Gordon, 2011).

The university is a very diverse campus. Almost half (47.2%) of the university's student population of the university in 2013 are members of underserved populations (University Academic Affairs). This includes American Indian/Native American, Latino/a, African American and Pacific Islander. It was the intent of the researcher to have a varied group of participants but did not believe that the race or ethnicity of the

participants would affect the outcome of their experiences.

The main site of participation was a Student Recreation Center (SRC) at the same local four-year university. Opened in 2012, the SRC is a state-of-the-art recreation center, complete with a 3-story rock wall, indoor basketball and soccer courts, outdoor pool, exercise classrooms, and a lot of exercise equipment provided for the students, faculty and staff to enjoy. There is an exciting aura in the SRC, as many students come with friends, meet up and exercise on a daily basis. Being that it is fairly new, the SRC is well kept, modern and clean. Students become members of the SRC simply by being students of the university. Therefore, all students who are part of this research study had free access to the fitness programs and other resources in the SRC. Additionally, faculty, staff, alumni and community members can join for little to no cost. The main reason why this site was selected is because the university has conducted a series of quantitative research studies on student participation at the SRC and how it has impacted student success.

According to a recent study completed by the SRC (2012), women are less likely to use the SRC. This study looked at the usage patterns within the first five semesters of the SRC. The same study showed that freshman women may benefit most from participation in the SRC. Approximately 5-9 visits at the SRC is associated with a higher one-year continuation rate for freshman women. To delve deeper, women from underserved communities may benefit even more from their participation in the SRC. Because this is the case, I found there to be more potential for benefit for the women who attend the university to participate in the study. Additionally, women are less likely to continue to exercise in a program, therefore their involvement in the EASE program would promote a continued involvement.

Participants

In order to have a representative sample population, two recruitment strategies, criterion and opportunistic (Miles & Huberman, 1994) were applied. Inclusion criteria were as follows: 1) female, 2) at least 18 years old, 3) a full-time student at CSUN, 4) currently exercising at the SRC, 5) had signed a waiver at the SRC to participate in exercise and 6) were willing and able to exercise for 150 minutes per week for the duration of one semester.

Participants were recruited mainly through word of mouth. A flyer (APPENDIX D), approved by the Institutional Review Board (IRB) at the four-year institution where the data collection took place, was posted in the women's restrooms and locker rooms at the SRC along with various bulletin boards throughout campus. The flyer had graphics on it to attract attention. The flyer had the researcher's contact information, both cell phone number and email address. The flyer also indicated that those who completed the participation would receive a \$50 gift card to the campus bookstore. Many participants chose to email the researcher to inquire further about the study but others sent text messages. Students were usually responded to within an hour.

Additionally, the researcher used an opportunistic contact to spread word of the project. Having had attended the same university for undergraduate and graduate degrees, the researcher had fostered many relationships with faculty and staff. As the opportunity presented itself, the researcher had requested from a faculty member to distribute flyers to his kinesiology list of students. The flyer, which was sent to the faculty member, was forwarded to a kinesiology student list. Additionally, the participants who received the flyer via e-mail also indicated that they saw it posted in the women's locker rooms at the

SRC.

The researcher requested institutional review board (IRB) approval in order to ensure that the research was ethically conducted. This meant that the participants' along with the institution's identity was sealed and all participants were referred to by numbers. Careful selection of research site and participants, and engaging in research based sampling strategies insured that this study would be effective and thorough in describing the experiences of college age students who participate in an on-campus exercise program.

EASE Program

College campuses across America have some of the best exercise facilities in the country. Most, if not all, universities and many community colleges have a form of a fitness center or student recreation center. Ranging from programs such as intramurals, an outdoor pool, basketball courts and a three-floor rock-climbing wall, the SRC is a hub for students to potentially relieve stress and get fit.

The Exercise for Academic Success and Excellence (EASE) program was implemented to investigate the experiences of college aged women who participated in a semester-long on-campus exercise program. The American College of Sports Medicine (ACSM) suggests that adults should exercise for 150 minutes of moderate physical activity or 75 minutes of rigorous physical activity per week in order to enhance physical activity and wellness (ACSM, 2011). A meeting of the Physical Activity Advisory Committee in 2008 recommended this number. Additionally, studies conducted between 1998-2010 were used to suggest this number to ACSM. The US Department of Health guidelines for exercise are in line with those of ACSM and the American Heart

Association (AHA).

The EASE program followed these guidelines for the duration of a semester (12 weeks). Students were requested to participate in the minimum exercise requirements according to ACSM, and keep logs recording how they felt about their exercise, including any changes or general feelings.

Data Collection Instruments and Procedures

Data collection was done in three phases: pre-intervention, during the intervention and after the intervention. Pre-intervention data collection included a participant questionnaire and interview. Weekly logs were collected during the intervention, and interviews were conducted after the intervention.

Participant Questionnaire

When participants contacted the researcher indicating their interest in the program, they were given more information about the program, including data collection procedures and time expectations. They were also told that they would receive a Google Form asking for demographic information and to fill it out before the initial pre-exercise interview. The questions were constructed so that participants could select options to their questions by clicking an answer that best reflected their response. The sixteen-question form asked students for various demographic information, including as age, sex, academic standing, and GPA. Participants provided a brief description of their exercise habits, such as what types of exercise they typically engage in and how often. The questionnaire also asked for an email address and participants had the option to opt in for the research program should they qualify. Most of the participants were able to fill out the questionnaire prior to the initial meetings; others were not able to. However, all

participants filled out the form before they began their involvement in the EASE program.

Participant Interviews

For the purpose of this research, interviews were conducted twice during the semester; one at the beginning of the semester and one at the end. Interviews were conducted because they are the most thorough way to understand the experiences of students who engage in physical activity and what effect it may have on their academic success. The interviews were recorded using a digital recorder and later transcribed for accuracy and to better help the researcher find trends and recurring data in the interviews. The interview method of data collection is often selected in order to provide rich and thick description. Additionally, by using interviews, it allows the researcher an opportunity to clarify any statements or further probe for more information from the interviewees. Creswell (2013) indicates that another benefit of using interviews as a data collection instrument is that it provides a potential for the interviewer to get the perspective of the interviewee on the experience at hand. The interviews took place in an area that was comfortable for the interviewee. Although the researcher attempted to make the best of the interview, there may have been times when a participant may have felt resistive or shy. It was the job of the researcher who conducted the interview to make the interviewee comfortable.

Pre-Exercise Interview

An initial meeting was set up for pre-intervention data collection. Interested participants were able to choose the location, although most chose the campus setting. At the pre-intervention data collection meeting, students were read the consent to act as a

human participant, (Appendix C) and a Bill of Rights (Appendix E). Eleven students agreed and signed the forms. Once consent was obtained, the interview began. All interviews were recorded using an Ann Bully digital recorder. Participants were advised to speak loudly and clearly.

For the pre-intervention interview questions, there were multiple sections in order for the researcher to get a complete sense of the student's perceptions of academic performance and exercise. Each initial meeting, including the explanation of the consent forms and the interview, lasted anywhere between 20-45 minutes.

There were five sections to the initial interview: (APPENDIX A)

1) Interviewee Background: these questions asked students about their academic standing including where they went to school, current GPA and major

2) Exercise Background: questions regarding interviewee's exercise habits and preferences

3) Institutional Services: questions regarding interviewee's understanding of available academic and exercise resources on campus along with benefits to exercise.

4) Assessment: questions regarding overall assumptions of exercise and the impact it has on academic success. Additionally, participants were asked how they felt exercise impacted several elements of academics.

5) Discipline: questions regarding challenges the students face in regarding to obtaining physical fitness and academic performance

Weekly Logs

The weekly logs were administered through Google Forms. Each week, on Sunday evening, the participants received a Google Form with questions regarding their

past week's experiences participating in the EASE program. I decided to use a weekly log because from the pre-interview to the post-interview was going to be about 12 weeks. It was important to collect weekly logs for a couple of reasons. Primarily, this meant that the students were able to submit real time information, as opposed to being forced to recall how their involvement in the semester went at the post-intervention interview. This way, the students would be able to document any changes as they were occurring. Secondly, it provided for triangulation of the data, which is important because it increases credibility and validity.

Questions on the weekly logs regarding exercise included the following: how long did you exercise for this week, what categories of exercise did you participate in, how many times did you attend the gym, did you notice more men or women at the gym, how would you rate your intensity of exercise this week, where did you exercise?

Questions on the weekly logs regarding academics included the following: did you have any assessments this week; have you noticed any differences in academics this week; how do you feel you did; have you noticed any differences in memory, cognition, task time, etc. since your involvement in the program; do you feel that your involvement in the program had impacted your academic success this week; anything else to add about academics or exercise this week?

Post-Exercise Interviews

The post-exercise interviews were conducted in a similar fashion to the pre-exercise interviews. Students were sent out a Google Spreadsheet with available times and dates in which they could select an appointment to have their final interview. Because it was done during finals week, all students opted to have their interviews done

on campus. The post-exercise interviews were a lot more comfortable considering that we had been communicating throughout the semester and that we had met before. Interviews were once again recorded using the Ann Bully digital recorder and later uploaded to Rev.com to be transcribed. During the post-intervention interview, students discussed their perception of their involvement in the program and how it may have impacted their academics. The interviews began with a general reflection on the participants' involvement in the program and went into more depth discussing academics, exercise habits and any changes seen. The post-intervention interview also addressed how the involvement in the EASE program would shape future exercise habits (APPENDIX B). After the interview, students were thanked for their participation and given a \$50 gift card to the student bookstore on campus.

Data Analysis Procedures

After completing both the pre- and post-semester interviews, I, the researcher, used transcription services through Rev.com to word-for-word transcribe the interviews from all eleven participants for both pre- and post-intervention interviews. These transcribed interviews were used to be analyzed for recurring themes, trends and keywords.

There are several options for transcription services that are available. However, after careful review, the researcher had made a selection. Rev.com is set up to be an easy and simple way to request transcription services. At \$1 per minute, it is not necessarily cheap but saves a lot of time and is 99% accurate. The MP3s of the interviews were uploaded onto Google Drive, then downloaded and uploaded onto Rev.com. The turnaround rate for the interviews was less than 2 hours. After reading the transcripts, I

saw how accurate they in fact were. Rev.com was chosen for its accuracy, price and for its glowing reviews.

According to Bloomberg and Volpe (2012), it is important to review transcriptions and observation data for any “themes, patterns, or issues” that may arise. Referring back to previous literature, I was able to select certain key descriptors to guide my search for common themes. The previous literature brought up certain key terms such as memory (Budde, 2008; Soga, 2015; Gu, 1992; Cooper, 2012, Fu, 2014; & Hillman, 2009), attention (Raspberry, 2009; Lees, 2013), concentration (Caterino & Polak, 1999) and academic success (Ardoy, 2013; Fourestier, 1962; Shephard, 1984; Sallis, 1997; Ahamed, 2007; Coe, 2006). By using these key terms, I was able to revert back to previous literature that has already been peer-reviewed to support the findings of this research. I had categorized the participants’ responses by question. Each question in both the pre and post-intervention interviews was placed in a column in a Google spreadsheet. Each participant response was then placed beneath the appropriate question, which helped to classify the information and make answers more linear. This simplified the search for any themes, patterns, issues or key terms.

In order to make the process easier on students to answer questions, Google Forms was used for demographic information, GPAs and the weekly logs. Google Forms is an easy way to share form and was also easy to copy the same questions from week to week. Additionally, all data was stored online and could be easily sorted into spreadsheets for the researcher. This is the main reason why Google Forms was selected as a way to administer the questionnaires. It is also cost effective as it is free to use.

There was a process behind selecting to ask certain questions for the pre- and

post-interviews along with the weekly logs. These questions were designed to be able to trace any perceptions of their experiences as the program progressed that might come about during the participants' involvement in the EASE program. Additionally, questions in the weekly log were asked similarly to those in the interviews in order ensure that the students were cognizant of what, if anything, is changing during their participation. For example, during the pre-interviews, when asked if students noticed if exercise has any impact on their memory, many were unsure how to answer or said they did not pay attention to that. In the weekly logs, students were asked a similar question weekly and being asked this question on a weekly basis made them think more about the impact that their involvement in the program might have on their memory.

