STARS

University of Central Florida
STARS

Electronic Theses and Dissertations, 2020-

2020

Factors Related to Physical Education Course Enrollment at the Community College Level

Jennifer Katz
University of Central Florida

 Part of the Health and Physical Education Commons
Find similar works at: https://stars.library.ucf.edu/etd2020
University of Central Florida Libraries http://library.ucf.edu

This Doctoral Dissertation (Open Access) is brought to you for free and open access by STARS. It has been accepted for inclusion in Electronic Theses and Dissertations, 2020- by an authorized administrator of STARS. For more information, please contact STARS@ucf.edu.

STARS Citation

Katz, Jennifer, "Factors Related to Physical Education Course Enrollment at the Community College Level" (2020). *Electronic Theses and Dissertations, 2020-*. 67.
https://stars.library.ucf.edu/etd2020/67

FACTORS RELATED TO PHYSICAL EDUCATION COURSE ENROLLMENT AT THE STATE COLLEGE LEVEL

by

JENNIFER G. KATZ
B.S., University of Central Florida, 2015
M.S., University of Central Florida, 2017

A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Education
in the College of Community Innovation & Education
at the University of Central Florida
Orlando, Florida

Spring Term
2020

Major Professor: Jeanette Garcia

©2020 Jennifer G. Katz

ABSTRACT

This study was designed to evaluate the factors related to Physical Education course enrollment at a predominately two-year state college operating under a community college model in the state of Florida as it pertains to enrollment declines in electives focused on health and wellness. The mixed-methods study included a survey of current students at the college (n =177) perceptions and reasons for enrolling in physical education classes. Further, a historical data analysis (n = 87,399) of students' institutional records was conducted to investigate the relationship between student success and physical education. Groups included those who took physical education courses and those who had not. Propensity score matching was achieved at < .002 and matching groups totaled n = 3,258.

The analysis of the data indicated that there was a relationship between Physical Education course enrollment and some student success metrics (e.g. course completion). Further, a thematic analysis of the student survey data identified factors that influence elective decision-making including: (a) students' focus on self-improvement, (b) degree and career path planning, and (c) personal enjoyment.

This study provides insight for researchers and college administrators interested in elective enrollment, particularly with those focused on Physical Education. The metrics and trends identified can guide future research and inform analytical decision points in the collegiate Physical Education space.

This dissertation is dedicated to my husband, David, for not giving up on me, even when I gave up on myself. I am here today because of your love. There will never be enough words to show my gratitude, but each word contained within was made possible by you. I love you.

ACKNOWLEDGMENTS

I would first like to thank my committee chair, Dr. Jeanette Garcia, for her constant support, and her willingness to guide and encourage me. Dr. Garcia, I will never be able to thank you enough for what you have given me. I cannot imagine this journey with anyone else as my advisor, and I am thankful to be finishing this program with someone I now consider my friend.

To Dr. Michele Gill, thank you for your guidance, and for believing in me. Although my subject area was not "typical" you never made me feel like an outcast in the program, and for that I can never thank you enough.

To Dr. Laurie Campbell, I am forever grateful that Dr. Garcia referred me to you. It was a pleasure to work with such a strong female role model, even though it was not in my usual subject matter. You are a genuinely kind person and I am honored to know you.

To Dr. Joshua Guillemette, I am not sure where to begin. Without your friendship, I probably would not have made it this far. Thank you for being an ear when I needed it, and of course, my stats guru. And that makes us happy.

To my husband, David, I wish there was a way you could see yourself through my eyes. You have been the most kind and patient man throughout this journey, and I know I didn't always make it easy on you. You make me feel like I can do anything, and with your love and support, I have no doubt that is true. I love you.

To my children, Brooke, Samantha, Zachary, and Joshua, thank you for believing in me, even on the days when I did not believe in myself. I love each of you dearly and my hope is that you always know that.

To my best friend, Diane, thank you for understanding when I had to cancel lunches, and for letting me vent over these last several years. Your friendship is one of the greatest gifts I have ever received.

To my colleague and friend, Dr. Tammy Sabourin, you may not know it, but this whole journey began because of you. I have had the pleasure of working with you for the last eight years and during that time I have seen a compassionate, intelligent, amazing professor who gets to do what she loves. You inspired me to be the best I could be for my students, thank you.

Finally, to my wolfpack: Marci, Sejal, and Maureen. We have been through so much together over the last three years, and I would not have been able to do it without each of you. From the text messages to the celebratory outings, the laughter and the tears, you are the ones who understood because we were walking this path together. I look forward to celebrating each of you as we all cross the finish line together.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

CVI	Chronic Venous Insufficiency. A circulatory disorder linked to sedentary behavior.
GPA	Grade Point Average. The total number of grade points achieved divided by the credit hours completed.
PAD	Peripheral Artery Disease. A disease of the circulatory system associated with sedentary behavior.
PE	Physical Education. This abbreviated term can apply to any course that is designed to improve the health, wellness, or related knowledge of the student. This may include physical activity, sports, skills, nutrition, physiology, and other related educational content.
PS	Propensity Score. A matching method used to reduce bias in samples by equating groups based on pre-selected criteria, covariates, and/or variables.
SCT	Social Cognitive Theory. The overarching theory of how an individual perceives their ability to complete a task or achieve a goal as developed by Bandura (1977, 1991).
SE	Self-efficacy. An individual's belief in their ability to perform an activity or attain specific performance levels, as developed by Bandura (1977).

CHAPTER ONE: INTRODUCTION

Introduction

The percentage of overweight and obese Americans has grown at an alarming rate over the last thirty years, with 70% of the U.S. population classified as overweight or obese (Centers for Disease Control, 2017; Hales, Carroll, Fryar, & Ogden, 2017). Research has identified several factors that have contributed to this epidemic, such as the increased accessibility of highly processed and fast foods (Bhutani, Schoeller, Walsh, & Mcwilliams, 2018; Jabs & Devine, 2006; Kruger, Greenberg, Murphy, DiFazio, & Youra, 2014) and the decline in levels of physical activity and exercise (Carr, Lydecker, White, & Grilo, 2019; Church et al., 2011). The risks associated with high levels of body fat include heart disease, Type II Diabetes, stroke, and some types of cancer (Freisling et al., 2017), with such risks increasing with advanced age (Wu, Ding, Tanaka, & Zhang, 2014). Research has shown that engagement in health behaviors, such as participation in physical activity during adolescent and young adult years, may be instrumental in influencing lifelong health habits (Loprinzi, Cardinal, Cardinal, & Corbin, 2018), including those both physical and mental (Chekroud, 2018; Mikkelsen, Stojanovska, Polenakovic, Bosevski, & Apostolopoulos, 2017). Unfortunately, a marked decline in health behaviors has been observed as youth transition from high school into a university setting (Bray, 2007; Bray & Born, 2004). Given the evidence to support the importance of health behaviors during this time period, it is critical to better understand the factors that may promote or prevent adoption and participation in healthy lifestyle factors.

In recent years, health-related education has been reduced or eliminated in many school settings (Charles & Charles, 2016). A decline in participation at the university level has also

been observed; however, while the decision to eliminate health-related courses in grade schools is largely decided by school administration, the lack of enrollment at the university level is often a result of student decision-making and program specific enrollment requirements. This is unfortunate as these courses may encourage better health habits and nutrition decisions in students and may help reduce the risk of becoming overweight or obese later in life (Long et al., 2013).

At the time of this research study, the researcher was associate faculty in the Physical Education department at a large community college in Central Florida. This department has been in existence for over thirty years and has offered a myriad of classes during that time. The physical education facility at the main campus includes a gymnasium that has provisions for activity courses such as Basketball, Volleyball, and Martial Arts. The adjacent fitness center offers equipment for cardiovascular training, strength and resistance training, and video playback equipment for instructional purposes. The cornerstone classes offered in the fitness center include personal fitness and wellness, and strength training I and II. The department also offers more niche classes like yoga, tennis, and scuba training.

This research was conducted to identify potential factors affecting course enrollment in the various classes offered by the Physical Education (PE) department at the main campus of the community college, as well as student success outcomes related to participation in those courses. This research was supported and encouraged by the Department Chair at this site. No other research initiatives have focused specifically on PE course enrollment at this community college.

Problem Statement

The problem of practice that this dissertation addressed was the low enrollment in health and wellness courses at a large community college located in Central Florida. The goal was to evaluate the student body at this community college to determine possible factors that may be correlated with student's decisions to enroll/not enroll in health and wellness courses. The health and wellness courses at the main campus of this college were experiencing a decline in enrollment, which had been increasing in severity over the last several years. This is tied to a larger national decline in PE courses being offered and the removal of requisite PE requirements (Cardinal, Sorensen, & Cardinal, 2012). In Florida, many colleges have removed the requisite PE requirement and offer these courses as elective-only options (Physical Education, 2016), as is the case with the college being studied. Courses of this nature are important for educating students on proper health and wellness behaviors, during a time where students are statistically likely to gain weight, have increased body mass index ratings, and decreased aerobic health (Meckel, Galily, Nemet, & Eliakim, 2011).

Student success is a primary focus at the college. Participation in health and wellness courses has been previously correlated to student success at the collegiate level (Danbert, Pivarnik, & Mudd, 2014; Larson, Orr, & Warne, 2013). Physical education and wellness courses have also been associated with improved student mental health, reduced burnout, and increased attendance (Annesi, Porter, Hill, & Goldfine, 2017; Blank, 2015). As such, this study evaluated student success factors for those who have participated in PE courses at the college to help identify trends and themes that may be useful to college administrators, academic advisors, and faculty.

Previous research in this area is spread out across a number of different areas that may provide some insight, but a more specified study was needed to allow this college to address these challenges. The guiding research questions for this study were as follows:

Research Questions

1. *Is enrollment in health and wellness courses associated with success outcomes such as GPA, graduation rates, and retention?*
    - *It is hypothesized that enrollment in health and wellness courses will be positively associated with GPA, graduation rates, and retention.*
2. *Controlling for demographics, do student success factors such as GPA, graduation rates, and retention, differ between students who have enrolled in PE and those that have not?*
    - *It is hypothesized that students who have enrolled in PE would have higher GPA scores, graduation rates, and retention rates compared to students who have not enrolled in PE.*
3. *Do students who have completed a PE course have higher levels of exercise self-efficacy compared to those who have not completed a PE course?*
    - *It is hypothesized that students who completed a PE course would have higher levels of exercise self-efficacy compared to those who did not complete a PE course.*
4. *What factors affect student's decision-making regarding health and wellness course enrollment?*

- *It is hypothesized that there will be differences regarding reasons for choosing electives between PE completers and non-completers.*

Significance of the Problem

Community College enrollment has been trending downward in recent years (National Student Clearinghouse Research Center, 2018), and projections anticipate small growth percentages in the undergraduate population nationally over the next six to seven academic years (National Center for Education Statistics, 2018). Studies investigating elective choices for students have been limited at the community college level and have rarely focused on health and wellness related courses. In the existing research, which was focused on the four-year college level, students have previously shown concerns regarding health-related topics such as nutrition, activity, mental wellness, and disease prevention (Lombardi & Dupain, 2014).

Health and fitness initiatives have been shown to have a positive impact on student outcomes as early as elementary-school age (Fedewa & Ahn, 2011; Fox, Barr-Anderson, Neumark-Sztaner, & Wall, 2010), but the course of study for the average student in Florida reduces physical education to one-half of one percent of their high school curriculum requirements (Physical Education, 2019). Additionally, students may be exempted from physical education for a variety of reasons, including many that are not related to student's ability to perform in such classes. In Florida high schools, a student may be exempted from PE classes due to the need for other remedial courses, participation in band or ROTC, or playing varsity sports (Physical Education, 2019). Arguably, some of these exemptions do include a reasonable amount of physical activity for the student (e.g. ROTC and varsity sports), however, the student is not receiving instructional time related to their personal health and wellness. It is unknown as to

whether this is impacting students' decisions to enroll in PE courses beyond high school as research in this specific area has not been published.