The Self-Determination Theory (SDT), developed by Deci and Ryan (1994), was the primary theoretical framework that drove this study. Deci and Ryan identified that there are three main psychological needs in people, which drive us to do something, in this case, exercise. Those needs are competence, relatedness and autonomy. Competence refers to the need to be effective when dealing with one's environment. Relatedness refers to the need to have close, affectionate relationships with people while autonomy refers to the need to control the course of our lives. The theory, in general, explains why we do what we do. Not in these exact words, but the ideas behind them were also used as themes for why the participants engaged in the study, specifically considering intrinsic and extrinsic motivators.

Role of the Researcher

For the purposes of this study, the role of the researcher is direct and uncomplex. According to Bloomberg and Volpe (2016), the role of the researcher in a qualitative

study is multi-faceted. It is the role of the researcher to adopt an etic, or an outside point of view that will not be reflected in the results or through the questions and analysis of the qualitative data. The researcher also seeks to test or verify theory. He or she identifies variables, makes predictions based on his or her opinion and previous research and seeks specific evidence that will support or disconfirm the hypothesis or hypotheses at hand. It is also the role of the investigator to believe that the research can be value-free. The researcher must attempt to remain unbiased, objective and impartial.

The role of the researcher begins at the moment of study inception and finishes only once all data have been collected. The researcher must strive to describe the meaning of the findings from the perspectives of the participants in the study. In order to do this, the data must be gathered from the participants directly. The primary goals of the researcher, which are description, interpretation and communications, are collected through data collection and data analysis. The researcher must have flexibility in the design of the study. It is imperative that the researcher be able to modify and adjust if necessary in order to get a more well rounded qualitative research compilation (Bloomberg & Volpe, 2016).

Because of the phenomenological nature of this study, it is the role of the researcher to be unbiased and remove his or her thoughts and previous sentiments on the subject away from data collection process in order not to influence the research outcome. The researcher's role in this project, along with planning and conducting the study, was to facilitate and promote discussion with students who participated in the interviews. In this specific research, the researcher was looking into the experiences of students who exercised and how it may play a role in academic performance. I personally have had a

lot of experience in this field considering that both my undergraduate and graduate degrees are in exercise science. Because of my involvement and passion for the topic at hand, it was critical that I put my biases and personal thoughts aside.

Another important role of a researcher in a qualitative study is to provide a thorough description of the interviews for the reader to understand the depth of the interview. It is pertinent that the researcher be able to provide thorough and descriptive information regarding the interviews and outcomes to the reader. By doing so, it provides a more in-depth description of the data collected.

Conclusion

There are many factors that one must take into consideration when conducting research, particularly qualitative research. The research tradition allows for better understanding of the model behind the research while the data collection instruments, procedures and analysis help to guide the reader as to the intentions and process of the research as a whole. Lastly, the researcher roles help to identify what the part of the researcher is, not just to conduct the interview. By being comprehensive in these aspects, a researcher is well on his or her way to conducting a successful and comprehensive research project.

CHAPTER 4. RESULTS

Introduction

The purpose of this study was to explore the perspectives of female, full-time college students participating in a semester long on-campus exercise program. This was done via face-to-face interviews, once at the beginning of the semester and once after the completion of their involvement in the program along with the collection of weekly logs that monitored their experiences through forms submitted on the Internet. The goal of the study was multi-fold: 1) to understand the thoughts, feelings and emotions of the students who participated in the program during participation 2) to understand what impact the participants perceived the exercise had on their academic performance and overall well-being, and 3) to help the researcher understand the motivational factors behind involvement in exercise and why students continued to participate in the exercise program.

The primary theoretical framework of the study is Self-Determination Theory by Deci and Ryan (1994). SDT describes one's natural tendencies and intrinsic motivations to behave in healthy ways. A study conducted by the same authors indicated that whether or not participants adhered to exercise was based on enjoyment, competence and social interaction, rather than physical appearance (Ryan, 1997). Other studies have been conducted studying how SDT has played a part in exercise. Teixeira (2012) concludes that intrinsic motivation, a component of SDT plays a large part in predicting long-term adherence in exercise. The overall idea of the Self-Determination Theory is being able to control something and be in charge.

Participants

Eleven females participated in the research beginning at the start of the Fall 2017 semester and ending after finals of the same semester. The majority of students (n=10) did not live on campus. Overall, the participants were excited to partake in the research program. They were quick to contact the researcher and for the most part, maintained contact throughout their involvement in the program. The students were kind, mature and well-presented. Two students were freshmen, one sophomore, four were juniors and the remaining four were seniors. The age of the majority of students (n=10) ranged from 18-24 with only two participants between the ages of 25-30. Five of the participants were majoring in Kinesiology (including an Athletic Training major). The women self-identified their race as Caucasian (n=3), Armenian (n=1), Middle Eastern/North African (n=2) and Hispanic/Latino origin (n=5). As a group, the students' GPAs ranged from 2.8 to 4.0. Below is their demographic information.

Table 1
Participant Demographic Information

Participant	Living on Campus?	College Standing	Age	Major	Race	Current GPA
1	No	Freshman	18-24	Marketing	Hispanic	4.0
2	No	Junior	18-24	TV Production	Hispanic/Latino origin	2.964
3	No	Junior	18-24	Computer engineering	Hispanic/Latino origin	3.0
4	No	Senior	25-30	Communication Disorders and Sciences	Hispanic/Latino origin	3.0
5	No	Sophomore	18-24	Financing	Middle Eastern/North African	2.8
6	No	Junior	18-24	Athletic Training	Caucasian	3.8
7	No	Freshman	18-24	Environmental and Occupational Health	Caucasian	4.0
8	No	Senior	25-30	Kinesiology	Armenian	3.3

9	No	Senior	18-24	Kinesiology	Middle Eastern/North African	3.6
10	No	Senior	18-24	Kinesiology	Caucasian	3.28
11	No	Junior	18-24	Biology	Hispanic/Latino origin	3.0

Data Analysis

It was the intent of the researcher to ask open-ended questions that would allow subjects to explore more on the emotions, feelings and experiences of the students who participated in the exercise program. Not only were their experiences while participating in the program important for the researcher to understand but so, too, were the participants' perceptions of academic success and exercise as it pertained to their college experience. In order to further understand the factors that shaped the outcomes, the researcher structured the interviews and weekly logs to allow for students to elaborate on personal experiences, emotional and psychological responses as well as their perceptions of exercise and academic performance.

Transfer of Data and Coding

The researcher herself conducted the interviews. Additionally, she read the transcripts as they were submitted by the transcription service, Rev.com. The interviews were recorded on a digital recorder. The MP3 recorded files were then uploaded onto Rev.com, where they were transcribed and sent back to me within 12 hours. According to their website, Rev.com has a 99% accuracy rate. By rereading the transcriptions and classifying the responses from the participants into questions on a spreadsheet, the researcher was able to see recurring themes as they appeared in the responses.

Once data were collected via recordings that were transcribed or through weekly logs, all information was placed into spreadsheets. The researcher placed the questions

that were asked during the interviews on a Google spreadsheet. The answers per participant were then inputted in response to the questions. Data were then coded this way by reading each participant's responses side by side and seeing what results were common.

The weekly logs were inputted in Google Forms. There is an option in the Forms that allows for all data to be transferred to a Google Spreadsheet. This allowed for the researcher to have an organized spreadsheet with all the participants' responses on a weekly basis. Similarly to the data from the interviews, the data from the weekly logs were aligned per question with the participants' responses making it possible to look for trends and similar responses for coding.

As questions were answered in the spreadsheets, different topics were coded in different colors. For example, questions that discussed academics were classified in red, questions regarding exercise in orange and questions regarding the institutional resources were coded in green. Full responses from participants were placed in the columns of the questions as not to leave out any detail. Additionally, this simplified the task of including detailed quotes for specific topics within the results section.

Data collection was structured to be able to collect data before, during and after the participants' involvement in the program. This included pre- and post-intervention program interviews as well as weekly logs.

Data are presented in the following sections: pre-intervention interview results, comments from weekly logs, post-intervention interview results and participants' academic performance. Within each of the areas, participants' perceptions regarding academic success and exercise involvement were analyzed. Additionally, in the pre-

intervention exercise interview, students were asked about their knowledge and use of resources available at the four-year university, which they attend as full-time students.

Pre-intervention Interview Data Analysis

As a result of the information yielded from the interview questions, responses have been organized around three main thematic categories: academics, exercise and institutional resources. Often times, there were connections between sections.

Participants' Perceptions Related to Academic Success

The following findings pertaining to academics emerged from the pre-intervention interviews. Categories were centered on self-perceptions of academic performance, factors that impede academic success and motivation to succeed.

A majority of the participants (n=7) considered themselves to be good students, and the remaining four had indicated that they were average or “so-so.” All the students had at least an average GPA of C or higher. Even if students thought they were average, they were above average in the general sense of what “average” means academically (which is the letter grade of a C). Students appeared to be hard on themselves, both academically and with regard to their personal fitness levels and fitness goals. As a certain financing major stated, “I think I'm simply, I'm a good student. Because by the end of the day I do get my work done, and I do get pretty good grades.”; “I guess I have good and bad habits of being like a good student and being like a not so good student. It really depends on, I guess the ... trying to word it ... the intensity of the course.”

A first year transfer student remarked:

Right now, I'm just considering myself an average student. If I just have a C in a test, I'm just happy I passed the class. Now, I'm like, ‘Okay, I got a C. Now I have

to pump it up again.’ Now I'm just trying to be the best I can be.

Finally, one participant felt quite confident in her academics, indicating that she is “usually a straight A student.”

A couple of the students indicated that their main goals were to receive As but sometimes, they would give it their best and would get a B that they felt good about. “I always just strive to do my best” was how one participant explained her approach.

The most common response when asked what they described to be academic success was obtaining good grades (n=5). “Good grades, at least a C which is passing....” Relatedly, a good cumulative grade point average (GPA) was important to one participant.

Not related particularly to grades were the habits that participants indicated were critical for success. “Just to be organized, to be on top of your classwork” was one participant’s way of feeling academically successful. Another theme was that being academically successful goes beyond the good grades but that the material is actually understood, internalized and applied. “I think it's really understanding the material, but also participating in extracurricular activities and not doing it just for the grade, but doing it for your own personal reasons as well.” For another student, doing “the best I can” indicated academic success.

Challenges to Academic Success

An overall theme from the participants was that they felt they should have better study habits. Some students felt they needed to study more and simply put some more effort in their work. A number of students (n=4) mentioned poor study habits, such as procrastination, as interfering with their academic success. When describing her study

habits, one participant said simply that,

“They’re bad. I procrastinate a lot. I try not to. I try to be more aware. I do use a calendar or agenda and stuff to write all my assignments, and most of the time I do get them on time, but there's a lot of procrastination.”

Or as another student explained, “I wait until the test is four days or three days [away].”

Quite a few students had indicated that they knew they were not putting enough effort into their academic performance. “If I just focused a little bit harder or tried a little bit harder, I could easily be an A student.”

My study habits, not very good studier. I just kind of put my subjects off...because I'm not participating in any sports and any clubs, I feel a little bit more disorganized, because when I did have organizations, and sports, and stuff, it made me have to spread out, and figure out like, ‘I need to do this. I need to do that. What's important? What's less important?’ For this semester, I'm just trying to study what's more important, like what's due this semester, or this week, or today or tomorrow.

The above quote by a first year transfer student who lived on campus shows that the student was aware of her poor study habits but appeared to be motivated to improve them.

Other students mentioned that it simply “depends on the class”. If a class is more difficult, they tend to feel more of a need to study to ensure a good grade as opposed to another class. Also, for a course specific to a major, participants felt the need to study more. For example, a participant majoring in Kinesiology felt that all her effort for the semester was going to studying for a rigorous exercise physiology course.

This semester I'm taking Exercise Physiology, so like I know I'm going to have to put in a lot of like time to study, versus like other classes where I could just study like one or two days in advance and just like kind of cram it. So it really depends on the class and the difficulty, but like if a class is obviously harder I'm going to devote more time for it and you know, try harder. But if it's just like an easy class, I usually am pretty good with like just memorizing whatever needs to be for short-term.

In this quote, the participant acknowledges that one specific course is going to take up most of her time and attention for studying, whereas in other courses that do not require the same academic demand, she may not spend as much time.

Motivational Factors Contributing to Academic Success

When asked about motivational factors, the participants' responses included both intrinsic and extrinsic factors. Some students simply hate failing! "I don't like failing. I don't know. I've always gotten good grades, so I don't feel good when I get a bad grade."

Many participants mentioned that they do well in school for personal gratification. "When I do get a good grade and something, when I know I study hard for something and I see I did good at it, it motivates me to do more," while others indicated motivation came from their family. "As a first-generation, I want to make my parents proud." And another, "I think it's mostly due to my family." One participant mentioned that as she is the oldest, she wants to be a good role model for her younger brother.

For a few students, hopes of advancing on to another degree kept them motivated to do well in school. Due to other responsibilities and circumstances, it appeared that students were more concerned with graduating with a higher GPA and good grades,

regardless of how long it would take, than they were with graduating within the standard four years for a bachelor's degree.

“Now it's just being so close to the goal, and being so close to applying to grad school. That's what keeps me focused...the prize is so close now that it keeps me motivated,” stated a senior Kinesiology student.

Participants' Perceptions Related to Exercise

The pre-intervention interviews yielded information on exercise, which focused on the following categories: motivation to exercise and self-perceptions of the effects of exercise on academic performance.

Motivational Factors Contributing to Exercise

According to the participants, a big motivational factor for participating in exercise is for health reasons (n=5). Some participants explained that they care about how they look and want to get to a physical goal to look better. Others indicated that they exercise because of the health benefits, not just the physical benefits. “I really want to lose fat. Okay, I want six-pack abs. That's what I want. Now, I know my eating habits, that's a whole separate problem, but that's why I exercise.” Other students talked more about health as a whole such as “My well-being, I don't like to look fat,” and “Just overall health. I want to be healthy and I want to get fitter, like tone my body.”

Several participants (n=3) indicated that generally speaking, they felt much better mentally or psychologically when they would engage in exercise. This is what prompted them to exercise. Some examples are: “Since I started going to the gym, I started feeling like a lot better about myself, and a lot happier. So, like, the do good feel good type of aspect of it.”; “I feel like when I do exercise, I feel like it's a stress reliever for me.”

A former dancer and current athletic training major student indicated the following:

I want to stay healthy. I used to be a dancer and a runner, but I went through a back injury, so during that time, I definitely felt unhealthy. I felt like I wasn't doing well in my physical or emotional wellbeing. That motivates me a lot.”

Here, it is apparent that a main motivational factor for exercise is the ideology that exercise promotes improved physical health. Additionally, the participant took notice in previous times in her life when she was active compared to times where she was not as much and how it impacted her.

Another student discussed her perception of exercise and the impact it has on her stress levels: “I think when I exercise, I don't feel as stressed throughout the day, and I feel better that I did exercise. It's a positive ... It's almost like a reward for me. It definitely affects me positively.”

Participants also felt that exercising as a stress reliever would allow them to think more clearly which would allow them to be more successful in school. It also appeared to provide students with more energy to continue to study or to focus better in class: “It’s [exercise] helpful, I workout and it relieves my stress but something I feel instead of working out I should be studying.”

Often times, the participants referred to having more energy when exercising. “I feel I have so much more energy.” Another participant, a marketing major and freshman indicated that:

I’ve noticed that when I keep a constant workout week my entire week is stress free. I also noticed that I’m more productive throughout the day. One thing I noticed is that I get more sleep because I do everything early since I’m so

energized from working out.

Perception of Exercise in Relation to Academic Success

Many of the participants agreed that they believed that exercise improved their academics (n=9). As one participant noted exercise involvement provides “clarity in order to be more academically successful. I do believe that, because it kind of clears your mind up.”

Most of the time I exercise to calm myself down from all the pressure that I have from all my classes, and like the tests and all that. Yeah, because I think that if you feel good body wise, your mentality will be good. It does actually improve my study skills.

I think I can do well academically either way [with or without exercise], but I feel more motivated to do more work if I've exercised. So, I get more motivated to get things done if I'm exercising, 'cause it gives me the energy.

Based off of these quotes, it appears that the participants already have a sense of the impact of physical activity and exercise on academic performance. Participants also claimed that exercise specifically improved their concentration:

“It [exercise] gets me concentrated (sic). It gives me enough energy to feel focused.” and “I feel like my concentration has been better when I exercise because of the fact that I'm stress free, and my only focus is now on school.”

Additionally, emotional responses were indicated when asked about the impact of a participant's involvement in the program.

I'll physically feel happy as the sun when I exercise, but I know that I do like to exercise when I am feeling blue, and it does help. And it gives me a better self-

image, instead of being a couch potato I feel horrible, and then I have a really terrible self-image, and then negative thoughts and bad, bad, bad, yeah.

Institutional Resources for Academic Success

It is important to understand what the student participants deem their university is doing in order to help students be successful, both academically and in their fitness goals. During the interviews, participants had mentioned their awareness of on-campus tutoring or peer learning facilitation (PLF). Transfer students (n=6) and incoming freshman (n=2) were less aware of resources available on campus. One participant commented in response to the question, “I don't know yet, and stuff. I need to start looking more.” Another student remarked, “I don't really know... They have a bunch of rooms to study in, they have a library. They have a bunch of resources I guess you could say, to help you.” However, while aware generally that resources were available, some participants felt more could be done to support the use of those resources. One participant noted, “I feel like they just need to make it more known, 'cause I didn't really find out about it until last year. So ...” And another said: “I feel like they give a lot of resources. I feel like a lot of students don't know of those resources. I think students don't utilize them.”

All participants were aware of the Student Recreation Center (SRC) on campus. They were aware that it was free and said that the fact that it was no-cost and extremely convenient made it more likely for them to use this on campus resource.

Oh yeah, so definitely the student rec center, which is built in with our tuition, so it's free basically. You're not paying extra. So I think that definitely encourages people to go and work out, 'cause it's available. And the group classes there, that's good too. And I know there's a pool, but I haven't used it.

Some participants, mainly kinesiology majors, were also aware of the activity classes one can take through the Kinesiology Department. For example, “I know there are classes that students can take that involve exercise, there's a dance class, do swimming, martial arts, classes like those.”

Weekly Logs Data Analysis

The Exercise and Academic Success and Excellence (EASE) program was designed to follow the American College of Sports Medicine’s Guidelines for Exercise. The EASE program includes 150 minutes a week of moderate exercise. This program was implemented as part of the study to see what the female students who participated in the research experienced while exercising for 150 minutes a week at an on campus exercise facility. Students who participated reported feelings, thoughts, emotions and changes through weekly logs sent by the researcher.

Although the pre – and post-intervention interviews were designed to gather considerable information, with the interviews having been approximately 3 months apart, it would be easy for students to omit information between interviews. Therefore, in order to obtain real-time feelings without relying on anticipation or recollection, the researcher implemented the collection of weekly logs. The weekly logs were sent to participants each Sunday, through Google Forms. This allowed the researcher to collect additional information on how the participants felt and what they noticed on a weekly basis.

It was important to the researcher to be able to provide a platform to make it easy for subjects to report back on their progress. Therefore, the researcher decided to use Google Forms. Google Forms is an application by Google that allow for a person to ask questions where responses can come in various formats such as multiple choice, ‘select

all' options, short answer and essay. By using Google Forms, participants were able to effectively communicate responses. Choices were given to them regarding minutes of exercise spent per type of exercise, making it easy for them to select the best option. For questions that required more detailed and involved responses, the researcher set up the response to be a long answer response, where participants could type responses at their will. This allowed for participants to get into more depth regarding questions that asked of them to recall feelings, emotions, anticipations, etc. These responses were private, where only the researcher was able to see the data collected.

Other questions within the Google Forms focused on academics and workload, indicating if participants had some form of an assessment that week and perception of performance. This helped the researcher to understand what type of academic demands the students were placed under throughout the semester and how or if the exercise the participants' participated in had impacted their academic success.

The questions in the weekly logs focused on the participants' exercise habits and academic outcomes throughout the semester. Participants were asked to log how many minutes they spent in various types of exercise: cardiovascular activity, flexibility, strength or other exercises. Additionally, participants were asked to log any differences they may have noticed academically. As a group, the amount of submissions from participants ranged between 4 and 12 submissions, with the average number of logs submitted per participant being 9 entries.

On the weekly logs, participants indicated how many minutes of exercise per week they were involved in and in which type of exercise. Specifically, participants indicated if they participated in 0-30, 31-60, 61-90 minutes of cardiovascular exercise,

muscular strength, flexibility or other exercises. The researcher then took the averages of these minutes throughout all the weeks of participation to compute the average time spent over the duration of a participant's involvement in the EASE program for each component of physical activity. Responses of 0-30 were assigned a 1, 31-60 were assigned a 2 and so forth (Table 2) until 150 minutes or more was assigned a 6. These were then averaged to give a final number of exercise minutes spent per component of physical activity. In other words, a score of 4.3 meant that over the course of the semester, the student spent an average of 91-120 minutes participating in that specific type of exercise.

In order to find the averages of each student's participation in the EASE program, I assigned a number to each category of time that the participants were able to select from their weekly logs in the different areas of exercise. By assigning each category a number, I could then determine an average amount of minutes each participant spent exercising in cardio, strength training, flexibility or other exercise along with how much time spent participating in exercise per week.

Table 2
Minutes of Exercise for Computing Averages

Minutes of Exercise	Number Assigned
0-30	1
31-60	2
61-90	3
91-120	4
121-150	5

Although eager to participate, it was not long before their ability to participate was interfered by certain facts of life such as injury, increased academic load and personal issues, interfered with the participants' desire to participate and what the reality of involving oneself in 150 minutes of exercise per week entailed. Often times, school got in the way or an injury prevented a participant from being able to complete the required 150 minutes per week of exercise. However, all participants completed the program and attempted to complete the required minutes of exercise by participating for at least 30-60 minutes of exercise per week.

Only four participants met the minimum 150 minutes a week (average of all weeks of involvement), while the remaining 7 participants exercised between 31 and 120 minutes per week. As a group, the participants collectively exercised an average of 90-121 minutes per week. The women did cardiovascular exercises (between 31-60 minutes per week) along with weight lifting (between 31-60 minutes per week) and flexibility exercises (between 0-30 minutes a week). The women performed other forms of exercise as well (between 0-30 minutes per week).

Table 3
Average Amount of Exercise

Name of Participant	Cardio exercises	Flexibility exercises	Muscular Strength exercises	Other	Average Amount of Exercise	Total Weeks of Exercise Reported
1	1	1	2	1	2	7
2	1	1	1	1	2	4
3	3	1	4	1	4	11

4	1	1	1	1	3	10
5*	3	1	2	1	5	11
6	1	1	1	1	2	10
7	2	2	1	1	4	4
8*	1	1	4	1	5	11
9	3	1	1	1	3	11
10*	4	1	1	1	6	12
11*	2	2	1	1	5	8

* indicates having met minimum requirements for exercise on a weekly basis (150 minutes of physical activity)

Overall Perception of Benefits of Exercising

There were multiple ways to describe feelings in the logs that the participants had while exercising. Some participants had been in-tune with their ability to describe their emotional state or changes while participating in the program. Other students seemed a little uncertain about the changes in such a state. It was also important to see how students progressed throughout the semester. One participant had initially said that exercise relaxed her. “I was highly relaxed, yet working out the majority of my body muscle.” As the semester goes on, she indicated that she felt more motivated, pushed her limits and felt determined. Students had also indicated that even if it was inconvenient for them to exercise either because the gym was full or because they were pressed for time, they still exercised because they knew that it would be beneficial. “I try to push my limits when I’m working out to get that full body workout. It gives me adrenaline that helps me throughout the day” or “My thought process when working out is always the same, to push myself to go one more step than last time.”