Context and Setting

The main campus at this community college was selected due to its unique ability to offer a full range of physical education courses. This college is one of the 28 state colleges in Florida (Florida Department of Education, 2019a) and has multiple locations throughout the Central Florida region. The college offers a selection of programs that include Associate Degrees, certification programs, and a select number of four-year degrees. Only a few of the locations have PE course offerings, due to the specific facilities, and none of them can offer the full range of classes that are offered on the main campus. The main campus location has a gymnasium, fitness center, running track, and tennis courts, in addition to traditional classrooms for lecture material. A sister campus has a fitness center, but lacks a gymnasium or tennis courts, and the other campus locations have only recreational exercise areas with no credit-based PE courses being offered.

This community college's PE course enrollment problems have been compared to existing research literature, though some faceting of the research was necessary. College enrollment has been studied and statistics have been gathered, but data at the community college level was not as prevalent as that of four-year colleges and universities. Physical education studies have been performed with subjects of all ages, ethnicities, and abilities, and were compared to the student population data available from the college. Research on college electives was limited to those with focus on particular majors (Daly & Last, 2017; Elliott & Paton, 2018), but contextual connections were made to this study where appropriate.

Conceptual Framework

The conceptual framework for this study was largely structured around Bandura's (1977) Social Cognitive Theory (SCT). The research effort was set forth to understand more about student perceptions and experiences, which are a primary focus of SCT. Although the overall SCT informed this study, the research was more targeted toward self-efficacy research, a key piece of Bandura's theory (1977, 2004). The research questions were designed to use self-efficacy as the guiding framework for further understanding PE student experiences at the college being studied. The survey portion of the study was largely based on Bandura's (1977, 2004, 2006) model of self-efficacy for exercise behaviors, a scale Bandura designed specifically to understand self-efficacy related to barriers to exercise. The remainder of the survey included open-ended questions that were developed using research in self-efficacy and self-determination (Pajares & Zeldin, 1999). Analysis of those responses was grouped based on experience types, using Bandura's sources of self-efficacy (1994) as a guide. Examples of these sources and their relation to Bandura's theory are shown in Figure 1.

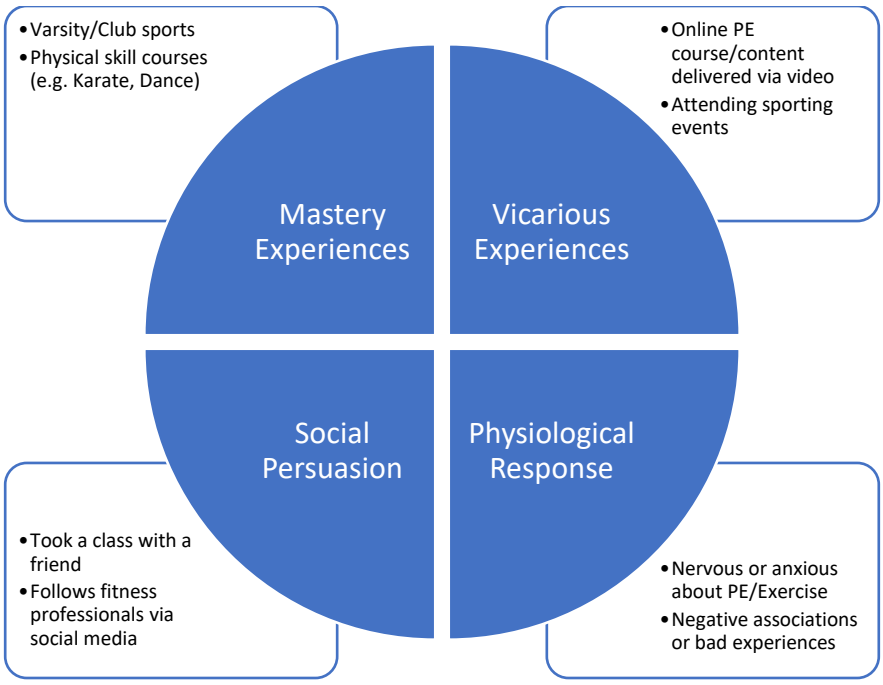


Figure 1. Sources of self-efficacy

Study Purpose

There is a need for further research into the factors that specifically affect community college students' decisions to enroll in health and wellness courses. A deeper understanding of the organizational and psychological factors may bring new insight into the enrollment process, student experience, and decision-making. This mixed-methods study examined factors that were specific to the physical education enrollment decline at the community college, guided by seminal and current research in the fields of physical education, collegiate studies, and student wellness. With this information, leadership at the college can determine what actions, if any, will be taken to ensure students have a well-rounded community college experience that incorporates core values and maximizes positive student outcomes.

Limitations

The data requested from the community college included a variety of student data points and initially included a request for student attendance metrics. It was discovered that attendance data is not collected at the course level and is not stored through the Institutional Review division at the community college. Therefore, the relationship between PE course and attendance was not explored during this study. The study was limited to the main campus location only. It is probable that there would be some variation in results at different campuses, but the main campus location was the only one that had full PE facilities at the time of the study, as outlined in the context and setting section, making it the most robust option for studying physical education electives at this large Florida community college.

CHAPTER TWO: LITERATURE REVIEW

History of Physical Education in Schools

Physical Education (PE) in the United States was documented as early as the early-to-mid-nineteenth century, with less formal presentations of activity-based education dating back to the seventeenth century (Guedes, 2007). Early forms of PE were focused on games, sports, and recess time where children were often separated by gender (Kennard, 1977). In the late nineteenth century, there was an effort to develop associations for specific professions, including PE pedagogy(Park, 2007b). It is widely accepted that the first formal association for PE teachers was the Association for Advancement of Physical Education (AAPE), formed in 1885 (A brief history, 2019). Shortly following the formation of the AAPE, *The American Physical Education Review (APER)*, a journal to disseminate information to PE professionals, was published (Guedes, 2007). The AAPE has gone through a number of name changes but is still in existence at the time of this research, now known by the name of SHAPE America (A brief history, 2019), a well-known industry leader in fitness and wellness education. The *APER* has also undergone name changes, but now helps educate those in the profession under the name of *The Journal of Physical Education, Recreation, and Dance (JOPERD)* (Guedes, 2007).

As curriculum for PE became more formalized there was an early focus on anthropometric changes through activities such as calisthenics and gymnastics (Park, 2007b). Early PE curriculum often struggled to find a balance between information sources, but often relied on physiology-based research and hygiene focused practices (Davenport, 1980; Kennard, 1977). Gender segregation was common in American PE classes regardless of the age of the students, and different activities were often designated for male classes versus female classes

(Davenport, 1980). This remained the case until legislation required equity for female students in sports participation (Overview of Title IX, 2015).

Physical Education and Wellness in the College Setting

Physical Education (PE) courses have been part of the collegiate setting since the early days of American college establishment (Cardinal, Sorensen, & Cardinal, 2012). Male students participated in activities through sports engagement, as well as calisthenics and gymnastics. Female students also had opportunities to engage in PE courses in college, but the offerings were originally focused on body weight and postural muscles, as sports were considered to be too masculine (Park, 2007a). Over time, women were offered more opportunities to participate in collegiate sports (Overview of Title IX, 2015), independent of specific PE courses.

Although health and wellness education courses were considered requisite for many decades, the number of colleges requiring PE participation has dwindled over the years, going from over 96% of colleges in the 1920's to less than 40% as of 2012 (Cardinal, Sorensen, & Cardinal, 2012). For colleges where PE is requisite, these courses are often focused on general health and wellness, while others include nutrition as part of the health education initiative. Although many colleges have removed the requirement for PE classes, most continue to offer PE courses as elective options for students (Physical Education, 2016). These courses range from generalized health, to more specific courses that focus on a specific sport or activity (Taxonomy, 2019). Varsity and intramural sports are other options for students seeking an opportunity to compete in a collegiate setting, though qualification for these teams is often limited to more elite athletes (NCAA Research, 2019).

Benefits of Physical Activity & Related College Courses

The physical, psychosocial, and academic benefits of physical activity have been widely documented in research (Biddle, 2016; Janssen & LeBlanc, 2010). Although less research has been conducted specifically on PE, there is evidence to suggest that participation in PE may also improve physical health, mental health, and academic performance (Mears, 2008; Melton, Hansen, & Gross, 2010), ranging from early childhood education to college students. Research in this area include a variety of methods and study designs: self-reported metrics, surveys, and comparison of test groups and control groups, among others. This review of the literature evaluates the research related to the academic and psychosocial benefits, in addition to the more generalized physical benefits of both overall physical activity and physical education.

Physical Activity

The quantity of research showing the benefits of physical activity as it relates to human biology, cardiovascular health, respiratory function, and muscular and skeletal health is vast. Cardiovascular exercise is positively correlated to increased cardiac output (Lee & Oh, 2016; Romero, Minson, & Halliwill, 1985), improved resting heart rates (Nealen, 2016), increased oxygen uptake (Carrick-Ranson et al., 2014), and reduced body weight (Slentz, Duscha, & Johnson, 2004). Resistance training, also known as strength or weight training, is positively associated with increased bone density (Almstedt, Canepa, Ramirez, & Shoepe, 2011), increased muscular fitness (Assunção et al., 2016), and reduced body fat (Sigal et al., 2014).

An abundance of research has shown that physical activity can reduce the risk of chronic disease. . The risk for heart disease is mitigated through exercise and proper nutrition (Houston, Minich, Sinatra, Kahn, & Guarneri, 2018), as is the risk for Type II Diabetes Mellitus

(Abrignani, 2018). Osteoporosis and osteopenia can be mitigated through resistance training (Pasqualini et al., 2019), as can sarcopenia (Hamaguchi et al., 2017). Circulatory dysfunction such as Chronic Venous Insufficiency (CVI) (Padberg et al., 2004) and Peripheral Artery Disease (PAD) (Manfredini et al., 2019) can be improved, and possibly prevented, with proper types and levels of physical activity.

Physical Education

One of the frequently observed changes during early collegiate transition is a decline in physical activity (Bray, 2007; Bray & Born, 2004), despite the fact that it is considered general common knowledge that physical activity and exercise have health benefits. Weight gain in college has become expected, to the point where it has its own terminology – the "Freshman 15" (Smith-Jackson, & Reel, 2012). Although the naming convention is somewhat deceiving, as most students do not gain fifteen pounds during their Freshman year, research has shown that up to 75% of college freshman do experience a weight gain between four and ten pounds (Graham & Jones, 2002; Mihalopoulos, Auinger, & Klein, 2008). In fact, a prior study that surveyed incoming college students on their intentions to enroll in PE courses or recreational sports in college found that weight loss or maintenance was one of the most common responses by students who intended to participate in these activities (Lackman, Smith, & McNeill, 2015). Additionally, prior research reports that greater cardiovascular fitness was observed in young adults who were from K12 schools that required a greater number of PE credits compared to schools without these requirements (Mears, 2008).

Mental Benefits

Academic Benefits

The academic benefits of PE have been widely studied in the United States, though the studies are predominately in the K-12 space. The Centers for Disease Control (2010) reported that out of 50 studies within U.S. schools, over 50% showed that physical education and activity had a positive correlation with cognitive skills and attitudes. They also reported that from those same studies, there were only negative correlations in 1.5% of the populations studied. Although this report is aggregate in nature, similar research results can be found consistently throughout domestic and international academic journals.

Though widely studied in K-12 schools and classrooms, few studies have examined the impact of physical education on academic outcomes for college students. There has been some research in the college setting regarding the impact of physical activity and education on behaviors that are highly correlated with academic outcomes such as motivation, self-efficacy, working memory, and body weight. Felez-Nobrega, Hillman, Cirera, and Puig-Ribera (2017) studied the effects of physical activity on working memory in a large undergraduate population and found that students with higher activity levels performed better in working memory testing as compared to their more sedentary counterparts. Although this was not directly linked to academic achievement in college, it shows a positive correlation between physical activity and cognitive behaviors.

Similarly, Calestine, Bopp, Bopp, and Papalia (2017) studied the relationship between work habits and physical fitness and activity levels. This study found that students efforts in academically sound behaviors like studying and time management was correlated with positive

physical health behaviors. Like the previous study, this was not a direct study of academic achievement, but still demonstrated a positive relationship between physical activity and habits that are shown to yield positive academic outcomes.

Psychosocial Benefits

The transition from high school to college can bring about a number of potential life changes. These changes may include living arrangements, employment, financial standing, geographical changes, and more. Research has indicated this transitional time, combined with the pressures of collegiate responsibilities, may lead to mental health impacts such as depression (Marcotte, Diallo, & Paré, 2018), anxiety (Auerbach et al., 2018), disordered eating (Barrack, West, Christopher, & Pham-Vera, 2019), and poor sleep patterns (Becker et al., 2018).