Other students reported simply how they felt overall, not necessarily related to their feelings or thoughts during the exercise, rather generally such as “I felt a bit out of shape because I haven’t danced as much as usual the past few weeks, but I felt good

about myself while I was exercising.”

Over the course of the weekly loggings, participants indicated how much more energized they felt when they exercised. Some examples were: “I felt happy and energetic during the workout. I felt good about myself” and “I felt that when I was tired, exercise gave me the energy I was lacking.” Lastly, “ [I am] feeling more energetic and strong. Always feel energized and happy after a good workout.”

Additionally, it was noted that students felt focused during a workout: “[I feel] euphoric since my mind felt clear of any thoughts. I was just focusing on the music and my workout.”

Perceptions of Academic Changes

Students were asked to report any changes academically in their weekly logs. Initially, students indicated that they did not pay attention to differences in their academics. Yet as the semester progressed, more and more participants became aware of what was changing. One participant indicated on an early weekly log that, “it’s hard to notice it now, but I would say that working out helps keep me productive.” As time progresses her responses change to indicate that she noticed improvements such as, “...I did start noticing that the moment I start something, I don’t stop or procrastinate much.”

Repeatedly, participants explained how their focus improved throughout their involvement in the EASE program. Some examples include: “After my workouts, I feel more and more energized and focused for the rest of the day.” Another example was from a senior who indicated that, “I’m noticing that I am able to focus better and for longer periods of time when studying (especially after my workouts)” and “it has become almost a requirement to workout before I study because of the huge boost in focus and energy it

causes” and “exercise definitely allows me to stay more focused during class and while completing assignments.” Other students noticed: “I had more time to study. I focused more” and “I was more motivated to do my school work and focused in my classes.” Additionally, “I have been able to sit down and focus on my schoolwork for a longer duration as opposed to when I don’t work out” and “I’ve noticed that my attention span has expanded. I am able to focus through the lectures longer than before...” The following quote comes from a freshman student who started the program later into the semester but who felt her level of focus depended on her exercise involvement. “Because I did not get to exercise as much as I’d like to this week, I felt drained and it was difficult for me to stay focused during classes because I felt exhausted.”

Participants also noted their improved memory, retention of information, and alertness by reporting that “I really did study a lot I can say I managed to have a better memory” and “I noticed that I am more aware when I workout in the morning before class.” Other components related to academic success in general were also noted, such as organization. “My organization seems to be much better this semester. I never miss an assignment and remember all important due dates.” Retention of information was noted through the following quote: “When I exercise, I have noticed that I can retain information better. I would study, take an exercise break, and then study again. The second time around, I could see the links for my exercise physiology class better.”

One student was particularly aware of the impact of exercise on her ability to remember and her memory: “Recalled stats from a chapter we were reading in one of my classes,” “I felt I was able to grasp new concepts learned in class fairly quickly” and “I’ve been remembering all of my work and plans without writing them down.”

Not only did the participants notice the changes in themselves, but others around them noticed positive changes as well. “I’ve been very observant, and it was pointed out at least twice over the weekend,” meaning that people noticed her attention to detail and memory improvements.

Factors that Motivated Participants to Exercise

Although motivational factors were discussed in the interviews, students were asked about motivation in their weekly logs as well. The answers varied widely but did reflect what was said in the interviews. For example, students began to see the impact of what exercise was doing for their mind and body; therefore they continued to engage in physical activity. This was displayed through the following quotes: “I believe cardio is better for studying because it clears the mind and relaxes a person so I had better memory on what I was studying” and “I haven’t been moody lately so exercise helped make me feel better,” indicated an engineering major who started the university from high school. Another student noted that her involvement in the study kept her on track: “This study has really kept me diligent but mainly seeing my results and seeing improvements physically helps me keep going so I don’t lose my progress.” Since students saw the difference in their focus, retention and memory, they felt inclined to continue to exercise.

Participants felt they noticed differences in their physical body, which they attributed to exercise involvement. “My physical strength makes me motivated to maintain and improve what I worked hard for and my boost of energy and focus post-workout motivates me to go to the gym at night” while another noted that “my health I think that to stay healthy I need proper exercise” along with “...my breathing is actually really getting better than what it was before. I did not know that until recently.”

Participants also started to feel dependent on the exercise for a specific improvement such as a sleep pattern. As a certain transfer student and senior pointed out, The [exercise] classes motivate me because I see the same group of people and I feel accountable for coming. Also, not feeling like I can't sleep at night because I didn't move a lot in the day is also what motivates me.

Post-Intervention Interviews

During the post-intervention interviews, it was the intention of the researcher to essentially circle back to the initial questions and themes that had been addressed during the first interview to see if any themes had reoccurred, changed, stayed the same or shifted in any way. Therefore, similar topics were discussed in the post-intervention interviews that were discussed in the pre-intervention interviews.

Perceptions of Involvement in the Exercise Program

After not having seen the participants for twelve weeks, I began the post-intervention exercise interview by asking a general question regarding their involvement in the program. The responses were overwhelmingly positive and the participants had all indicated that the program went well. Students (n=2) even appeared to have been surprised with their commitment to a long program, such as, "I did surprise my own self with the fact that I committed to [the program]..."

I was excited, honestly. I was really excited. I was a little scared that I was going to fail...maybe skip a couple of days or weeks here and there. I'm surprised at how determined I was for it, so it was good.

As notes another participant, who was a marketing major:

It was really good, I learned a lot from the process actually to my surprise. I didn't

know that I can actually commit to something for a good amount of time, so that's actually what I learned. And then I also learned that with the exercise I've been actually doing, I'm a lot more stress free from what I've noticed, from my previous time, before we started.

I thought I was gonna get more distracted, working out more, so when the opposite happened I was like, 'Wow, this is super awesome. Why didn't I do this before.' That was the only thing I was nervous about, the time commitment, but it worked out.

Based on the above quotes, the participants seemed to be impressed with own abilities and dedication during their involvement in the program.

A senior, Kinesiology major commented on her consistency:

It was good. It was really good. I usually do work out throughout the school semester, but this study really helped me stay focused and not have cheat weeks once in a while. I was like I have to at least get three days in. I pretty much did that the entire semester.

Not only did students explain that the overall program was good, but they even noticed a difference between weeks when they were most involved in the program compared to weeks where they may have slacked off: "It was good. I definitely felt the differences between the weeks. When I was exercising a lot and when I wasn't."

Once again, the recurring topic of focus was brought up as the students realized that they were more focused during their involvement in the program.

It was good. I was a lot happier when I was more focused on working out and I feel like because I was focused on working out, in relation to my grades, they

went up.... I was really happy.

Not only did students express that their involvement in program went well and they enjoyed it, but they had also expressed general interest in being part of a research project. Some participants credited the fact that they were involved in a study as contributing to their success in committing to exercise for 150 minutes a week for a whole semester.

Motivation Behind Completing the Exercise Program

It was important for the researcher to understand the motivational factors behind the participants' involvement in the study. Therefore, the researcher asked all the participants in the post-intervention interviews the following question: "What motivated you to exercise? Please state any intrinsic or extrinsic motivation factors." After reviewing the responses of the participants, it became clear that it was difficult to distinguish between intrinsic and extrinsic motivational factors. What might be an intrinsic motivational factor to one participant may have been an extrinsic motivational factor to another participant. Participants discussed both intrinsic and extrinsic motivational factors, often times in the same quote.

Participants gave a variety of factors as to what kept them motivated to continue. Some participants (n=4) noted intrinsic factors such as doing well in school and others extrinsic, such as looking good physically. The following are samples from the post-intervention interview that were provided by the participants to indicate what motivated them to participate in exercise.

The intrinsic I would say is at first because I was kind of out of my workout in the beginning. In the beginning of the semester I came back from summer break. I

was on vacation, so I wasn't really into it as much, and then this study helped me intrinsically be motivated. I'm like, all right, I have to do this. Then extrinsically along the way I was just seeing how my body was improving and I was like, wow, this is great. This feels great. I'm strong, so I'm like, I want to keep doing this.

From another participant, who was majoring in communication disorders:

I think it was more intrinsic only because I said, 'I myself sometimes, like motivated me.' And there was (sic) times where I was just like, I had other things going on in my life as well, that kind of were trying to steer me and not commit to it. But, at the end of the day you're like, I myself like, stayed with it.

And another:

Mostly it's intrinsic for me, because I definitely feel a shift in my mood when I work out. Especially with dancing, because that's something I enjoy doing. So it's mostly ... I'll feel myself not feeling good, and not as happy, not as energized when I'm not working out, so that will definitely motivate me to exercise.

One student mentioned that her involvement in the program itself is what motivated her to participate.

Well, I mean, this [the research project] motivated me, and the fact that I actually wanted to commit to something, but the fact that I actually went through with it, and I didn't think I was going to go through with it actually motivated me.”

Extrinsically speaking, the students did mention how their physical appearance had changed and that their involvement in the EASE program assisted with this.

Extrinsic would obviously be looking better, so you can wear nicer clothes

because ... So aesthetics. Internally, it gave me an outlet for just ... When you have so much on your mind, and you go to the gym, you kind of just forget about everything...But also just exercising... I can't sit for too long, so exercising is good because it ... I would say, 'Okay, I need to exercise,' and that would be my excuse to get up and actually take a break.

Other times, it was people, such as family members, who would motivate the participants to continue to exercise, such as one participant's brother: "In the beginning it motivated me to do exercise because my brother would always call me and say, 'Are you doing exercises? Don't get fat.'"

Perceived Psychological Benefits of the Exercise Program

A number of participants credited improved self-concept, confidence and concentration to their involvement in the program. When asked about psychological benefits, students were positive, such as this quote: "Yeah a lot of confidence. Like more confidence than what I had before so I feel like that just goes along with working out and then it was cool seeing my grades improve too."

Another participant, majoring in finance and who joined the program after a friend of hers recommended it, realized how much of a difference exercise had on her.

I wasn't aware of all those effects that working out has, but I start to be more aware of what it does and how it does help you with studying and staying focus (sic) at tasks. So before, I wouldn't take it in. I will like, 'Oh, I'm just working out for fun or for whatever goal it is.' Then it's always the outside effect that it has upon. So I definitely noticed that, which also helped."

Additionally, one student felt that her involvement in the program helped her prioritize,

which led to her self-confidence improving since she was able to complete more tasks.

...By the time I started doing the program, and I started doing more exercises at the exact same time, that helped me focus, prioritize my school, too...Now that I'm in university and I'm in a program like, 'Okay, the minute I finish the gym I'm going to go home, take a shower, go eat, and then go straight to studying for an hour, relax, and then study some more' kind of thing...It kind of boosts up my self-confidence cause I feel good about myself. So when my test came and I did the work with my studying and all that, I felt more confident in what I need to do.

Another noted her improved concentration.

After exercise, I was able to concentrate better. That's for sure. I think the reason is because I just took a break from everything, and it just gave me a chance to really focus on what I was working on instead of just pushing myself when I obviously am not going to retain anything when I do that.

Repeatedly, increases in levels of energy were a popular subject discussed in the post- intervention interview as they were in the weekly logs: "I definitely felt a change in energy level and motivation after exercising" and "I felt more energetic and motivated with doing my school work this week, and I think exercising contributed to that."

One student mentioned that not only did it feel good for herself, but she knew she was helping me as the researcher, which motivated her.

I think it did psychologically help me, I guess, because it made me feel like I have ... I'm doing something for myself but for others as well, and it made me feel better about that.... So it's not really just for myself."

Changes in Perceptions of Academic Success

It is interesting to take note of the changes that occurred in the participants' responses from pre-intervention to post-intervention interview questions regarding their definitions of academic success. In the pre-intervention interview, the students discussed grades and what effect exercise had on their grades. Participants explained in greater detail during the post-interview about their habits and tendencies and how that impacted not just their grades, but many other elements associated with student success such as memory.

Considering that a semester had passed since the pre-interview, participants were again asked their definition of academic success and if it had changed from the beginning of the semester up until now. Participants (n=2) mentioned that academic success to them meant grades simply or even just passing classes (with a C or higher) such as, "above a 3.0, so like B's and A's" or "at this point? Passing..."

Other participants indicated that academic success to them meant retaining the information and being able to understand and apply it to their life.

I would define it as, basically, you go in, you give your best, and you know you did your best, so no matter what you get, you succeeded in the fact that you tried what you knew you had. So to me, that is academic success.

One student indicated particularly that academic success is more of a mindset and point of view rather than grades alone.

Participants had varying points of view for what their definition of academic success is. Some included application, doing well in class, doing your best and the knowledge obtained. "So, I guess it's understanding the material, and getting good grades," said one participant and "academic success meaning, you've studied hard, you

worked on getting your A's and then you get those A's so you've succeeded in what you wanted to achieve” is how another described academic success.

If you can apply what you're learning in your classes to your life, to everyday living, because when you're able to apply instead of just memorize it's a whole new ball game. I would consider that as academic success. You can get an A or you can get a C, but if you really learn something that will show more when you go onto grad programs, or whatever, if you really know the material or you just memorized some facts to get an A.

Another participant, a Kinesiology senior, found that academic success is the overall knowledge and the process of learning, that it is not solely the knowledge one acquires.

To me academic success is not just the diploma. It's the knowledge that you gained and how you can apply it to your everyday life. It's just being able to educate people, like if they have questions about what you're learning and if you can properly demonstrate to them and teach them points, I think that's academic success, not just the paper, but the knowledge that you gain with it.

With this quote, it reiterates that participants did not just strive to graduate but that they aimed to graduate with good grades that will help them continue in school.

For another student participant, academic success had to do with a comfort level and the ability to be happy and calm with oneself, which would allow for her improved academics.

It has to be ... you have to be comfortable with yourself. Because if ... for me if I'm stressed out and if I don't ... if I'm not okay internally, then I won't perform

academically. I feel like that's a big thing for academic success.

Like others, academic success is more of a concept, not a specific grade or grade point average. This included achieving goals for one specific participant.

How do I define academic success? ...do as much as possible and try to get what your kind of goals are. The majority of mine is just trying ... In the beginning it was trying to get As all the time. Right now I'm just trying to pass my classes....

My academic success is kind of lowered a little bit and stuff for the first semester, but it's going to raise up again. Probably next semester I'm going to aim for Bs and As and stuff instead of just barely passing kind of thing.”

Interestingly enough, as shown in this quote, many students did not really think of what academic success was until it was asked of them. It took a moment to give an answer but once the participants responded, they were able to provide good descriptions of what academic success meant to them.

Changes in Academic Success as Measured by Grade Point Average

A primary goal of the research was to study the impact of exercise on academic performance. The participants' self-reported previous semesters' GPAs and the researcher compared them to the semester in which the students were involved in the program, which was also collected by the researcher at the end of the program. To some students (n=2), academic success was the ability to apply material learned to everyday life. Interestingly enough, the two that believed the importance of application of material learned are kinesiology students, who study exercise. Through their involvement in the program, they were able to apply what they learned to exercise effectively. These two kinesiology students were the first two to contact me to participate in the program. They

were both quite eager to see the results that their participation would yield on their academic performance. Their grade point averages were the only two among the group of eleven participants whose GPAs increased from previous semesters. Specifically the GPA of participant 8 increased by .53, and the GPA of participant 10 increased by .19 from previous semesters. The other participants had, for the most part, maintained their grade point average. This may be due to the fact that they were already exercising and since they did not exceed the exercise recommendations, they maintained their grade point average. There were two participants who had seen decreases in their GPA. One participant had changed majors recently due to struggling in her current major. This academic struggle may explain other reasons for the decrease in GPA.

Table 4
Participants' Grade Point Average Changes

Name of Participant	Spring 2017	Fall 2017	Overall GPA	Change
1	Not enrolled	1.925	1.93	None
2	Not enrolled	3.35	3.35	N/A
3	2.867	2.138	2.70	Decrease
4	3.25	2.756	2.72	Lower but not overall
5	2.575	2.131	2.54	Lower but not overall
6	4.0	3.917	3.98	None
7	Not enrolled	4.0	4.0	N/A
8	2.85	3.383	3.24	Increase
9	4.0	4.0	3.98	None
10	3.56	3.75	3.40	Increase
11	2.792	2.036	2.99	Decrease

Changes in Academic Success as Perceived by Participants

Although overall there were not noticeable increases in GPA, participants were aware of changes in factors that affect GPA. When asked in the post-intervention

interview what they noticed from week to week, their answers included better retention of information and improved memory, changes in life style, improved time management skills, and increased focus. In the pre-intervention interviews, one can see that the participants did indicate that they felt that exercise improves their academics, but they were not entirely sure how. Now, during the post-intervention interviews, they express these changes are more able to pinpoint how they noticed the changes come about.

I think my memories are better, because, I never really ... If I had many things to do, I would write them on my planner or on my phone. And things were kinda happening all at once, so many things going on the semester, that I realized that even if I didn't write down on my planner, I would remember that I had to do something at a specific day or specific time. Which is really cool, 'cause I'd be like 'Oh my gosh, I remember!' And I wouldn't be like, 'Oh, darn, I forgot it!'

The above response from a participant shows that the improvements were noticed on a daily basis and throughout different components of their day, such as planning or making appointments.

Another perceived change that was discussed was a more lifestyle change. A participant indicated that this semester helped put her general outlook on academics and grades into perspective. She had been quite hard on herself and having been involved in the EASE program this semester where she was able to commit to something and give her all in her academics improved her overall self-perception.

I learned a lot. I changed the life that like ... I honestly ... My mentality is to be that I needed to get perfect A's, and I needed to get perfect scores and everything, or I felt like I didn't commit enough to certain things, and now looking back, I

actually realized that it's not even about that much of like getting perfect grades, first the fact that you give it your all, and that when you do something, you go through with it. You don't just leave it halfway done.

The above quote from a participant provides insight into her change in mentality after being involved in the EASE program and how that has helped her to be more aware of goals and what success means to her.

Similarly to the previous participant, another participant mentioned how she was more carefree.

Yeah. I feel like in the beginning of the semester I was a bit more ... I don't know if I should say where but more conscience of myself. And I feel that with working out and stuff, I became more carefree. I was definitely beginning ... You know how lots of people count calories and all of that? I was more aware of things. And after working out and I got over the whole, 'I'm working out to lose weight' or 'I'm working out now towards a goal' It was just like, 'I'm working out for myself because I like working out.' So that went on.

The above participants looked at her involvement in the program as a goal to complete and saw her exercise involvement as something for herself as opposed to working out to lose weight.

One participant indicated that her academic performance improved by being able to prioritize and have better time management skills.

Yes, but I didn't see it officially until I continuously started to make that habit, because... At the beginning I would just study all the time, and I'm just super stressed out, nervous, and stuff, but then as the semester went on I learned how to

prioritize my schedule a little bit better, and making time for the exercise, for the studying, for the work, for the friends, whatever other dimensions are in my life.

Academic success came as I became more relaxed, because when I'm too stressed out I kind of choke, and I can't retain anything. It's just awful.

Just as discussed previously under the weekly logs, the impact of exercise on the ability to focus for longer periods of time, was mentioned in the post-intervention interviews. Two students specifically noted that their academic performance improved as a result of their improved focus - "I think it might be easier for me to actually sit down and do my school work now."

I felt like it helped boost my memorization, just my focus, and sitting for a long period of time and being at a desk, it helped with those things. After a while it just stayed at that level. I didn't see anything significant after. I'd say mid-semester I was just like I don't feel anything else, but it was good and it stayed up there.

Another element that was found to be different was that of the physical body. Participants had noticed a change in their body composition and physique since the beginning of the semester through their involvement in the program.

"Just that I feel like I focused more energy into it because I had that energy. Because it improved ... and then like me personally, I feel like I'm more happier and more healthier since the program."

Impact of the Weekly Logs on Participants' Perceptions

As mentioned in the methodology of the research study, students reported to the researcher weekly through logs in the form of Google Forms. Questions that were on the weekly logs asked of students to indicate how much time they spent exercising over the

last 7 days, what types of exercises they engaged, how long they spent exercising in different areas of training (cardiovascular exercise, strength training, flexibility, other). They were also asked to rate their intensity of exercise, to describe their experiences exercising, any noticed changes in academics, and if they had any academic assessments (such as exams, quizzes, papers or projects) in the last week and how they felt they did.

Overall, the participants stated that the weekly logs reinforced feelings, thoughts or emotions about involvement in the program. The weekly logs required the participants to be more reflective and more accountable for their exercise involvement. Additionally, they became more self-affirming as they recorded feelings and observations in their logs from their participation. As a result, the participants felt better about themselves because they were more aware of the positive changes that were occurring with their participation in the program. This is shown through their responses in the post-intervention interviews when participants indicated that the exercise implemented is now a habit and they will continue to implement this in their lives, even once their involvement in the program has ended.

Increased Awareness During Exercise

Participants noted that the logs put into perspective what they were doing and made them more conscious of their exercise efforts and academic improvements. Additionally, the logs reinforced what to look for or focus on during their involvement in the program. Some students were unaware of experiences to focus on during the academic semesters such as their progress in courses or how their memory, cognition or task time improved. However, by being asked such questions on their weekly logs, the participants felt that this reminded them of what to look for and be more conscious of

factors that might change throughout the semester. Some participants noticed that the weekly logs made them realize just how much they had done regarding exercise or how they were doing academically on a weekly basis. It forced reflection from the participants on a weekly basis. For example, one participant indicated that it helped her because “just that repetition to focus on and just to keep track of how I was feeling.”

Not necessarily like improving anything, but rather like, just kind of like, make you realize, oh! You did this much, you felt this way. What's the difference between the previous one?... So you're kind of just self-learning what it is that you mentally are learning and like, what yourself is improving academic wise.

Other participants indicated that the logs served as a wake-up call if they had not done as much exercise as they had anticipated or planned on for the week.

...I realized I was a little bit behind. Then I remembered, ‘Oh I'm going to have to log this. I better finish it before Sunday.’ So definitely, I had to do at least those two and a half hour.

And as another student reflected:

Especially writing down how much you actually worked out, because sometimes you'll think that you did enough, and then you write it down and it's like, ‘Oh, I only worked out one time this week.’ Or, ‘I didn't work out this week.’ Definitely in terms of seeing what you're actually doing on paper.

One participant indicated that some of the questions on the logs did not seem to feel relevant to her but in the long run, she feels that she pays more attention to her feelings when she exercises.

It made me think, definitely, about my workout, because before I would just

workout and then go along with my day. But then charting how I feel is not something I gave value to because I just never thought about it. Thinking like, 'Oh, how did I feel after? Did it affect my schooling?' ... Something that I don't usually do is tap into my feelings for exercise, at least, so that was brought to my attention. So now I pay attention to how I feel when I exercise.

Finally, participants indicated that the weekly logs reminded them about their accomplishments and in this way, it made them feel good about their workout routine and served as a motivator to continue. Quotes from the weekly logs to depict that are as follows: "Yeah. It's a reminder of how good it makes me feel at the end of the week."

And the following:

I guess just feelings of your overall week, like how did you feel you did on your test and so it kind of gives you a reflection on your academics. I guess [seeing] the duration of my workout ... kind of motivated me.

Implications for Future Exercise Habits

After having implemented the EASE program for one semester, it became important to the researcher to understand if such involvement in a program would impact future exercise habits. It became clear that the participants felt that their involvement had created a habit, one they would have no intention of breaking in the future. Additionally, the participants noticed a difference between when they had been involved in the program compared to previous semester when they had not, as indicated here: "I exercise more now... If I don't exercise I feel sluggish..."