In order to aid students facing these mental health issues, many colleges have free counseling services available like those at the University of Central Florida (2019) or can provide referrals to low or no-cost support. However, in recent years there has been an expanding body of research that focuses on the mental health benefits related to physical activity and exercise. This growing area of research strongly supports physical activity as a factor in mental health treatment for the most common mental health impacts experienced during the college years (Fried, Karmali, Irwin, & Salmoni, 2018; Hegberg & Tone, 2015; Melnyk, Kelly, Jacobson, Arcoleo, & Shaibi, 2014).

The use of physical activity and exercise has also been examined in other areas of psychological well-being for students. Bandura's Social Cognitive Theory (1977, 1997) and specifically self-efficacy, have been heavily researched and measured in physical fitness settings

since being published in the 1970's. Bandura's earlier published work was more focused on generalized findings about behavioral expectations and outcomes (1977), but he later applied his research specifically to exercise and its related aspects (1997, 2004). Countless studies in this field have used Bandura's theories as a basis, leading to additional research into both exercise initiation (DuCharme & Brawley, 1995; Lee, Avis, & Arthur, 2007), as well as adherence behaviors (Schwarzer, Luszczynska, Ziegelmann, Scholz, & Lippke, 2008; Murru & Ginis, 2010) demonstrating that self-efficacy is highly correlated to exercise and health activities.

Social Cognitive Theory

The Social Cognitive Theory (SCT), as developed by Bandura (1977), created a perspective into how individuals view themselves and their abilities using their own experiences as well as the experiences of those around them. This theory was originally introduced by Bandura in the 1960's as the Social Learning Theory and was later revised and renamed as the SCT (1991). Essentially, this theory incorporates internal behavioral and cognitive factors while also providing for external influences such as social influences and observations. The SCT is often referred to as a bridge between previous theories like behaviorism and models that focus more on cognitive processes (McLeod, 2016).

Bandura (1991) has described SCT by evaluating how a person makes decisions through thought, planning, inventory of existing knowledge, and self-belief. When further revising and expanding on SCT, Bandura (2001) described three areas of human agency that play a key role in the theory: intentionality, forethought, and self-reactiveness. These agency elements were used to describe how an individual may plan and set goals, as well as the motivation and self-regulation needed to meet those goals.

Self-Efficacy

Self-efficacy is a key element of the Social Cognitive Theory (SCT). Bandura (1977) describes self-efficacy as being related to goal attainment, as it is the belief an individual has in their own ability to execute the actions or behaviors necessary to reach said goal. An individual may believe that a certain goal or outcome is possible, but if they doubt their own ability to reach it the outcome may be affected. Self-efficacy is specific to beliefs about one's actions or abilities, as opposed to self-confidence which is considered to be more general in nature and not focused on particular traits or elements (Coleman, 2015), though the two are considered to be related.

Bandura (2006) developed scales to evaluate self-efficacy in a number of different populations such as children, parents, and teachers. The scales created evaluated specific areas of ability ranging from driving a vehicle to academic subject matter self-efficacy. One of the more heavily studied areas as it relates to self-efficacy is that of exercise intention and ability (Lox, Martin Ginis, Gainforth, & Petruzzello, 2019). Exercise self-efficacy has been studied in numerous populations in both generalized research as well as more niche studies in smaller clinical populations.

A review of the literature focused on exercise self-efficacy revealed studies focused on those as young as elementary school all the way to elderly individuals. For the purposes of this study, literature focused on student populations was reviewed. Though this research was focused on the community college population and Physical Education (PE), studies in all student populations and among varying types of physical activity elements were reviewed to inform the study.

Self-Efficacy and Physical Activity

In a middle school study done by Gao, Xiang, Lochbaum, and Guan (2013) the impact of self-efficacy was measured in relation to cardiorespiratory exercise. This prospective study issued questionnaires to middle school students related to their achievement goals and self-efficacy, and then had the students perform the PACER test, a standard cardiorespiratory test administered to students in various PE courses. As the students had all performed the PACER test previously, the self-efficacy questionnaire was geared toward their belief in specific performance on that test. This study found that self-efficacy beliefs were positively correlated with PACER performance testing.

In college settings, research studies have examined some areas that are more unique to the collegiate population. One such study evaluated the relationship between exercise self-efficacy and identity related to physical activity levels during stressful times (Strachan, Perras, Brawley, & Spink, 2016). In this study, students were given questionnaires that contained measures focused on exercise self-efficacy, exercise identity, and physical activity that was focused specifically on the time period during student exams. In this study it was revealed that there was a relationship between exercise activity during examination periods and their levels of self-efficacy and exercise identity.

In more general studies focusing on physical activity levels in college populations, it has often been found that there is a relationship between self-efficacy levels and activity levels. Farren, Zhang, Martin, and Thomas (2017) found that exercise self-efficacy was related to whether or not students met minimum guidelines for physical activity levels in a study of over 400 male and female college students from a large four-year American university. An earlier

study of over 300 male and female college students in the United States showed that self-efficacy was a significant predictor of physical activity levels. In a smaller regional study in Louisiana, Brannagan (2011) evaluated self-efficacy and physical activity levels specific to college freshmen. In this study, it was found that exercise self-efficacy and perceived exertion levels were related to the student's ability to adhere to an exercise program.

Self-Efficacy and Physical Education

Self-efficacy is considered to be one of the strongest determinants of physical activity behaviors (Lox, Martin Ginis, Gainforth, & Petruzzello, 2019). As such, research related to exercise, physical activity, PE, and other activity-based elements have drawn on Bandura's (1977) SCT theory. Ferkel et al. (2019) assert that PE course curriculum should be designed with the intent to increase exercise self-efficacy in students and to encourage positive health behaviors as those students mature. This idea is further supported by research that has shown self-efficacy plays a role in leisure-time activity beyond the PE classroom as well (Ennis, 2017). Exercise-related self-efficacy has been shown to be one of the most consistent predictors of exercise participation. This has been seen in studies examining exercise self-efficacy and how it relates to body image, health benefits, and aerobic fitness.

In one such study, Lodewyk and Sullivan (2016) evaluated how Physical Education (PE) was related to factors such as self-efficacy, gender, and body image in high school students. This study found that students with a better view of their body image had higher self-efficacy as compared to students with body image dissatisfaction. The study also found that female PE students reported statistically lower self-efficacy scores when compared to their male

counterparts. Overall, the study found a relationship between self-efficacy beliefs and overall fitness in the high school PE students that participated in the study.

Decline in PE and Wellness College Course Offerings

It is estimated that less than forty percent of four-year institutions have requisite PE or personal health-related courses currently, down from nearly ninety-seven percent in the 1920's (Cardinal, Sorensen, & Cardinal, 2012). When narrowing that lens to the state of Florida, PE classes are nowhere to be found on the general education core curriculum. The state mandate, revised in 2012 to take effect in 2015-2016 (Florida Department of Education, 2019b), outlines the 30 core curriculum hours required for all state colleges, none of which include PE courses. Colleges are able to decide what courses are offered for the remaining 30 hours of general education curriculum, but most of the Florida community colleges fail to incorporate PE courses in those hours. It is important to note: this review is focusing on the General Education requirements of Florida colleges and not evaluating specific majors and their requirements, as they vary greatly by college and are constantly changing. Physical Education requirements for specific degrees may be entirely different and are not being evaluated for the purposes of this review. Exercise self-efficacy was also found to be correlated to exercise enjoyment in a small study of college women (Hu, Motl, McAuley, & Konopack, 2007).

Elective Course Selection

The question as to why students choose particular electives is another relevant research area related to this study. Unfortunately, this topic has only been studied in limited settings. Based on the research that has been conducted, some of the factors that may contribute to these

decisions are perceived difficulty of the course, skills relating to employment, and interest in the material (Ting & Choi Lee, 2012). Students may also evaluate elective options based on the workload and how it balances with their requisite courses (Daly & Last, 2017). A more recent development that may influence student elective choices are websites that provide ratings and reviews of the professors and instructors that teach the courses (Hayes & Prus, 2014; Scherr, Müller, & Fast, 2013).

The study by Daly and Last (2017) found that students enrolled in a medical major were more likely to choose electives that were related to their overall program major based on a retrospective historical analysis of program data at a large European university. The researchers in this study also found that students were likely to consider the perceived difficulty of an elective in an effort to manage their workload. The findings related to course difficulty were consistent with research by Ting and Choi Lee (2012). In this study it was discovered that perceived difficulty was the primary driving factor behind elective enrollment decisions for students in Malaysian universities.

At the community college level, elective research has been more focused on the shift to online modalities and associated risks with that delivery method. One such study was completed at a large community college in New York (Wladis, Wladis, & Hachey, 2014). This study was focused on withdrawal and failure of online courses, but one of the study elements was focused on reason for elective selection. Students in this study were most likely to take electives as a result of requirements for their major or distributional electives.

Summary

The existing research literature is not completely devoid of material that is suitable when studying this population, however there are some obvious gaps pertaining to physical education electives for community college students. The research into physical benefits of PE is well-documented, but the studies focused on academic and cognitive benefits are limited to the K-12 population or are smaller studies that are not generalizable to the wider community college population. Self-efficacy for exercise has been researched using Bandura's (1977, 1994, 2006) theories, but has not been focused on students in community college PE courses.

CHAPTER THREE: METHODOLOGY

Introduction

This mixed-methods study consisted of a) a retrospective analysis of existing quantitative data and b) a cross-sectional design administered to current students in the form of a survey, which included open-ended response options. The study sought to identify how participation in PE was associated with student success outcomes (retrospective data), and factors related to PE enrollment (cross-sectional survey). All of the following procedures were approved by the University of Central Florida Institutional Review Board (IRB), as well as the review board at the community college where the study was conducted (see Appendix A). The following sections describe the retrospective design and the cross-sectional survey process.

Retrospective Design

Description of Data Source (Research Questions 1 & 2)

Data on student academic records was requested from a large community college in Central Florida . The data request regarding student success and participation in Physical Education courses had a minimum enrollment criterion of six credit hours in the Fall/Spring, or three credit hours in the Summer in two or more semesters over the last three years. The three-year timeframe was selected based upon the observed decline in enrollment in Physical Education courses over that time period as noted in enrollment records gathered from the Physical Education Department at the main campus at this college. The specific data points requested can be found in Table 1. These variables were selected based on common themes in the prior literature as they relate to age, gender, and race/ethnicity (Egli, Bland, Melton, & Czech, 2011)

and based on other factors such as socioeconomics which have been shown to be correlated to physical activity (Bradshaw, Kent, Henderson, & Setar, 2017; Fradkin et al., 2015). The data request yielded over 80,000 records, which is considered sufficient for correlational research (Fraenkel & Wallen, 2006). As the data records captured the past three academic years, a retrospective analysis of the data was selected as an appropriate treatment. As a random clinical treatment did not present itself as a feasible framework for this study, efforts were made to reduce the risk of confounding data. As such, the methods used propensity score matching on PE and non-PE student data using Austin's (2008) modeling.

Table 1

Retrospective Data Points

Data	Type
GPA	Numerical
Course completion	Categorical
Graduation	Categorical
Enrollment hours	Numerical
Time to completion	Numerical
Retention	Numerical
Financial aid status	Categorical
Age	Numerical
Declared major	Categorical
Transfer status	Categorical
Gender	Categorical
Race/Ethnicity	Categorical
Start Term	Categorical

Note: Course completion data also included courses that were not completed, such as incompletes and withdrawals.

The original sample was comprised of 87,399 student records. The data set was reduced by 1,517 records due to missing data, leaving a total of 85,882 total records. Within the remaining data, it was discovered that 1,629 students had taken one or more PE courses, while the remaining 84,253 had no PE course completion on file. Students that had taken a PE course were Propensity-Score (PS) matched with students who had not using age, race/ethnicity, gender, and number of attempted courses as match variables in SAS 9.4. The PS matching process was successful, with a logit of propensity score of < 0.002. The PS model SAS output results can be found in Appendix B.