Participants realized differences between weeks when they were actively involved compared to weeks when they had not exercised as much as they should have.

Participants (n=7) appeared to respond quite passionately when discussing the impact that the involvement in the program had on their exercise habits. The following are quotes taken from the post-intervention interview that depict how the students felt their involvement would impact their future exercise habits.

It did. It did impact a lot actually. I actually worked out at first for like 30 minutes. When I first started, it would only be like 30 minutes or 40 minutes, but now ever since, I said I'd stick with it, it's gone up to like 2 hours, and now it has become a routine where it's 2 hours everyday.

Oh, yeah, for sure. It's more habit ... Now, over winter break, I couldn't ... It's not just going to be an academic thing. I want to keep going over break, and then want to come back to school, and all that. And it's also just like a nice little outlet when you just have so much going on, school work, whatever the case may be. It's just nice to have an hour to yourself, hour and a half, however much you have just for yourself. You just plug in your headphones, just do your workout. You don't have to answer to anybody.

I am not breaking this. Yeah. I'm going to keep going, and this taught me that school isn't so much of an excuse. If I manage my time better, I can make it work, so I kind of just let it be an excuse in the past, and now it's like, wow, it was me. It wasn't school.

Conclusion

The pre-exercise interviews, weekly logs and post-intervention interview data

have given a lot of insight to what the participants experienced during their participation in the EASE program. The pre-exercise interviews allowed the researcher to understand the baseline of the students' perceptions of academics along with what they believe impacts exercise habits and academic success. The weekly logs served as a way to collect real-time data as the students were going through the program. This would ensure that they would be able to provide information of changes, feelings, thoughts or emotions as they were occurring while in the program. The post-intervention interview questions allowed for the students to express how they felt overall with their involvement in the program and to indicate any changes observed from the start of the program to the end.

CHAPTER 5. DISCUSSION

Introduction

As the data collection and analysis has concluded, it may be effective to revert back to the purpose of the research endeavor as the discussion begins. In an effort to better understand what occurs during engagement in a structured exercise program, the researcher posed two questions:

- What are the experiences of female students who engage in an on-campus exercise program on a regular basis?
- How is their academic success affected by participation in a structured on-campus exercise program?

A related question investigated the motivational factors that contributed to continued participation in the exercise program. Through pre- and post-participation interviews and weekly logs, information was gathered on the area of exercise, motivation to exercise, and perceptions of academic performance, as well as GPA. In the early stages of the research, it was hypothesized that those who participated in the EASE program, by engaging in a minimum of 150 minutes of physical activity per week for one academic semester, would elicit increased academic performance when compared to their academic performance in other semesters. Additionally, it was hypothesized that participants would experience improvements in psychological and emotional health and well-being.

This chapter is organized around these research questions focusing first on the experiences of participants and then on the relationships found between exercise and academic performance. Self-determination theory provides the framework for a discussion of motivational factors and differences among participants. The chapter

concludes with limitations, recommendations and conclusions.

Research Question 1: Experiences of Participants

Summary of Pre-Intervention Interview

During the pre-intervention interviews, the students were asked several questions regarding their academic performance, exercise habits and perceptions that one had on the other. In general, exercise has been proven to provide significant and positive improvements in academics (Singh et al., 2012). It has also been proved that there are improvements in core class grades (Coe, 2006), along with achievement tests (Coe, 2006 & Ahamed, 2007). Several age groups have been tested to track this correlation such as school aged children (Morales, 2011), high school students (Garcia, 2014) and even college aged students (Bellar, 2014). This study aimed to focus on college-aged females at a four-year institution.

Although their responses were somewhat vague, the student participants collectively appeared to be generally aware that exercise is good for a person, whether it be physically or psychologically, but they were not aware of how it specifically impacted them. The majority of the participants were also relatively aware of resources on campus that were available for exercise such as the SRC and kinesiology activity classes. However, the students were less aware of academic resources on campus such as free tutoring and math and writing assistance. At baseline, the students already exercised so they did believe in the positive effects of exercise and were excited to participate in the program. Five of the participants were kinesiology majors who were studying exercise and fitness as their major.

From the initial interview, it was determined that most of the participants were

good students, or at least considered themselves to be good students on their own terms. In particular no student mentioned graduating on time as a measure of academic success. Rather, students were more concerned with getting, what they perceived to be good grades, as opposed to graduating within the standard four-years for an undergraduate degree. One reason for this was that students were more intent on acceptance to graduate schools rather than graduating in a more timely fashion.

Summary of Weekly Logs

The Weekly Logs were an online form that was sent to the students on a weekly basis for them to record their academic experiences and exercise habits from the previous week, along with any changes they noticed in these areas. The Weekly Logs were a useful tool to collect data as they were cost-free and easy to implement, and somewhat unexpectedly yielded multiple benefits. During the post interviews, participants indicated that the weekly logs reinforced their thinking patterns and their motivation and commitment to the program. The logs reminded students what to look for and reminded them to constantly pay attention to changes. With this always looming in their minds, the participants were more cognizant of change.

As the semester progressed, the participants became more aware of their exercise and academic habits and this was evident through their weekly log entries. At the beginning of the semester, the participants were not paying as much attention to any changes. However, as the semester continued, participants were more aware of changes and provided more specific examples of any improvements elicited. Participants became more aware of how important it was for them to exercise, how much they exercised and how it was impacting their academics.

With changes being more evident, there was increased motivation for them to continue participation in the program. Often times, people are discouraged from exercise because they are unaware of the changes that are occurring in their mind and body. However, these logs reminded the participants to look for the changes and when they did, they saw that in fact, there were changes in both their academics and exercise patterns. This served as a great motivational factor for the participants.

There were some gaps in weekly entries from students as the semester progressed; some due to illness or injury and others due to increasing responsibilities throughout the semester. The logs, which asked student participants to indicate any changes in their academics along with their exercise performance on a weekly basis, had brought awareness to the women as to what to look for with their involvement in exercise. By filling in the logs, the participants were more conscious of factors to look for that may change in the duration of the program.

The kinesiology participants were more aware of their exercise habits and what it means to be involved in exercise. For example, they were more aware of changes that were happening in their memory, cognition, academics and how their exercise involvement made them feel emotionally. I was under the impression that the kinesiology students were more mindful of the differences their body and mind experienced throughout the semester as they were involved in the EASE program.

Summary of Post-Intervention Interview

As suggested in weekly log entries participants were more aware in the post-intervention interviews than they were in the pre-intervention interviews, of the impact of their exercise habits on academic performance. The participants compared the start of the

semester to where they were at the post-intervention interview, making several remarks on changes and improvements. A recurring theme regarding exercise was that it helped the students focus more and they became more aware of that as the semester continued. At the end of the semester, the participants were overall happy to have participated in the program, saw improvements in many aspects of their life including academic, psychological and physical. Academically, students saw improvements in their study habits, memory and felt like better students who did not procrastinate as much. Psychologically, the participants discussed improved self-esteem and self-confidence. Physically, participants noticed actual change in body compositions and they liked how they looked physically now at the end of the EASE program.

The overall consensus of the participants in the post-intervention interview was that they were happy to have participated in the program. Having done so made them more aware of their physical condition along with how their involvement in exercise was impacting their academic performance. Students felt more focused, more attentive and more energized throughout this semester, which they attributed to their being involved in the EASE program. Participants also indicated that they planned to continue such a program for the rest of their lives as they saw how beneficial it was on many levels, including physically, academically and psychologically. Having participated in the EASE program, students felt more disciplined as it required constant and weekly attention to detail and weekly log inputs. The participants' involvement in the program addressed the challenges to performing well academically, such as staying focused, avoiding procrastination and memory.

Question 2: Impact of Exercise on Academic Performance

Although this study was qualitative, it is still important to look at the previous research outcomes in the area of physical activity and academic success, whether it was qualitative or quantitative. A number of quantitative research studies have found a positive relationship between exercise and academic performance. Trudeau (2008) concluded that students who were involved in physical activity were more successful when it came to academics. Morales (2011) also concluded that the amount of physical activity was directly correlated to success in academics. Bellar (2014) and Keating (2013) specifically concluded that exercise improves grade point average (GPA). However, this was not the finding in the current research. Few students improved their GPA (n=2), whereas most (n=9) had no change in GPA and some (n=2) even dropped in their GPA from the previous semester.

Contributing to this finding may be the participants' level of adherence to the exercise program, as only four of the eleven participants met the weekly 150 minutes of exercise. Of the two whose GPA did improve, one did the greatest amount of cardiovascular exercise, and the other was one of the four participants who averaged 150 minutes per week. Weekly Logs were also a requirement of the program. Two of the four women with the lowest number of logs submitted had no change or a lowered GPA.

However, although their GPAs may not have reflected it, during the study over half of the students reported that their academic performance improved and all participants reported improvement in academic performance at some point during the semester. One participant had a difficult academic semester, causing her to switch majors to something less challenging. Even with this change, she still felt that she had seen some academic improvements during the semester. As the primary goal of the research was to

document participants' experiences and feelings it was important to understand this seeming contradiction.

One explanation may be participants' perceptions of academic success, which changed over the course of the study. In the initial interview academic success was defined as GPA. In post-intervention interviews participants described academic success as more than GPA. It was the ability to apply and understand the content, doing your best, and as a process and mindset. And as perceived, participants attributed their improved academic success to factors repeatedly mentioned in the research literature, including concentration and memory, and overall well-being. Some participants were able to pinpoint exactly how exercise benefitted them, even prior to their participation in the program. While others became more aware of these benefits as the study progressed. In other words what was discovered through this qualitative study aligns well with previous research conducted using quantitative methods.

First, there were many noticed improvements in the participants' ability to focus:

“After my workouts, I feel more and more energized and focused for the rest of the day.”

“I'm noticing that I am able to focus better and for longer periods of time when studying (especially after my workouts).”

“It has become almost a requirement to workout before I study because of the huge boost in focus and energy it causes.”

Although the terminology differs, these participants' use of the word focus seems consistent with research examining the positive effects of exercise on concentration (Caterino & Polak, 1999; and attention (Lees, 2013 & Raspberry, 2009)

Participants also reported experiencing increased memory and organizational and time management skills, with what the literature refers to as executive functioning. As examples, students indicated being able to remember material learned in class, material studied and even remembering to do tasks without having to write them down. As noted by students: “I really did study a lot I can say I managed to have a better memory” and “I never miss an assignment and remember all important due dates.” Additionally, in post-intervention interviews, student mentioned better study habits and that they did not procrastinate as much. These are indications of improved executive function. Improvements in cognitive brain function were also reported by the participants, as indicated by their increased ability to stay on task during assignments (Ratey, 2008; Sattelmair, 2009). Consistent with participants’ perceptions are several published research articles suggesting that memory is improved through involvement in physical activity (Budde, 2008; Cooper, 2012; Fu, 2014).

Even before their participation in the program, all participants felt that their psychological health was impacted by exercise. This says a lot about how exercise presents itself as not just good for the body, but good for the mind as well. Generally speaking, the participants perceived that their self-esteem improved throughout the semester as they started to notice physical and academic changes with their involvement in the program. In the same manner, previous research has also indicated that involvement in physical activity improves self-image, self-confidence (Fox & Corbin, 1989) and mood (Blumenthal & Williams, 1982).

Motivation to Exercise

There were several motivational factors that led the participants to continue

exercising in the program. Motivation was both intrinsic and extrinsic, with no one factor taking precedence over the other. Rather both components were present in students' responses. Several participants noticed physical changes in their body, either with weight, physique or strength. These participants indicated that they exercised because it helped them look better. Participants were also prompted to exercise when they noticed their health was improving. Such changes have been previously seen in research when testing the impact of physical activity (Dwyer, 1983). Likewise, Cockburn (2002) concluded that people engage in physical activity for the effects it has on their body shape and Crone (1999) concluded that people participate in physical activity for health benefits.

Self-determination theory (SDT) by Deci and Ryan (1994) provides a conceptual framework for understanding these motivational factors. SDT indicates that there are three main rationales for people's motivations. They are: 1) people are motivated to internalize the regulation of uninteresting though important activities; (2) there are two different processes through which such internalization can occur, resulting in qualitatively different styles of self-regulation; and (3) the social context influences which internalization process and regulatory style occur. Two types of internalization are introjection and integration. Introjection requires taking in a value or a process but understanding that it is not one's own. Integration, however, is where this process is one's core sense of self. In this situation, introjection achieves a sense of internal control and integration results in self-determination.

Specifically, participants did not always feel excited to exercise (a potentially uninteresting though important activity) but did so because they were involved in the program and/or because they knew they would eventually feel good about it and that it

was good for them (internalization). Data suggest that several students needed the accountability the program provided to continue to exercise. The Weekly Logs, collected by the researcher served as that accountability. Once the participants were being held accountable for adhering to the program, the Weekly Logs also made them more aware of the benefits of exercise, which in turn motivated them to continue in the program.

Differences Within the Sample of Participants

It is possible to take into consideration both Azjen's (1985) Theory of Planned Behavior and Deci and Ryan's (1994) SDT in explaining the differences that occurred within the sample of participants. As previously mentioned, five of the eleven participants were kinesiology majors. When looking at the logs, the participants who had logged the most and spent the most time at the gym during the semester were the kinesiology students. Two of the four women who had met the requirements for the EASE program were kinesiology majors. These findings can be interpreted multiple ways: 1) the kinesiology students have a stronger likelihood to exercise more; 2) they *must* exercise for their courses; 3) they have a deeper understanding of the positive benefits of exercise and therefore, choose to exercise more; 4) they typically enjoy exercise. All four of these reasons could explain why the kinesiology students were the ones to meet or exceed the exercise requirements of the EASE program. It is also important to note that the two students with increased GPAs were farther along in their academic careers and were more experienced with colleges' academic demands. As per the Theory of Planned Behavior, Kinesiology students would have both the intention to exercise and the ability to do so. Consistent with Deci and Ryan (1994), the kinesiology students would fall under the internalization process of "integration," since they spend

their educational career learning about kinesiology and the benefits of exercise whereas the participants who majored in other subjects would more likely internalize through “introjection”. However, as students who already engaged in exercise, they did have a sense of integration already, but it is believed to have been more of a core belief for the kinesiology students considering this is their field of study and future career area.

This may explain why the kinesiology students were the ones who adhered closely to the program, saw increases in GPA and were more aware of changes that occurred throughout the semester. The kinesiology participants were more aware of their exercise habits and what it means to be involved in exercise. For example, they were more aware of changes that were happening in their memory, concentration, and, academic performance and how their exercise involvement made them feel emotionally. Overall, because of my personal experiences as a Kinesiology undergraduate and graduate student, I was under the impression that the kinesiology students were more mindful of the differences their body and mind experienced throughout the semester they were involved in the EASE program.

Limitations

Although the current research project was effective in helping to understand the experiences of the students who participated in the EASE program as it set out to do, there were multiple limitations. In order to better understand a wider population, a greater sample size would be more effective. Specifically, having a sample of both men and women would provide further insight into academic changes with exercise implementation. Additionally, recruiting participants from various institutions such as community colleges or places where a fitness culture is not as strong might help to better

understand the impact of exercise on academics.

Further, the study was only implemented during one semester. In order to better understand the impact of exercise on academic success in college aged students, it is recommended to extend the participation of the students throughout multiple semesters, if not their entire academic career.

Another limitation was using grade point average as a measurement of student success. Several previous authors, such as Bellar (2014) and Keating (2013) used GPA as a variable to indicate academic performance. However, when conducting the research, it was apparent that the GPA of the participants did not accurately depict how they felt academically. Participants noticed positive changes that were not reflected in their GPA, yet still felt improvements in contributors to academic success such as focus and retention.

Lastly, it is important to note the complexity behind exercise compliance. Participation in the EASE program recommended students to participate in 150 minutes of physical activity each week. As time passed during the semester, students became injured, more involved in school, and in general, had more responsibilities. Since their involvement in the program was not required for their academics, it took the back burner when other things got hectic. These barriers may have made it more difficult for the participants to be compliant with their exercise.

This study provides some observational support of a relationship between GPA and physical activity. Participants with observed increases in their grade point average also had participated in the minimum amount of physical activity in the EASE program. It is unlikely that the other participants' whose GPA either stayed the same or decreased

did so because of their involvement in the program, no matter how much time they dedicated to exercise each week. It is not possible to say that their involvement in the program is what caused changes in GPA, due to the fact that the study did not control for many other elements that could have impacted these changes, such as level of difficulty in the courses they took during the semester.

Future Recommendations

Future research may consider these limitations by expanding the sample size and increasing the duration of the exercise program. This is consistent with the results of McAuley and Rudolph (1995) who indicated that an exercise program with multiple sessions over a longer period of time is likely to result in psychological benefits.

Another recommendation that might be considered for future research is having a more structured program that would include meeting as a group with the researcher and other participants. This arrangement might elicit social benefits along with allowing the instructor to control exactly what kind of exercise the participants are being exposed to, as opposed to them determining what kind of exercise they prefer to perform.

Lastly, it would be beneficial to run similar types of studies that are more correlational or causal in nature. This would isolate major causes for such relationships and truly separate the reasons for improvements in the participants.

Implications

Through the completion of the research, several implications have come to light. This study supports the importance of providing opportunities for students to engage in physical activity on campus. It is reassuring to know that the students have several resources on campus, where the research was conducted to help them achieve their

physical activity goals. Resources for health and wellness include a Student Recreation Center, exercise classes through the Kinesiology Department, outdoor exercise equipment, a student health center, a wellness lounge which offers massages, meditation, sleep pods, and psychological and nutritional counseling.

The Student Recreation Center of the four-year institution where the participants engaged in the EASE program cost over \$62.3 million dollars to build. The big question is if this money, collected over years from student fees, was worth it to build such an elaborate student recreation center. After seeing what benefits can arise from having students exercise regularly throughout the semester, it is easy to say that yes, the money spent for the student recreation center was well worth it as it has the potential to benefit the academic success of students.

The Need for Student Awareness of Exercise Facilities

Student Recreation Centers on campuses across the United States have gained popularity. However, the mere existence of recreational facilities is not enough. The centers, which are sufficient and offer many amenities for any type of physical activity, are not adequate.

The first implication for the research is the need for students to be made aware of the resources that are available on campus for physical fitness. In this study, it became clear that the students were unaware of several resources on campus. Participants were aware of the SRC on campus, considering its popularity and size. However, few were aware of the other resources for physical health and wellbeing offered on campus such as Kinesiology activity courses that are offered for units or the various on-campus exercise facilities such as the ExerCircuit outside gym or the ropes course. There are no additional

costs for students to use these services once they are enrolled in the university.

Additionally, few students were aware of academic resources such as tutoring that are available for free. Having spent nine years in this educational institution myself, I was able to offer advice on programs available for students to use and take advantage of for improved health, fitness and academic success concerns.

The fact that students are unaware of the services offered on campus is a great disservice. Although all services are advertised and spoken about at orientation, students may have felt overwhelmed and forgotten about the less popular ones. These resources are then overlooked and students do not optimize their resources at the institution. Some students, who had already been at the university for longer, knew about more academic resources than the newer students. Additionally, not all students were aware of the various ways students can exercise for free on campus besides the student recreation center. Few students were aware of the activity classes offered for units through the Kinesiology department. All students knew of the recreation center since it is very large and popular. However, other forms of free exercise programs offered on campus were not known to students. The fact that students are unaware of the services offered on campus is a great disservice.

As a result of the findings from this research, it is recommended for student recreation centers to hold workshops and facilities tours for students to inform them of the many options on campus. This may serve as a model for other universities to do the same.

Necessity for Accountability with Students and Exercise Programming

The second implication addresses the need for students to be held accountable and

made explicitly aware of the benefits of exercise and its impact on academic success. The implementation of the exercise [or EASE] program was overall a success. Participants engaged in the program and noticed its benefits. The program allowed for individualization and some self-motivating features but had factors such as the weekly logs, built in as accountability. When the students had volunteered for the program, they were already exercising and were interested in exercising. However, they had stated that when school became busy or work and personal life got in the way, their exercise was put on the back burner. Such a program like the EASE program that held the participants accountable by requesting a weekly log is more likely to be successful as it holds students responsible for their involvement along with more self-awareness of progress.

Further, simply exercising is not enough if one does not understand what benefits can possibly come from such a habit. The data indicated that by being more aware of exercise habits, for example by filling out logs, one can also be aware of the benefits of exercise as well. A specific benefit that was derived from filling out the logs was that the participants increased their awareness of what behaviors were improving with their participation in the program. By answering the questions posed in the logs, they had to pause and reflect each week to see if there were changes. Because of this constant reflection, it became more apparent that changes were in fact occurring.

It is suggested that such a program should be implemented regularly as a campus-wide program. Such a program holds students accountable and in turn, students are more likely to participate, yielding improvements. It would require that a staff member is on top of the weekly logs and communication with the students. A similar idea may also be extended to other resources on campus that are under-utilized. Although most universities

and colleges have many resources available for student success, it is not enough to simply have the resources: the students should be held accountable for taking advantage of the resources in order to be made explicitly aware of their benefits. It seems unnecessary to force college-aged students to be held accountable for using the resources on campus, but it may prove to be more effective for them if they do so. When the students begin to see the benefits of the program, they will willingly participate and no longer need to be held accountable.

Implementation Science

Finally, there are multiple frameworks that help us understand the effects of an exercise program. Deci and Ryan's (1994) Self-Determination Theory helps explain the motivation behind involvement in such a program. Various physiological theories help us to understand that physiology changes with exercise, thus motivating further involvement in exercise. However, a research study like the one reported in this paper opens a new framework entirely by having people participate and reflect upon their participation in a program to see the benefits it yields. This is called implementation science. According to the National Institute of Health (NIH), implementation science is the study of certain methods that help to promote the adoption and integration of evidence-based practices into routine health care and public health settings. Implementation research is what helps researchers to identify barriers and enablers of certain health programming and policies. Using this knowledge acquired through evidence-based study can lead to more effective delivery approaches. The idea of evidence-based practice such as implementation science can help us to understand the following question: if we see several benefits to exercise, why is it that approximately a third of Americans are sedentary? When the participants

were engaged in this program, they were required to self-reflect and take note of changes. This showed them that changes were in fact occurring, which further inspired and motivated them to continue in the program.

Conclusion

The issue that the researcher set out to address was the void of qualitative studies in the field of exercise and its relationship to academic success. There is a considerable amount of quantitative research regarding the relationship between exercise and academic success (Bellar, 2014; Keating, 2013). Additionally, Taras (2005), Trudeau and Shephard (2008) and Singh et al. (2012) each compiled systematic reviews of the research literature investigating the relationship between physical activity and academic performance. The following specific questions were asked in these previously published studies: does exercise improve academic performance in college age students? Does engagement in physical activity impact brain functioning? Does exercise improve concentration, memory and executive functioning? Does exercise have psychological benefits including improvements in mood and self-esteem? However, no research was found that specifically looked at the ongoing experiences of those who participate in an on-campus exercise program and what impact, if any, it has on their academic success and perceptions of academic success. By conducting pre- and post-intervention interviews, along with collecting information in weekly logs, this research has made a contribution to better understand what students experience while exercising.

The research utilized various qualitative methods to gather information through the use of interviews and weekly logs. Even though only some of the participants were able to participate in the requirements of the EASE program, there were still positive

results as a collective group. In general, being able to participate in a structured exercise program that holds a participant accountable for their exercise habits by requiring check-ins through weekly logs, students are more likely to abide by the terms of the program, thus reaping the benefits that are associated with exercise. Even more so, the women who were able to meet the minimum requirements of the program displayed the highest positive changes in grade point average along with many physical psychological and cognitive benefits. The obtained research can set a standard for other universities who are unsure of the benefits that a project that costs so much can have on the student population. By publicizing the benefits of such a program, other institutions can also build similar programs, which may elicit further benefits for their student population.