Independent Variables

The dataset was provided by the college via an Excel file containing 87,399 records. The data provided for evaluation of the first and second research aims were provided as variables within the dataset. Gender data was provided categorically with three options: male, female, or unknown. Race data was also categorical and included options for African American, Caucasian, Hispanic, or Other. Data that indicated whether a student had participated in a PE course was provided as a dichotomous yes/no answer for each of the semesters requested. The data also contained student data to help inform the study such as the term in which the student began (categorical) and the total number of courses attempted (numerical). Pell grant status was provided as a yes/no answer.

Dependent Variables

The metrics for GPA were cumulative as of the date the data was pulled and were numerical on a traditional grading scale of 0.0 to 4.0, with the data rounded to the nearest

hundredth. Course data requested included successful completions, withdrawals, and incompletes, all of which were provided in whole numbers. Graduation data were dichotomous yes/no fields. Retention was calculated as the total number of terms retained during the three-year period being examined and as such was in whole-number format.

Procedures

Upon receipt of the historical data, records missing key variables (academic outcomes, PE completion) were removed. Possible confounding factors regarding the association between PE courses and academic success measures were identified based on previous literature. The possible confounding factors were identified as race/ethnicity, age, Pell grant status as it relates to socioeconomic status, gender, and the term in which the student started at the college (Bauman, Sallis, Dzewaltowski, & Owen, 2002; Egli, Bland, Melton, & Czech, 2011; McPherson, Mackay, Kunkel, & Duncan, 2018; O'Donoghue et al., 2018; Wilson-Frederick et al., 2014).

The PS matching process also included a step to match students based on the number of courses attempted, to avoid comparisons of new students versus that of well-established students. Historical records were matched using calipers of width equal to 0.25, a standard width used in research and accepted as a standardized statistical analysis practice (Ali et al., 2013; Austin, 2011; Austin, 2017).

Research Question 1

Is enrollment in health and wellness courses associated with success outcomes such as GPA, graduation rates, and retention?

Statistical Analysis Procedures

Descriptive statistics were examined to determine distribution of participant characteristics and outcome variables. To evaluate the first research question, regression analyses were performed to determine if a relationship exists between PE course enrollment and student success factors. To evaluate the second research question, data was matched between students who had, and those who had not, taken a PE class. After controlling for demographic factors, propensity scoring and *t-test* analyses were performed against the same success factors: GPA, attendance, graduation rates, and retention.

Research Question 2

Controlling for demographics, do student success factors such as GPA, graduation rates, and retention, differ between students who have enrolled in PE and those that have not?

Statistical Analysis Procedures

The PS matched data was then used to perform *t-tests* and chi-square measurements to determine if relationships existed between PE course participation and student success measures used at the college. Tests were run to evaluate the number of courses successfully completed, the number of courses withdrawn from, incomplete courses, total number of semesters retained,

Grade Point Average (GPA), and graduation rates. The results of these analyses are discussed in chapter four.

Cross-Sectional Survey Design

Description of Data Source (Research Questions 3 & 4)

The purpose of this cross-sectional survey was to examine exercise self-efficacy among students at the college being studies, as well as to gain insight into enrollment decisions made by those students. To be eligible for the current cross-sectional study, individuals were required to be at least 18 years of age, and currently attending the study college as an undergraduate student. The emails were sent from the researcher to faculty that had agreed to assist in the distribution of the survey. The professors that assisted were in a variety of disciplines including mathematics, social sciences, and communications, and the PE department. All eligible students were required to provide consent prior to participation in the study.

Procedures

Students were sent a request via email to complete a brief survey related to exercise barriers and their experience with health and wellness courses. The link to the survey was also posted in the online course management system for students who were invited via email, as back-up for any lost or deleted emails. Once students provided consent to participate in the study, they were able to access the previously described survey via Qualtrics. Participants were first asked whether or not they had completed a PE course while at their current college. This question had a dichotomous yes or no response. Demographic questions were included at the end of the survey in order to collect information on students' gender, age, race/ethnicity, and intended major.

Research Question 3

Do students who have completed a PE course have higher levels of exercise self-efficacy compared to those who have not completed a PE course?

Measures

Students were asked to complete a brief online survey via Qualtrics intended to gather information about self-efficacy (exercise barriers) and their experience with PE courses. The exercise barriers section was based on Bandura's (2006) Self-Efficacy for Exercise questionnaire attached in Appendix A. Bandura's exercise self-efficacy scale provided 18 situation-based scenarios, where participants then rated their ability to exercise in those given scenarios on a scale of 0 (cannot do at all) to 10 (certainly can do). The internal consistency of the 18-item scale was rated at 0.95, and validity metrics were found to be positively correlated ($r = 0.28$, $p = 0.035$) (Everett, Salamonson, & Davidson, 2009).

Statistical Analysis Procedures

Descriptive Statistics

Descriptive statistics were calculated to examine the characteristics of the sample. Frequencies were run to determine whether the missing data or outliers in the sample existed. Frequencies were also checked to ensure participants met inclusion criteria. If participants were younger than 18, they were removed from the final dataset. The self-efficacy scale in Qualtrics was a scale response option of 0 to 10, so outliers due to data entry error were not possible within this type of survey response. However, frequencies were run for each individual scale item to look for skipped questions on the scale. Any participants who were missing more than 20% of

the items for the exercise self-efficacy scale were removed from the dataset and final analysis (Stanish et al., 2015).

Inferential Statistics

Independent *t-test* analyses were conducted to determine whether students who completed PE courses had greater overall exercise self-efficacy scores compared to students who had not completed a PE course. Inferential statistics also utilized categorization provided by a factor structure analysis of the scale items which separated them into externally influenced and internally influenced questions (Cornick, 2015).

Research Question 4

What factors affect student's decision-making regarding health and wellness course enrollment?

Measures

The open-ended questions in the survey were designed to uncover information related to the participants experience with health and wellness related courses and activities. The questions were not time specific, to allow for participants to provide any experiences they felt relevant, regardless of when it occurred. These questions were drawn from previously tested and verified surveys in educational settings (Pajares & Zeldin, 1999; Palmer, 2006; Zeldin & Pajares, 2000) and only the subject area was modified to fit the scope of this dissertation study. For example, this study asked students to tell a memorable story about their experience in health and wellness classes, whereas the original question asked for a memorable experience in a math class.

These open-ended questions were designed to help the researcher understand more about students' past experiences with PE prior to attending the college, and what motivated them to

choose their electives PE-related or otherwise. Barr-Anderson et al. (2008) found qualitative questions to be an effective complement to quantitative data in PE settings. For students who had not taken a PE course at the college, they were asked what would encourage them to take a course focused on their health and wellness, while students who had taken a PE course at the college were asked to share anything valuable or useful from that experience. A full copy of the survey is located in Appendix A.

Statistical Analysis Procedures

Thematic Analysis

Thematic analysis was selected as the method of evaluation for the open-ended text responses. Thematic analysis is widely used in qualitative data analysis and can be performed with the academic rigor necessary for a well-researched paper (Roberts, Dowell, & Nie, 2019). The open-ended responses were first read in their entirety by the researcher to become familiar with the data. A second read-through of the responses was done on a question-by-question basis which began the thematic analysis. Codes were created for any themes that were present in multiple responses. Upon completion of the second pass and initial coding, a third read-through was completed, and larger themes were then expanded into additional codes for sub-themes. Data was then classified into tables based on these identified trends and patterns.

As a method of ensuring accuracy and reducing bias, a second researcher was engaged to perform an additional thematic analysis. This review was completed by an experienced analyst from a non-education-based industry. The second researcher was provided with the unmarked survey responses and was given the primary theme categories via a codebook (see Appendix C)

as a means to orient them to the industry and material. Once the second researcher had completed their thematic analysis, the coded responses were compared to the original thematic analysis using the Miles and Huberman (1994) inter-rater reliability formula. Calculations were done for each individual code and aggregated for each question. There agreement percentages for each question are detailed in chapter 4.

$$reliability = \frac{number\ of\ agreements}{number\ of\ agreements + disagreements}$$

CHAPTER FOUR: RESULTS

Introduction

A mixed-methods study was conducted to determine factors related to Physical Education (PE) enrollment and student success metrics, as well as elective enrollment decisions at a large community college. The results are presented herein.

Retrospective Study Results

Sample

Of the 87,399 student records in the original dataset, 1,629 students had taken one or more PE courses. After 1,517 records were removed due to missing key variables, a total of 84,253 records of students who had not completed a PE course were then entered into the PS Match procedure in SAS 9.4. These records were successfully matched with the 1,629 students who completed a PE course, with a logit of propensity score of < 0.002. The PS model SAS output results can be found in Appendix B. A post-hoc power analysis was completed using the PS matched GPA mean data and a 35% power was achieved. This low power outcome is likely a result of similar mean GPA results between the two groups and a standard deviation that was larger than the mean difference. This may account for lack of significance in the results as outlined below.

Research Question 1

Is enrollment in health and wellness courses associated with success outcomes such as GPA, graduation rates, and retention?

Upon completion of the PS matching procedure, a linear regression model was applied to evaluate the success factors being assessed in this dissertation study. For cumulative GPA, regression analysis revealed that the total model was significantly associated with cumulative GPA results ($p < .0001$, $r^2 = .18$). The evaluated categories of age, race/ethnicity, gender, and courses attempted were all significant predictors of cumulative GPA ($p < .0001$). Participation in PE courses ($p = 0.35$) and Pell grant status ($p = 0.26$) were found to not be significant predictors of cumulative GPA. The complete GLM model output from SAS can be found in Appendix B.

Research Question 2

Controlling for demographics, do student success factors such as GPA, graduation rates, and retention, differ between students who have enrolled in PE and those that have not?

Statistical significance was found as it related to the differences between the two groups for successfully completed courses and withdrawals. The *t-test* showed that students who had completed a PE course had a higher number of successfully completed courses ($p < .0001$). Students who had completed a PE course also had a higher number of withdrawals than their non-PE counterparts ($p < .0001$).

There were no statistically significant differences identified between the groups when looking at the number of incompletes on a student record with PE and non-PE groups ($p = .26$). The *t-test* evaluation of cumulative GPA between the two groups also found no statistical

significance in the GPA of PE students versus that of non-PE students (p = .39). Retention differences, measured in total number of semesters a student was retained, also showed no statistical significance in the differences between the two groups (p = .91).

The graduation data was provided to the researcher in a nominal format (e.g. yes or no), so a chi-square analysis was used to evaluate whether a relationship existed between PE participation and graduation. There was no statistically significant difference found between graduation rates of the PE students versus those of the non-PE students, X^2 (1, N = 3258) = 3.32, p = .068. A summary of all student success metrics as found in the PS Matched data can be found in Table 2.

Table 2

Historical Student Success Factors - Summary

Metric	PE Completers			Non-PE Completers			Comparison
	M	*SD*	*%*	*M*	*SD*	*%*	*p*
Completion	11.12	6.07		10.17	6.5		< .01
Incompletes	0.001	0.035		0.003	0.055		0.26
Withdrawals	1.35	1.71		1.13	1.52		< .01
Retention	3.75	2.15		3.74	2.3		0.91
GPA	2.8	0.7		2.78	0.8		0.39
Graduated			50.95%			47.76%	0.068

Cross-Sectional Survey

Sample

Approximately 203 students completed the survey. Of the 203 responses, 11 students did not meet the minimum age criteria, and 15 students did not answer questions beyond the initial PE participation question, leaving a sample of 177 participants for the final analysis.

The response was largely female, with 115 (64.9%) of the respondents identifying as such. The male respondents totaled 39 (22.0%), and the remaining 23 (13%) were listed as other or were left blank. The students also answered questions about their intended majors, which included answers such as: fine arts, health/medical, education, psychology, general studies, and undecided. Students responding to the survey ranged from the ages of 18 to 49 (mean age = 23.0

± 6.0 years), with 58% of the responses falling into the 18-25 age range. The question was left blank by 26.6% of the respondents.

The respondents provided information about their race/ethnicity, with 10 respondents being African American (5.65%), 6 Asian (3.34%), 2 Native American (1.13%), 1 Hawaiian (0.6%), and 52 Caucasian (29.34%). The largest group of respondents were in the Hispanic category with a total of 72 surveys (40.68%). There were 10 students that selected multi-race as their ethnicity (5.65%), and the remaining 24 (13.56%) respondents preferred not to answer or left the question blank. These figures are all in close alignment with the overall ethnic characteristics of the college being studied, providing a good sampling base across the ethnic groups that attend the college.

Out of the 177 students, 52 (29.4%) respondents reported having completed a PE course. The characteristics for the entire sample are in Table 3 and is broken down by participation in a PE course.

Table 3

Participant demographic characteristics (*n*=177)

PE Participant Characteristics (*n*=52)	*N*	*%*	*M*	*SD*
Gender				
Male	11	21.2%		
Female	32	61.5%		
Other/Blank	9	17.3%		
Race/Ethnicity				
African American	3	5.8%		
Asian	1	1.9%		
Caucasian	16	30.8%		
Hawaiian	0	0.0%		
Hispanic	21	40.4%		
Native American	1	1.9%		
Multi-Race	2	3.8%		
Other/Unknown	8	15.4%		
Age (y)			23	5.90

Non- PE Participant Characteristics (*n*=125)	*N*	*%*	*M*	*SD*
Gender				
Male	28	22.4%		
Female	84	67.2%		
Other/Blank	13	10.4%		
Race/Ethnicity				
African American	7	5.6%		
Asian	5	4.0%		
Caucasian	36	28.8%		
Hawaiian	1	0.8%		
Hispanic	52	41.6%		
Native American	1	0.8%		
Multi-Race	8	6.4%		
Other/Unknown	15	12.0%		
Age (y)			23	6.03

Research Question 3

Do students who have completed a PE course have higher levels of exercise self-efficacy compared to those who have not completed a PE course?

A chi-square analysis revealed no significant difference between males (7.1%) and females (20.1%) as it related to PE course elective enrollment at the community college, X^2 (1, N = 154) = .029, p = .88. There were 23 (13%) surveys missing gender data that were not included in this portion of the analysis.

There were no significant differences between the self-efficacy scores in students who had completed PE electives and their counterparts who had not completed a PE elective at the community college. The cumulative averages showed that PE students had a slightly higher self-efficacy score of 5.30 (*SD* = 2.09), whereas their non-PE counterparts had a mean score of 5.00 (*SD* = 2.27). These values were not statistically significant (p = .41). A post-hoc power analysis was completed using the overall exercise self-efficacy mean data and resulted in a power of 13.3%. This low power rating was somewhat expected based on the small PE completer sample group and may indicate that there was not enough power to detect statistically significant differences. The highest individual measure of self-efficacy was reported in the item related to exercising without support from family and/or friends. The group that had completed a PE course had a mean score of 6.77 (*SD* = 2.85) and the non-PE group had a mean score of 6.34 (*SD* = 3.27). The item with the lowest self-efficacy rating for the group that had completed a PE course was related to exercising during a vacation (*M* = 4.23, *SD* = 3.29). The lowest self-efficacy rating in the non-PE group focused on exercising after injury recovery (*M* = 3.86, *SD* =

2.83). The results in Table 4 indicate the results for each of the 18 self-efficacy statements by PE course participation utilizing *t-tests* for each scale item.

Table 4

Comparisons of exercise self-efficacy of students who have completed a PE course against their counterparts that had not completed a PE course

Have completed PE		Have not completed PE		Comparison
M	*SD*	*M*	*SD*	*p*
When I am feeling tired				
4.98	2.55	4.50	2.52	0.25
When I am feeling under pressure from work				
5.41	2.70	5.08	3.06	0.49
During bad weather				
6.49	2.83	6.15	3.07	0.49
After recovering from an injury that caused me to stop exercising				
4.08	2.46	3.86	2.83	0.62
During or after experiencing personal problems				
6.19	3.06	5.71	3.19	0.36
When I am feeling depressed				
4.89	3.64	4.81	3.48	0.89
When I am feeling anxious				
5.15	3.03	5.53	3.38	0.48
After recovering from an illness that caused me to stop exercising				
4.68	2.48	4.54	3.16	0.77
When I feel physical discomfort when I exercise				
4.90	2.72	4.47	2.91	0.36
After a vacation				
6.37	2.62	6.11	3.06	0.60
When I have too much work to do at home				
4.40	2.97	4.01	3.22	0.45
When visitors are present				
4.58	2.92	4.38	3.21	0.71
When there are other interesting things to do				
5.54	2.60	5.01	2.98	0.27
If I don't reach my exercise goals				
6.56	2.82	6.28	2.82	0.56
Without support from my family or friends				
6.77	2.85	6.34	3.27	0.42
During a vacation				
4.23	3.29	4.18	3.49	0.93
When I have other time commitments				
4.54	3.04	3.89	3.01	0.19
After experiencing family problems				
5.71	2.73	5.22	3.26	0.34

Self-efficacy differences were further analyzed using gender as a basis of comparison. The survey data was again evaluated using *t-tests*, but with gender as the independent variable. The same 18 self-efficacy situations were reviewed and statistically significant differences between males and females were identified in 9 of the 18 situations. In all 18 situations, the mean self-efficacy scores for females were lower than the mean scores for male students. The specific results for the gender self-efficacy *t-tests* can be found in Table 5.

Table 5

Comparisons of exercise self-efficacy of community college students by gender

Female		Male		Comparison
M	*SD*	*M*	*SD*	*p*
When I am feeling tired				
4.47	2.61	5.46	2.44	0.04*
When I am feeling under pressure from work				
5.04	3.08	6.13	2.94	0.05
During bad weather				
6.02	3.07	6.97	2.86	0.09
After recovering from an injury that caused me to stop exercising				
3.52	2.61	5.05	3.13	0.03*
During or after experiencing personal problems				
5.74	3.29	6.59	2.84	0.15
When I am feeling depressed				
4.74	3.65	5.87	3.35	0.09
When I am feeling anxious				
5.05	3.41	6.95	2.69	0.00*
After recovering from an illness that caused me to stop exercising				
4.22	3.09	5.46	2.95	0.03*
When I feel physical discomfort when I exercise				
4.46	2.88	4.90	3.12	0.42
After a vacation				
6.10	3.02	7.10	2.87	0.07
When I have too much work to do at home				
4.05	3.15	4.85	3.38	0.18
When visitors are present				
4.26	3.14	5.36	3.10	0.06
When there are other interesting things to do				
5.01	2.94	6.31	2.66	0.02*
If I don't reach my exercise goals				
6.32	2.50	7.10	2.50	0.13
Without support from my family or friends				
6.23	3.26	7.59	2.78	0.03*
During a vacation				
3.92	3.38	5.54	3.82	0.00*
When I have other time commitments				
3.91	2.98	5.10	3.41	0.04*
After experiencing family problems				
5.18	3.08	6.36	3.25	0.04*

Note: * represents statistical significance where $p < .05$

The *t-test* analysis revealed that male students had a higher self-efficacy score when compared to their female counterparts where it related to exercising when tired ($p = .04$), after recovery from an injury that had previously hindered exercise ($p = .03$), and after recovering from an illness ($p = .03$). Males also reported significantly higher scores than females in exercising without support from family and/or friends ($p = .03$), when choosing between exercise and other interesting things ($p = .02$), when faced with other time commitments ($p = .04$), and after experiencing family problems ($p = .044$). Males were also more likely to exercise during a vacation ($p = .01$), or when feeling anxious ($p < .01$).

Female respondents indicated the highest levels of self-efficacy in response to not meeting their exercise goals ($M = 6.32$, $SD = 2.5$), while males reported the highest levels of self-efficacy when exercising without support from their family and/or friends ($M = 7.59$, $SD = 2.78$). Females reported their lowest levels of self-efficacy after recovering from an injury that caused them to stop exercising ($M = 3.52$, $SD = 2.61$), whereas male respondents had their lowest self-efficacy when faced with too much work to do at home ($M = 4.85$, $SD = 3.38$).

The statistically significant differences between male and female students fell into both the external influence and emotional influence-based questions as defined by a factor structure of the exercise self-efficacy questionnaire (Cornick, 2015). Male students were significantly higher than female students in six of the nine external influence-based items: when feeling tired ($p = .04$), after an injury ($p = .03$), after an illness ($p = .03$), when faced with other interesting things to do instead of exercise ($p = .02$), when faced with other time commitments ($p = .04$), and during a vacation ($p < .01$). Male students also had significantly higher self-efficacy scores in three of the six emotionally influenced scale items: when feeling anxious ($p < .01$), after

experiencing family problems (p = .04), and without support from family and/or friends (*p* = .03).

Research Question 4

What factors affect student's decision-making regarding health and wellness course enrollment?

The first question to have the thematic analysis performed was: *Tell me one memorable story that would help me understand your experience with health and wellness activities or classes prior to coming to [deidentified college] (Pajares & Zeldin, 1999).*

There were a total of 120 responses to this question, with 88 (73.3%) being from students who had not completed a PE course at the community college, and 32 (26.7%) of them being from students who had. There were common themes among both groups, though the frequency of those themes varied. The most common themes were participation in sports, past illness or injury, bodyweight issues, self-confidence, and motivation. The presence of language related to emotions, both positive and negative, were also major themes among both groups. Inter-rater reliability was assessed per item and for the overall response, with a total reliability score of 91.4% between the two coders. A complete list of analyzed themes and their respective responses can be found in Table 6.

Table 6

Responses to Q1: "Tell me one memorable story that would help me understand your experience with health and wellness activities or classes."

Primary Themes	PE completers (*n*=32)	PE non-completers (*n*=88)	*p*
Prior Sports Participation	3 (9.4%)	20 (22.7%)	0.10
Injury or Illness	5 (15.6%)	11 (12.5%)	0.66
Bodyweight Issues	4 (12.5)	10 (11.4%)	0.87
Self-Confidence	3 (9.4%)	5 (5.7%)	0.47
Motivation	4 (12.5%)	7 (8.0%)	0.45
Clubs	0 (0%)	3 (3.4%)	0.29
Parental Influence	1 (3.1%)	5 (5.7%)	0.57
General Knowledge	5 (15.6%)	12 (13.6)	0.78
Military	1 (3.1%)	3 (3.4%)	0.94
Positive Experience/Emotion	14 (43.7%)	17 (19.3%)	<.01*
Negative Experience/Emotion	4 (12.5%)	29 (33.0%)	.03*

Note: * denotes statistical significance

The students who had not completed a PE course at the community college referenced previous participation in sports in nearly 23% of the responses. Only 9.4% of the students who had taken a PE class at the college mentioned previous sports experience in their responses. The groups aligned more closely when referencing bodyweight in their replies with 11.4% of non-PE students mentioning it, and 12.5% of PE students doing the same. In relation to weight, both groups had responses that discussed having previously been overweight and efforts to lose that weight, though the group that had taken a PE course used more positive language to describe these instances:

"When I was younger, I was plump so as I got older, I got more interested in exercise and I remember when I first started working out it was a rush." (Female, 20 years old, PE course completed).

"My goal has always been to gain healthy wait (sic) and tone my lower body. I started going to the gym recently and saw improvement not only with my weight but in my muscle and I was so happy when I finally got to the results I wanted." (Female PE student, health sciences major, age not provided).

Similarly, the comparison of responses related to injury and/or illness were comparable in the response percentages with 12.5% of non-PE students and 15.6% of PE students referencing a previous injury or illness. However, the responses from the non-PE group often discussed serious injuries that led to the end of sports seasons, or activity altogether:

"...eventually I got Achilles Tendonitis. It took months to heal and it was already too late for me to return to run again, so I just stopped running." (Female, 18 years old, non-PE student).

An 18-year old male student shared a specific experience related to a previous injury that gives insight into why he has not taken a PE course at the community college: *"We were playing basketball and I tore my ACL when I collided with another player."*

A 20-year old female student who had not completed a PE course at the community college shared a similar story: *"At a young age I've torn my meniscus during basketball, afterwords (sic) I didn't like to play basketball anymore even though after I made varsity."*

The biggest contrast in responses came from the analysis of emotionally charged language. The responses were categorized into positive or negative categories based on the

language used by the students. The language was coded using terminology identified in previous psychology research (Fredrickson, 1998; 2001; An, Ji, Marks, & Zhang, 2017). Of the students who had not completed a PE course at the community college, 19.3% of the responses used positive language to describe emotions or experiences, while 33.0% used negative language to describe emotions or experiences. In contrast, 43.8% of students who had completed a PE course at the community college used positive language to describe emotions or experiences while only 12.5% used negative language to do so.