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APPENDIX A
Sample Interview Protocol

Protocol

In order to successfully complete our qualitative study, we have chosen to interview you in order to record, analyze and further understand your experiences as they relate to your success as a student. We will be interviewing you twice, once now (at the beginning of the semester) and once at the end of the semester in order to further understand and highlight your experiences during the semester as they relate to exercise and how they have affected your success as a student. Each interview is intended to last approximately one hour. You will be recorded and the interview will be transcribed using a transcription website.

Introduction Script

You have been selected to speak with us today because you have been identified as someone who has a great deal to share about exercise and academic performance on this campus. Our research project as a whole focuses on the experiences of college aged students who exercise at on-campus exercise facilities. We are interested in knowing this in order to understand such experiences and provide further information and knowledge as to how such programs are beneficial to college age students. Our study does not aim to evaluate your techniques or abilities. Rather, we are trying to learn more about your experiences and hopefully provide basis as to why on campus exercise programs are important for students' academic performance.

To facilitate our note-taking, we would like to record our conversations today. Please sign the consent form and bill of rights. For your information, only researchers on the project will be privy to the tapes which will be eventually destroyed after they are transcribed. In addition, you must sign a form devised to meet our human subject requirements. Essentially, this document states that: (1) all information will be held confidential, (2) your participation is voluntary and you may stop at any time if you feel uncomfortable, and (3) we do not intend to inflict any harm. Thank you for your agreeing to participate.

We have planned this interview to last no longer than one hour. During this time, we have several questions that we would like to cover. If time begins to run short, it may be necessary to interrupt you in order to push ahead and complete this line of questioning.

Interview Protocol

Institutions: _____

Interviewee (Title and Name): _____

Interviewer: _____

Survey Section Used:

_____ A: Interview Background

_____ B: Exercise Background

_____ C: Institutional Background

_____ D: Assessment

_____ E: Discipline

_____ F: Demographics (no specific questions)

Other Topics Discussed: _____

Documents Obtained: _____

Post Interview Comments or Leads: _____

Experiences of Academic Success in Students who Participate in On-Campus Exercise Programs

Introductory Protocol

To facilitate our note-taking, we would like to audio tape our conversations today. Please sign the release form. For your information, only researchers on the project will be privy to the tapes which will be eventually destroyed after they are transcribed. In addition, you must sign a form devised to meet our human subject requirements. Essentially, this document states that: (1) all information will be held confidential, (2) your participation is voluntary and you may stop at any time if you feel uncomfortable, and (3) we do not intend to inflict any harm. Thank you for your agreeing to participate.

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A. Interviewee Background

How long have you been ...

_____ a college student?

_____ at this institution?

Interesting background information on interviewee:

What is your current GPA? _____

What is your field of study? _____

1. Briefly describe your academic performance and study habits.

Probes: Was it always like this? Have you seen any changes in such habits?

2. What motivates you to study or do well in school?

3. Would you consider yourself a good student?

B. Exercise Background

1. How often do you exercise? On campus? Other?

2. What would you consider your level of exercise? (Beginner, novice, etc.)

3. How does exercise make you feel in relation to your academics?

C. Institutional Services

1. What do you think this institution does in order to improve student success?

Probes: Is it working – why or why not?

2. What resources are available to students to exercise on campus? Why use these resources as opposed to other resources?

3. Why would it be more beneficial for students to exercise on campus than at another facility?

Probe: Do you see a way to widen of the circle of participants here on campus?

4. What is changing about exercise and physical activity on this campus?

Probe: What is being accomplished through campus-based initiatives?

What kinds of networks do you see developing surrounding exercise/academic performance reforms?

5. Have you or your friends/classmates/fellow students encountered resistance to these programs on campus?

D. Assessment

1. Do you feel exercise improves your academics? How can you tell?

Probe: What kinds of assessment on academic performance most accurately capture what students are experiences when they exercise?

Post Interview

1. How did your involvement in the program affect your academics?

E. Discipline

1. What are some of the major challenges the school faces in getting students to perform better academically? What are the major opportunities when it comes to exercise?

Probes: How can barriers be overcome?

2. How can opportunities be maximized?

F. Demographics

Appendix B
Post-Intervention Interview Questions

- A. Looking back, how could you explain your commitment to exercise before starting the program?
- B. What motivated you to exercise? Please elaborate on any intrinsic or extrinsic motivational factors.
- C. Do you feel that your involvement in the exercise program had done anything to improve your self-concept or self-determination?
 - a. Did you ever think of the consequences of your actions if you continued to exercise or if you would stop? How did they impact your academic choices?
- D. What are some things you wish you would have known going into the program before starting?
- E. How would you define “academic success?”
- F. Do you see any differences now from the beginning of the semester?
 - a. If so, what are they? How do they relate to your academics?
 - b. If not, why do you think there were no differences?
- G. What were your thoughts going into the program?
- H. Were you making this connection to feeling health/looking good to motivate you to exercise?
- I. Did you set any specific goals for yourself?
- J. Did you make any relationships as a result of your participation in the study?
- K. Did the weekly logs reinforce any feelings/thoughts/practices about the program?
- L. What are your thoughts now that you have completed the program?

- M. What would you recommend to fellow students who are just starting out now?
- N. Do you feel this will in any way impact your future exercise habits?

Attitudes: the degree to which a person has a favorable or unfavorable evaluation of the behavior

Behavioral intentions: the motivational factors that influence the behavior. The stronger the intention to perform the behavior, the more likely the person will perform the behavior.

Subjective norms: the belief that people approve or disapprove of the behavior a person is engaged in

Social norms: customary acceptance in a group or people in a large cultural scene.

Perceived power: the perceived presence of components that can either facilitate or impede the performance of the behavior.

Perceived behavioral control: a person's perception of how easy or difficult the behavior

Appendix C:
Consent to Act as a Human Research Participant

California State University, Northridge
CONSENT TO ACT AS A HUMAN RESEARCH PARTICIPANT

**Student Experiences of the Exercising for Academic Success and Excellence (EASE)
Program**

You are being asked to participate in a research study, a study conducted by Leora Gabay as part of the requirements for the Ed.D. degree in Community College Leadership. Participation in this study is completely voluntary. Please read the information below and ask questions about anything that you do not understand before deciding if you want to participate. A researcher listed below will be available to answer your questions.

RESEARCH TEAM

Researcher:

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Faculty Advisor:

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Department of Education

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Northridge, CA 91330

(818) 677-2596

sue.sears@csun.edu

PURPOSE OF STUDY

The purpose of this research study is to understand the experiences of college aged students who participate in regular exercise programs in a college or university setting.

SUBJECTS

Inclusion Requirements

You are eligible to participate in this study if you 1) at least 18 years of age 2) are a full time college or university student 3) are willing to participate in 150 minutes of physical activity per week for the upcoming semester 4) are able to get a physician's consent to exercise.

Time Commitment

This study will involve approximately 45 hours of your time throughout this semester.

PROCEDURES

The following procedures will occur: You will be screened to ensure that you are eligible for this study. You will be interviewed to take account of your experiences as a college student and how exercise may impact this. You will either then be required to exercise 150 minutes a week for the semester or placed in a control group without exercise. You will then have a follow up interview to see how or if your experiences have changed. Each interview will be approximately 1-1.5 hours. The interviews will be recorded and transcribed.

RISKS AND DISCOMFORTS

This study involves no more than minimal risk. Besides for minor discomfort during exercise, there are no known harms or discomforts associated with this study beyond those encountered in normal daily life.

BENEFITS

Subject Benefits

The possible benefits you may experience from the procedures described in this study include improved physical and mental health and possible improved academic success.

ALTERNATIVES TO PARTICIPATION

The only alternative to participation in this study is not to participate.

COMPENSATION, COSTS AND REIMBURSEMENT

Compensation for Participation

You will receive a \$50 gift card for your participation in this study.

Costs

There is no cost to you for participation in this study.

WITHDRAWAL OR TERMINATION FROM THE STUDY AND CONSEQUENCES

You are free to withdraw from this study at any time. **If you decide to withdraw from this study you should notify the research team immediately.** The research team may also end your participation in this study if you do not follow instructions, miss scheduled visits, or if your safety and welfare are at risk.

CONFIDENTIALITY

Subject Identifiable Data

All identifiable information that will be collected about you will be removed and replaced with a code. A list linking the code and your identifiable information will be kept separate from the research data.

Data Storage

All research data will be stored electronically on a secure, password-protected computer.

The audio video recordings will also be stored in a secure cabinet in the researcher's home office then transcribed and erased at the end of the study.

Data Access

The researcher and faculty advisor named on the first page of this form will have access to your study records. Any information derived from this research project that personally identifies you will not be voluntarily released or disclosed without your separate consent, except as specifically required by law. Publications and/or presentations that result from this study will not include identifiable information about you.

Data Retention

The researchers intend to keep the research data until the research is published and/or presented and then it will be destroyed.

Mandated Reporting

Under California law, the researcher is required to report known or reasonably suspected incidents of abuse or neglect of a child, dependent adult or elder, including, but not limited to, physical, sexual, emotional, and financial abuse or neglect. If any researcher has or is given such information, she may be required to report it to the authorities.

IF YOU HAVE QUESTIONS

If you have any comments, concerns, or questions regarding the conduct of this research please contact the research team listed on the first page of this form.

If you have concerns or complaints about the research study, research team, or questions about your rights as a research participant, please contact Research and Sponsored Projects, 18111 Nordhoff Street, California State University, Northridge, Northridge, CA 91330-8232, or phone 818-677-2901.

VOLUNTARY PARTICIPATION STATEMENT

You should not sign this form unless you have read it and been given a copy of it to keep. **Participation in this study is voluntary.** You may refuse to answer any question or discontinue your involvement at any time without penalty or loss of benefits to which you might otherwise be entitled. Your decision will not affect your relationship with California State University, Northridge. Your signature below indicates that you have read the information in this consent form and have had a chance to ask any questions that you have about the study.

I agree to participate in the study.

- I agree to be audio recorded
- I do not wish to be audio recorded
- I agree to be video recorded
- I do not wish to be video recorded

Participant Signature

Date

Printed Name of Participant

Researcher Signature

Date

Printed Name of Researcher

Appendix D:
Recruitment Flyer

Can exercise help you in school?

You are invited to participate in a cost free project titled:

EASE: Exercising for Academic Success and Excellence

You are qualified to participate if:

- 1) 18 years or older
- 2) Full time college/univ. student
- 3) Able to obtain a physician consent to exercise
- 4) Willing to exercise throughout the semester



For more information, contact Leora Gabay, Graduate Researcher
e-mail | Leora.gabay.911@my.csun.edu phone| 818-915-7577

Appendix E:
Bill of Rights

CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

EXPERIMENTAL SUBJECTS

BILL OF RIGHTS

The rights below are the rights of every person who is asked to be in a research study. As an experimental subject I have the following rights:

- 1) To be told what the study is trying to find out,
- 2) To be told what will happen to me and whether any of the procedures, drugs, or devices is different from what would be used in standard practice,
- 3) To be told about the frequent and/or important risks, side effects or discomforts of the things that will happen to me for research purposes,
- 4) To be told if I can expect any benefit from participating, and, if so, what the benefit might be,
- 5) To be told the other choices I have and how they may be better or worse than being in the study,
- 6) To be allowed to ask any questions concerning the study both before agreeing to be involved and during the course of the study,
- 7) To be told what sort of medical treatment (if needed) is available if any complications arise,
- 8) To refuse to participate at all or to change my mind about participation after the study is started. This decision will not affect my right to receive the care I would receive if I were not in the study.
- 9) To receive a copy of the signed and dated consent form.
- 10) To be free of pressure when considering whether I wish to agree to be in the study.

If I have other questions I should ask the researcher or the research assistant, or contact Research and Sponsored Projects, California State University, Northridge, 18111 Nordhoff Street, Northridge, CA 91330-8232, or phone (818) 677-2901.

X

Signature of Subject

Date