The negative emotions and experiences from the non-PE group were often self-deprecating with students calling themselves "lazy" or "slacking off." In other cases, students named specific activities that they did not like, with one student calling running "literally the worst." Students also referenced negative situations that have hindered their efforts regarding their own health, such as not having the money or a car to get to a gym. There were other students that shared stories with more detail:

"I remember one year before coming to (community college) I exercised so much that I would go hours without drinking water. I passed out that following workout." (Female, non-PE student, age unknown).

"The only reason I go to the gym now is not necessarily for my wellness but because I have really bad body dysmorphia and do not feel womanly or feminine enough." (Female, 19 years old, non-PE student).

"I was required to take a physical education course at my high school and did not enjoy it. The exercises that were completed were tiresome and boring and not at all in any way making

me feel better about myself, but instead made me feel worse." (Female, 18 years old, non-PE student).

The negative responses from the PE group were often directed at high school PE courses and/or curriculum:

A 20-year old female PE student shared: *"The only class I took before coming to (community college) which related to wellness and health was HOPE, but it wasn't a very great class and I took it online."*

The last time I took a Physical education class in high school, the final semester and I didn't participate at all." (Female, 20 years old, PE student).

"I was required to take P.E. so I did. I didn't completely enjoy it because of the diversity in fitness levels between students." (Male, 21 years old, PE student).

The PE group responses related to positive experiences and emotions often focused on their specific course outcomes from high school and college PE classes:

"I enjoyed doing different classes that helped me exercise while having fun..." (Female, 19 years old, PE student).

"I took aerobics in high school and it was a lot of fun I enjoyed working out and having a set time for it." (Female, 19 years old, PE student).

A 21-year old female business student that had taken a PE class shared: *"I absolutely love feeling active. I have more energy and feel unstoppable which is why I recently decided to take my future back into my own hands."*

"My yoga professor is amazing has truly helped my body heal from surgery and has made going back to school a possibility and an amazing experience." (Female, 22 years old, PE student).

The second question analyzed was a more generalized question related to electives: *What experiences contributed to your decisions to enroll in your electives (Physical Education or otherwise)? (Zeldin & Pajares, 2000).*

There were a total of 122 responses to this question, with 89 (73%) reporting they had not completed a PE course at the community college and 33 (27%) reporting they had completed a PE course at the college. The themes were again common among the groups, though the proportions of those response were not always aligned. Students cited personal interest and enjoyment, desire for learning new skills, self-improvement, and their career and/or degree path as common points of influence in their elective selection. Inter-rater reliability for this question was at 87%. A complete list of analyzed themes and their respective responses can be found in Table 7.

Table 7

Responses to Q2: "What experiences contributed to your decisions to enroll in your electives (Physical Education or otherwise)?"

Primary Themes	PE completers (*n*=33)	PE non-completers (*n*=89)	*p*
Self-Improvement	17 (51.5%)	19 (21.3%)	< .01*
Career Path/Requirement	3 (9.1%)	26 (29.2%)	.02*
Personal Interest/Enjoyment	5 (15.2%)	22 (24.7%)	0.26
Interest in Skill	7 (21.2%)	11 (12.4%)	0.23
GPA Influence	3 (9.1%)	3 (3.4)	0.20
Self Confidence	0 (0%)	4 (4.5%)	0.22
Parental Influence	1 (3.0%)	2 (2.2%)	0.80

Note: * denotes statistical significance

For students who had not completed a PE course at the community college, they reported career path or degree requirement as their most influential factor in choosing electives, with 29.2% of the respondents giving this as a factor. The second-most common factor was personal interest/enjoyment in a subject, at 24.7% of the responses. Finally, self-improvement was answered by 21.3% of the non-PE group as a deciding factor when choosing electives.

Although many of the same themes were present with the PE group, self-improvement accounted for more than half the responses (51.5%). The desire for learning new skills was the second-most deciding factor (21.2%), and personal interest/enjoyment was a distant third (15.2%). While career path or degree requirements were the heaviest influencers in the non-PE group, it accounted for only 9.1% of the response from the PE group.

Students in the non-PE group had a wide variety of intended majors, and shared some of the following about their career paths:

"I wanted to help and education [sic] others in a time of being vulnerable whether its physically or mentally. That's why I decided to major in Health Sciences and pursue a career in Physical Therapy." (Female, non-PE student).

"Any other class I take is based on, 'will it help me in my nursing program...'" (Female, 30 years old, non-PE student).

A 21-year old non-PE female student offered: *"I want to graduate as soon as possible, that's why I do not enroll in physical education electives because all of the classes I take are focused around my career."*

The students in the PE group shared some of their interest in self-improvement that motivated them to choose their electives:

"I figured that I could continue to read Google and set myself up for failure or go out there and really learn about it. I chose to get a real education on it!" (Female, 21 years old, PE student).

"I wanted to learn ways I could exercise at home since I can't afford a gym membership." (Female, 20 years old, PE student).

"I wanted to learn more about health and what I could do to be more healthy." (Female, 20 years old, PE student).

Students in both groups had a small number of students that reported choosing electives based on the need to boost their grade point average (GPA) or for an easy grade. This was the

case with 3.4% of non-PE students and 9.1% of the PE group. A few responses mentioned other areas like parental influence (3), social influence (1), and self-confidence (4), but none of these themes were consistent across either of the groups or the responses as a whole.

The third, and final, open-ended question in the survey was different depending on how the student had answered the PE course question. Students that had not yet completed a PE course were asked: *What would encourage you to engage in a health and wellness course while at [deidentified college]?*

There were a total of 93 responses to the question. A thematic analysis of the responses was completed using the same methods as the previous questions. Several themes emerged from the review with students commenting on the need for more awareness of PE classes, inclusivity, mentorship, and social aspects. The most common response was that students wanted to know more about the physical benefits they could gain from a class (26.9%), with knowledge-related responses drawing a close second (23.7%). Students also commented that they would be more likely to take a PE or wellness course if it counted toward their degree fulfillment or was a required course (12.9%). This question had an assessed rater reliability score of 86.9%. A complete list of analyzed themes and their respective responses can be found in Table 8.

Table 8

Responses to Q3: "What would encourage you to engage in a health and wellness course while at [deidentified college]?"

Primary Themes	PE non-completers (*n*=93)	*%*
Physical Benefits	25	26.9%
New Knowledge	22	23.7%
Requirement	12	12.9%
Mentorship/Coaching and/or Professors	11	11.8%
Friends/Social	10	10.8%
Advertising	9	9.7%
Time/Location/Logistics	9	9.7%
Inclusivity	6	6.5%
Other Benefits	2	2.2%
Self Confidence	1	1.1%

The responses related to inclusivity provided insight on how students perceive PE courses and how the community college can address those needs:

"…showing me that I won't be walking into a class filled with fit supermodels. Sometimes people have the idea that in order to participate in fitness classes you must also be fit." (Female, 26 years old).

"I would enroll in health and wellness courses at (community college) if I felt that non-athletic people were welcome. I certainly understand that physical education courses are meant by definition to encourage physical fitness, but many of these courses seem like they are designed for more conditioned, not beginners simply hoping to improve their exercise regimen." (Female, 20 years old).

The final question for students that had reported completing a PE course was: *Write something that stands out as being a useful or valuable aspect of your [deidentified college] PE experience that gives you more confidence in your health and wellness activities (Palmer, 2006)*.

This question had a total of 29 responses. Students most frequently referred to the knowledge (58.6%) acquired during their PE course that helped them improve their health, lifestyle and/or nutrition. The second most common response was related to physical benefits (31.0%) the students took away from the class such as weight loss or new activity-based skill sets. Students also shared the mental benefits (24.1%) they attributed to the PE courses with many of those students citing the courses as a source of stress relief. After coding was completed and percent of agreement was calculated, this question was given an inter-rater reliability score of 86.8%. A complete list of analyzed themes and their respective responses can be found in Table 9.

Table 9

Responses to Q4: "Write something that stands out as being a useful or valuable aspect of your [deidentified college] PE experience that gives you more confidence in your health and wellness activities."

Primary Themes	PE completers (*n*=29)	*%*
New Knowledge	17	58.6%
Physical Benefits	9	31.0%
Mental Benefits	7	24.1%
Quality of Instruction	5	17.2%

The students responding to this question also pointed out the importance of a positive environment and knowledgeable instruction (17.2%), with comments including:

A female PE student shared: *"Working out in an environment where there is positivity allows students to feel comfortable (community college)'s fitness center I have found this."*

"…getting feedback from my professor is what motivates me and gives me confidence." (Female, 19 years old).

"Making sure that all of the teachers are as amazing as (name) was, caring, helpful, and understanding." (Female, 22 years old).

This question had the smallest dataset, as it was limited only to those that had completed a PE course. Of the 52 students eligible to answer this question, 29 (55.8%) provided a response.

CHAPTER FIVE: DISCUSSION

Introduction

The purpose of this mixed-methods dissertation study was to understand factors related to Physical Education (PE) course enrollment at the community college level. The retrospective phase of this study examined the association of PE participation on educational success factors including grade point average (GPA), retention, and graduation, while the cross-sectional phase aimed to identify student experiences and feelings regarding PE participation and elective selection.

Major Findings

This study was designed to evaluate four research questions in a mixed-methods study design. The historical data allowed the researcher to evaluate academic success predictors among students that had completed PE courses at the state college being studied. Although no relationship was identified between PE course completion and academic success factors, the researcher was able to identify other associations based on gender and race/ethnicity. The cross-sectional survey allowed the researcher to better understand exercise self-efficacy at the college. The results did not reach statistical significance for PE completers, though gender differences in exercise self-efficacy were found to be statistically significant in half of the items surveyed. Finally, the themes identified in the enrollment questions provided the researcher with commonalities that can be addressed at the college to potentially mitigate the previously observed enrollment declines.

Research Question 1

Is enrollment in health and wellness courses associated with success outcomes such as GPA, graduation rates, and retention?

In contrast to the initial hypothesis, results from the regression analysis of the Propensity-Score matched retrospective data indicated that PE course completion was not associated with GPA at the community college level. When the samples of students who completed a PE course was matched with non-PE completers the only predictor of academic success that reached statistical significance was number of successful course completions, which was higher in students that had completed one or more PE courses.

Although PE course completion was not associated with GPA, the demographic factors (age, race/ethnicity, gender) accounted for the model were associated with GPA with higher GPA numbers being found in those with a higher numerical age and female populations. This finding is in line with previous research regarding the association of demographic factors with GPA. For example, Vella, Turesky, and Herbert (2016) found that students who were both older in age and female had a higher GPA than younger college students and males. The finding that older age is associated with higher GPA has been consistently found in the literature (Healy, Mitchell, & Mourton, 1987; Owen, 2003; Vella, Turesky, & Hebert, 2016) and was in line with the findings of this study. Additionally, similar to Vella, Turesky, and Herbert (2016) and other studies, the current study found that being female was associated with higher GPA (Davis & Otto, 2016; Healy, Mitchell, & Mourton, 1987). However, not all studies have supported this finding (Leshchinskii & Maksy, 2019). Davis and Otto (2016) compared GPA among Black and White males and females, reporting that Black males had the lowest GPA out of the four groups.

This finding is in agreement with the current study which indicated that, in addition to being male and younger age, belonging to a minority group was associated with lower GPA. These findings that indicate that minority groups may have a lower GPA compared to White college students is further supported in the literature (Jaret & Reitzes, 2009). Although the current study did not examine the association of PE with GPA stratified by demographic information, it may be of interest to examine potential interactions in future analyses to determine whether a moderation effect may exist.

Research Question 2

Controlling for demographics, do student success factors such as GPA, graduation rates, and retention, differ between students who have enrolled in PE and those that have not?

It had been hypothesized that there would be a significant relationship between PE course completion and cumulative GPA, however that hypothesis was not upheld. There is limited research on the association between PE course completion and GPA in college students, though there have been several articles suggesting a positive relationship between PE and academic achievement in elementary (Ardoy et al., 2014; Coster et al., 2018) and high school students (Fox et al., 2010). One study by Wald et al (2014) identified modest associations between positive health behaviors and GPA, though this study was at a four-year institution and included all manner of physical activity rather than being focused on PE courses or enrollment. While physical activity has been shown to positively impact GPA (Wald, Muenning, O'Connell & Garber, 2014), the current study was unable to determine the type of PE course students enrolled in, thus actual levels of activity during these courses are unknown. Future work should investigate whether PE courses that encourage high amounts of physical activity during each

session have a greater association with increased GPA, as compared to courses that may focus more heavily on health behaviors.

The explanation for the lack of significance in the regression model for historical PE completion and GPA may be extended to the findings between the matched PE completers and non-PE completers. The current study did not assess leisure-time physical activity, and therefore it is unknown whether the amount of physical activity differed between the two groups. Future research should consider comparing PE courses that involve high amounts of moderate to vigorous physical activity with courses that have lower intensity or less frequent physical activity. Level of exercise intensity, or vigor, has been associated with cognitive control and academic performance in prior research (Phillips et al., 2019) and may have been a factor in the current study. An additional factor to consider is the limited information regarding PE-related GPA. The current study was unable to obtain information regarding either the successful completion of the PE course or the final grade received in the course. As prior research suggests that participation in physical activity is associated with higher GPA (Weston, Zeng, & Battle, 2020), this value may indirectly assess the link between physical activity and cumulative GPA.

Additionally, the study did not inquire about body weight or sleep patterns for the respondents, both of which have been previously associated with academic achievement in various educational settings. An inverse-relationship between body weight and academic performance has been studied and identified in elementary aged children (Ishihara, 2018), and similar results have been found in college-age women struggling with obesity (Aimé, Villatte, Cyr, & Marcotte, 2017). Sleep is another factor that was not explored in this study that has been

identified as a factor that may affect academic success metrics, particularly in college students (van der Heijden et al., 2018).

Interestingly, the number of successfully completed courses was the only predictor of academic success and was statistically higher in students who completed a PE course compared to those who had not. Electives, PE and otherwise, are generally taken after a student has completed their first 15 or more credit hours based on the current advising model at this college. The successful completion data, combined with the thematic analysis, may indicate that students are choosing courses they find interesting or enjoy, leading to a higher success rate. Based on these findings, a suggested path would be to match students based on their actual completed courses to ensure students were being matched on equitable courses and comparing similar courses by difficulty level.

The PS matched data also showed that students that had completed PE courses had a higher number of withdrawals when compared to their non-PE counterparts. Although this data was statistically significant, the practical application showed it to be a negligible difference. The PE completers were at a slightly higher number of withdrawals (M = 1.35, SD = 1.71) when compared to non-PE completers (M = 1.13, SD = 1.52), however both groups were within what the college considers to be reasonable and were consistent with recent research related to community college withdrawal rates (McKinney et al., 2019). The higher withdrawal rate for PE students did not allow the researcher to draw any clear conclusions, as it was cumulative data and it was undetermined if the withdrawals occurred before or after enrollment in a PE course.

There were no statistically significant differences between PE and non-PE students when looking at the number of incompletes on a student's transcript, nor were there statistically

significant difference in semester-to-semester retention. Incompletes are used sparingly at the college, so these results were not surprising. The retention metrics indicated that students were likely to enroll in subsequent semesters regardless of PE enrollment. While this does not show a positive association with PE, it was also noted that there was no negative association. It is possible that other factors, such as perceived academic control and boredom related to other courses may affect predictors of academic success (Respondek et al., 2017).

There was no significant relationship between PE course completion and graduation rates in the retrospective analysis, though the trend was toward a positive association (p = .068). While there was no significant evidence of PE being related to academic success, there were also no negative indicators associated with PE course completion. Thus, there is no evidence to suggest that participation in PE classes may negatively affect academic performance which has been previously suggested by pre-secondary teachers (Pelligrini & Bohn, 2005). As there has been little to no research on community college predictors of academic success and PE course completion, further investigation into this area is warranted.

Research Question 3

Do students who have completed a PE course have higher levels of exercise self-efficacy compared to those who have not completed a PE course?

It was hypothesized that students who completed a PE course would have greater levels of exercise self-efficacy compared to those who did not complete a PE course. Contrary to our original hypothesis, there were no significant differences in exercise self-efficacy scores between students who completed a PE courses and students who had not. Although there were no

statistically significant differences between PE course elective selection and exercise self-efficacy scores, it is interesting to note that students who had completed a PE course had a higher self-efficacy value for 17 of the 18 items (*MD* = 0.3) on Bandura's exercise self-efficacy scale (2006). Given the consistent findings from previous literature noting the relationship between levels of physical activity and exercise self-efficacy, the lack of significant findings between PE completers and non-completers is surprising. However, there are several factors that may account for the lack of statistically significant differences in self-efficacy scores. First, the current study did not account for leisure-time physical activity of participants, and therefore, while some participants may not be participating in PE courses, they could still have high levels of physical activity outside of school. Secondly, the type of completed PE courses among students was not examined. Typically, PE courses may vary according to level of skill involved and intensity, which could affect student self-confidence and sense of mastery. Additionally, the role of past student experiences in PE courses was not accounted for, though findings from the qualitative analysis of the current study suggest the importance of prior exercise and sport history in decisions to engage in PE courses. Interestingly, previous literature examining self-efficacy in high school students suggests that individuals who have recently started a PE course or new sport may experience an initial drop in self-efficacy as they become more aware of their exercise abilities compared to inactive high school students who may actually overestimate their abilities (Hortz, Petosa, Grim, & Stevens, 2015). Although the previous work was conducted in high school students, it would be of interest to examine whether a drop in self-efficacy may occur in college students at the beginning of a new PE course or activity as well. Thus, participants in the current study who were currently enrolled in a PE course that introduced new skills to them, may have reported a decreased level of self-efficacy at that time. Future research should consider

assessing self-efficacy scores in students enrolled in a first-time PE course to better evaluate the trajectory of self-efficacy throughout the course of the semester. Finally, the low statistical power (13.3%) of this sample population may have contributed to the inability to detect statistically significant differences.

Although there were no differences in PE course completion between males and females, males had significantly higher levels of exercise self-efficacy in 9 of the 18 self-efficacy items. These findings are consistent with prior studies examining gender differences in exercise self-efficacy, with studies consistently demonstrating that males report higher exercise self-efficacy compared to females both adolescents and young adults (Beville et al., 2014; Pauline, 2013; Spence et al., 2010). Additionally, previous research has shown that differences in exercise self-efficacy between males and females may be barrier-specific, with males reporting more confidence in being able to exercise despite time commitments, lack of social support, poor weather conditions, and when recovering from illness or injury (Barrett, Plotnikoff, Courneya, & Raine, 2007; Belville et al., 2014; Pauline, 2013). Apart from poor weather conditions, the findings from the current study fall in line with the specific barriers mentioned, with significant differences observed in items related to time commitments, illness and injury, and no family or friend support. Given that exercise self-efficacy has been consistently found to be one of the biggest predictors of physical activity participation, future studies should focus on strategies to increase self-efficacy in relation to participation in PE courses, particularly for female college students.

Research Question 4

What factors affect student's decision-making regarding health and wellness course enrollment?

It was hypothesized that PE completers would have different reasons for choosing electives as compared to students that had not taken a PE course. Although there were differences among PE completers and non-completers, several common themes emerged regarding decisions to enroll in PE courses. The common themes of parental influence, previous experiences in PE and sports prior to college, weight-related issues, and self-confidence are all areas mentioned by all participants, regardless of PE completion. These themes have been found in the leisure-time physical activity literature as predictors of participation in physical activity, particularly for females (Garcia, Sirard, Deutsch, & Weltman, 2016). Parental influence has been previously identified as playing a role in exercise behaviors, in both adolescents (Trost et al., 2003: Welk, Wood, & Morss, 2003; Garcia, Sirard, Deutsch, & Weltman, 2016; Wilk et al., 2018) and young adults (Langdon, Johnson, & Melton, 2017) and was an emerging theme in this study. Past injuries from PE or sport was also theme shared by both completers and non-completers . This is in agreement with prior research that shows past injuries were linked with a decrease in both self-efficacy and actual participation in physical activity, particularly for females (Hortz et al., 2015; Teyhen et al., 2016). As such, it would be relevant to evaluate aspects of previous injuries to better understand the importance of injury severity, type of injury, and specific timing of the sustained injury when attempting to understand why students may avoid PE courses during the enrollment process.

Interestingly, when asked about past experiences in PE courses, those who had completed a college PE course reported more positive experiences, while PE non-completers reported more

negative experiences. The emotion-focused codes were developed using previous psychology research as a baseline for comparison (Fredrickson, 1998; 2001; An, Ji, Marks, & Zhang, 2017). Research into emotional responses toward physical education is lacking in the collegiate population, but there have been studies of this nature in younger populations. Simonton and Garn (2019) found that negative emotions were related to lower levels of leisure time physical activity and higher rates of sedentary activity in middle school children. Furthermore, this same study reported that negative emotions, such as shame, boredom, and anger, were predictive of future physical activity levels, with reports of negative emotions linked to less participation in physical activity and greater time spent in sedentary behaviors. Unfortunately, the current study was unable to further investigate the details of emotional experiences during past PE courses within the current scope. For example, how does the timing (middle school vs high school) or age of participant (child vs adolescent) during these negative or positive emotional experiences affect future behavior in college? The high number of responses by students in the current study suggest the importance of prior emotional experiences in PE, which may provide support for the Control-value theory of achievement emotions (Pekrun, 2006). This theory proposes that emotions experienced in school settings, such as PE class, may be indicative of meaningful outcomes that contribute to student well-being. These experiences may predict both intentions to continue participation in physical activity, and academic outcomes. Unfortunately, the different samples comprising the retrospective and cross-sectional designs in the current study do not allow for this type of analysis to be conducted, however, future studies should examine whether emotions experienced during PE courses may mediate the association between PE completion and GPA. In addition to academic outcomes, prior research suggests that emotional experiences during PE may affect exercise self-efficacy and help shape intentions toward future physical

activity opportunities, further contributing to the argument that a mediation model should be considered to better understand the relationships among emotional experiences, self-efficacy, decisions to engage in PE, and academic outcomes (Hagger, Chatzisarantis, & Biddle, 2010

Although there were overlapping responses, differences in decisions to enroll in PE were observed between students who completed PE and those who did not. While self-improvement was the most common response in PE completers, non-completers reported that their elective decisions were based on how the course is related to their career path and their enjoyment of the course material. The finding that enjoyment is linked with participation in physical activity has been reported by prior research examining college students and physical activity levels (Poobalan, Aucott, Clarke, & Smith, 2012). One solution may be for the college administration to survey students for PE course suggestions, thus enabling students to suggest courses they would be interested in taking for the aforementioned reasons. Additionally, allowing students to participate in their course selections may improve perceived academic control, which has been linked to greater academic success (Respondek et al., 2017).

Limitations of the Study

Several limitations regarding the current study should be noted. First, the retrospective data offered no insight into which specific PE courses were taken. Additionally, the investigator was not able to control for outside variables that could have affected these relationships, such as leisure-time physical activity (Felez-Nobrega, Hillman, Cirera, & Puig-Ribera, 2017) or sleep (van der Heijden et al., 2018), which have been shown to affect academic performance. The historical data related to withdrawals and incompletes was cumulative in nature, which limited the researcher's ability to determine associations with PE course enrollment. This historical

analysis was taken from a specific period of time spanning a total of three academic years, whereas a continuous longitudinal sample following specific students through their community college tenure may have yielded different results.

A limitation of the cross-sectional study design was that the student survey did not inquire about other sources of physical activity such as leisure time activity, work-related physical activity, or participation in sports. Although the survey did ask if students had completed a PE course at the community college level, it did not ask for the grade received, the attendance record during class, or the specific type of PE class taken. While these items would have provided additional information, it is also important to not include too many survey items that may result in respondent survey fatigue or participant drop out (Lavrakas, 2008). Future studies should consider including these items, while carefully evaluating the participant burden of the survey. This information, had it been collected, could have possibly provided further insight into self-efficacy metrics to determine whether courses focused on specific areas (i.e. kickboxing or yoga) had the same self-efficacy results as more generalized or overall courses (i.e. wellness or personal health). As referenced above, this should be an area of focus in future studies to understand how different courses may influence self-efficacy. Although social desirability bias may be an element in physical activity research, an effort was made to mitigate this through the use of anonymous data collection (Joinson, 1999; Thielmann, Heck, & Hilbig, 2016). A larger overall sample size could strengthen results and reduce the impact of group size effects when analyzing results. Finally, the survey did not control for any confounding factors such as those addressed in the historical analysis: age, gender, number of credits attempted, Pell grant status, or race/ethnicity.

Strengths of the Study

There were a number of strengths that should be pointed out as they relate to this study. This study adds to the body of Physical Education literature focusing on the community college population, which as noted has been an area of need. The mixed-methods nature of the research provided an in-depth evaluation of students at the college from a historical and current perspective. The historical data set, containing over 80,000 records, provided the researcher a large data set for review and analysis. The strong response rate for the cross-sectional survey is another strength that was identified, as students from PE and non-PE courses responded to the survey and most of the responses were complete and usable in the data analysis. This inclusion of multiple departments outside of PE aided in this strong response.

The diverse ethnic representation in the cross-sectional survey response is another strength of this study. The participant ethnic demographics closely aligned with the overall population reported by the community college as a whole. This provided the college administration ethnically representative data from which to make decisions.

The historical data provided by the community college was robust and provided ample material for the research effort. The data included both PE and non-PE students with demographic and descriptive variables that streamlined the propensity score matching process and created closely matched comparisons. This matching process allowed for an objective review of that data without the concern of confounding factors such as race/ethnicity, gender, socioeconomic status, and age (Bauman, Sallis, Dzewaltowski, & Owen, 2002; Egli, Bland, Melton, & Czech, 2011; McPherson, Mackay, Kunkel, & Duncan, 2018; O'Donoghue et al., 2018; Wilson-Frederick et al., 2014).

Implications and Future Directions

Although there was not statistical significance to suggest an association between PE and predictors of academic success from the retrospective analysis, results suggested that the relationship between PE and these predictors was positive, and that there were no negative associations with academic success.

Findings from the cross-sectional survey data indicated that although not significant in the quantitative analysis, self-efficacy may play a role in PE participation. Unfortunately, these data were cross-sectional and therefore, no causal effects between PE completion and self-efficacy could be deduced. Future studies should consider an experimental design to examine self-efficacy scores before and following PE course completion. The differences in response between male and female students shows that instruction and interventions may need to be redesigned to help female students increase their exercise self-efficacy to that of their male classmates. This creates an opportunity for further instruction and intervention focused on the stages of self-efficacy, allowing for students to engage in more behaviors to build toward mastery (Bandura, 1994; Wright, Ding, & Li, 2005).

The results from the qualitative survey items provided valuable insight for the community college administration and instructional faculty and staff within the PE department. The thematic analysis can assist those at the community college with decision-making and planning (e.g. developing courses that may interest students and relate to career path), as well as other possible areas such as advertising and curriculum.

Students from both the PE and non-PE groups cited self-improvement as a factor in elective course enrollment, though PE students reported that at a significantly higher rate than

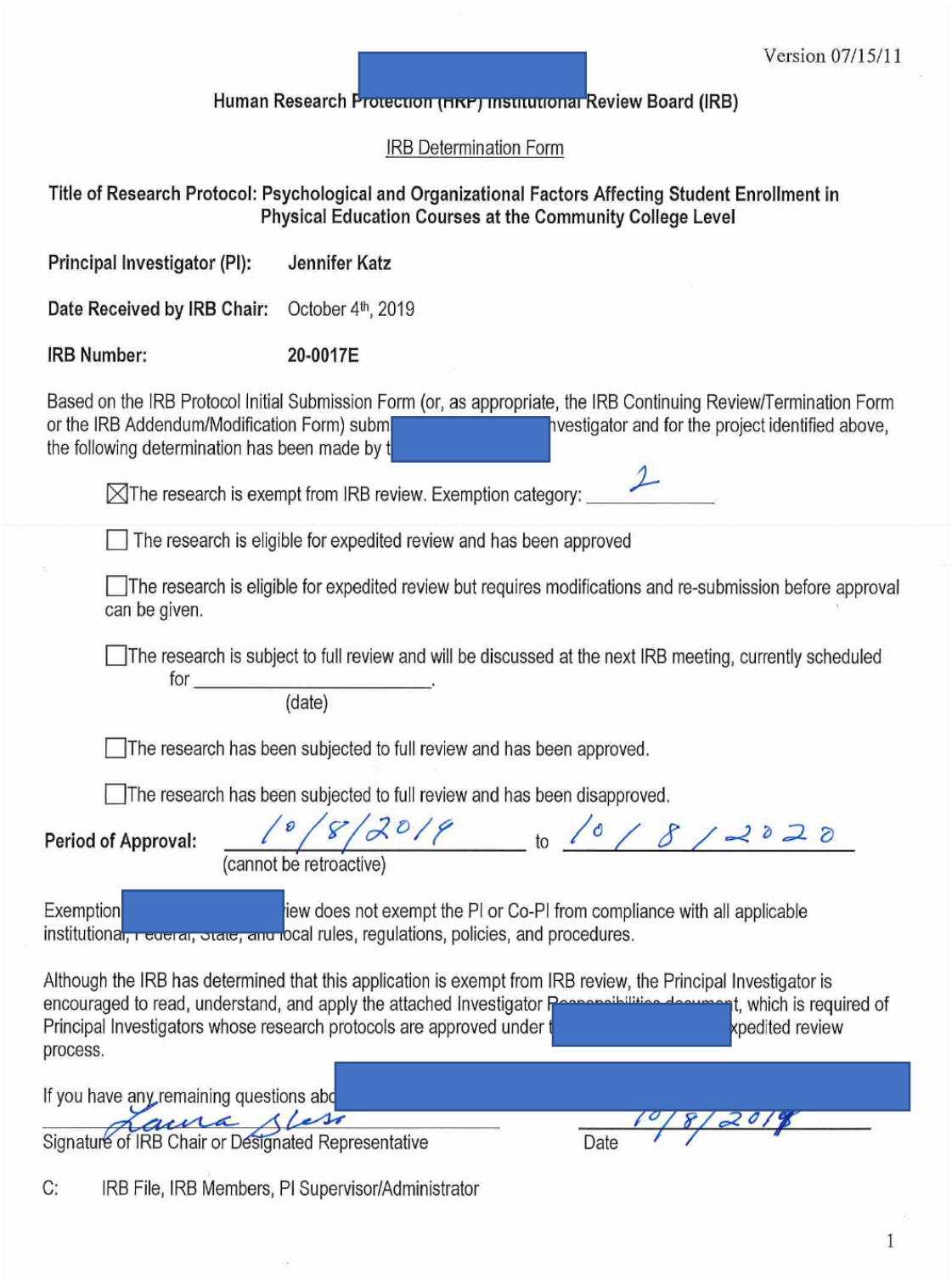
non-PE students. Students also indicated that they were not aware that the community college offered PE classes and stated there should be more marketing and advertising for those classes. These two points, when looked at in tandem, provide direction to those at the college to help focus marketing and advertising efforts on the self-improvement aspects of the PE courses to help attract students to the classes.

The other major factor discussed by students in both groups was that electives needed to align with their career path or count toward their degree requirements. As Physical Education courses are not currently counted toward the general education electives at the community college, this may be a barrier to future research and enrollment efforts in the department. An objective evaluation of PE courses should be completed to determine whether they may be reconsidered for general elective requirement credit at the college.

Conclusion

This is the first study, to our knowledge, that examined the association of PE course completion with predictors of academic success and self-efficacy in a community college setting. Although statistically significant results were not found in all areas of the study, the unique nature of this mixed-methods study adds to Physical Education research in the community college space. The trends identified advocate for further research in this area to determine how the college can aid in student success through existing PE courses. Future studies should consider evaluation of specific course types and their influence on student success factors and self-efficacy, as well in-depth interviews focusing on PE attitudes and experiences.

APPENDIX A: IRB MATERIALS



Version 07/15/11

[redacted] Human Research Protection (HRP) Institutional Review Board (IRB)

IRB Determination Form

Title of Research Protocol: Psychological and Organizational Factors Affecting Student Enrollment in Physical Education Courses at the Community College Level

Principal Investigator (PI): **Jennifer Katz**

Date Received by IRB Chair: October 4th, 2019

IRB Number: **20-0017E**

Based on the IRB Protocol Initial Submission Form (or, as appropriate, the IRB Continuing Review/Termination Form or the IRB Addendum/Modification Form) subm[redacted]nvestigator and for the project identified above, the following determination has been made by t[redacted]

☒ The research is exempt from IRB review. Exemption category: 2

☐ The research is eligible for expedited review and has been approved

☐ The research is eligible for expedited review but requires modifications and re-submission before approval can be given.

☐ The research is subject to full review and will be discussed at the next IRB meeting, currently scheduled for _____.
(date)

☐ The research has been subjected to full review and has been approved.

☐ The research has been subjected to full review and has been disapproved.

Period of Approval: 10/8/2019 to 10/8/2020
(cannot be retroactive)

Exemption [redacted]iew does not exempt the PI or Co-PI from compliance with all applicable institutional, Federal, State, and local rules, regulations, policies, and procedures.

Although the IRB has determined that this application is exempt from IRB review, the Principal Investigator is encouraged to read, understand, and apply the attached Investigator R[redacted]t, which is required of Principal Investigators whose research protocols are approved under t[redacted]xpedited review process.

If you have any remaining questions abo[redacted]

Laura Glesr
Signature of IRB Chair or Designated Representative

10/8/2019
Date

C: IRB File, IRB Members, PI Supervisor/Administrator

1

Figure 2. Community College IRB approval

UNIVERSITY OF CENTRAL FLORIDA

Institutional Review Board
FWA00000351
IRB00001138
Office of Research
12201 Research Parkway
Orlando, FL 32826-3246

NOT HUMAN RESEARCH DETERMINATION

September 30, 2019

Dear Jennifer Katz:

On 9/30/2019, the IRB reviewed the following protocol:

Type of Review:	Initial Study
Title of Study:	Factors Affecting PE Enrollment Retrospective Data Analysis
Investigator:	Jennifer Katz
IRB ID:	STUDY00000966
Funding:	None
Grant ID:	None
IND, IDE, or HDE:	None
Documents Reviewed:	• Faculty Advisor Review Retrospective_sign[25297].pdf, Category: Faculty Research Approval; • HRP-250 - FORM - Request for NHSR.docx, Category: IRB Protocol;

The IRB determined that the proposed activity is not research involving human subjects as defined by DHHS and FDA regulations.

IRB review and approval by this organization is not required. This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these activities are research involving human in which the organization is engaged, please submit a new request to the IRB for a determination. You can create a modification by clicking **Create Modification / CR** within the study.

If you have any questions, please contact the UCF IRB at 407-823-2901 or irb@ucf.edu. Please include your project title and IRB number in all correspondence with this office.

Sincerely,

Page 1 of 2

Figure 3. UCF IRB approval

UNIVERSITY OF CENTRAL FLORIDA

Institutional Review Board
FWA00000351
IRB00001138
Office of Research
12201 Research Parkway
Orlando, FL 32826-3246

Racine Jacques, Ph.D.
Designated Reviewer

Figure 4. UCF IRB approval page 2

UNIVERSITY OF CENTRAL FLORIDA

Institutional Review Board
FWA00000351
IRB00001138
Office of Research
12201 Research Parkway
Orlando, FL 32826-3246

EXEMPTION DETERMINATION

September 30, 2019

Dear Jennifer Katz:

On 9/30/2019, the IRB determined the following submission to be human subjects research that is exempt from regulation:

Type of Review:	Initial Study, Category 2
Title:	Factors Related to Physical Education Enrollment at the Community College Level
Investigator:	Jennifer Katz
IRB ID:	STUDY00000787
Funding:	None
Grant ID:	None

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made, and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request so that IRB records will be accurate.

If you have any questions, please contact the UCF IRB at 407-823-2901 or irb@ucf.edu. Please include your project title and IRB number in all correspondence with this office.

Sincerely,

Racine Jacques, Ph.D.
Designated Reviewer

Page 1 of 1

Figure 5. UCF historical IRB exemption

Recruitment Email

Dear Student:

A professor in our physical education department is conducting a study to determine the factors affecting elective course choice and enrollment.

In this study, you will be asked to complete a brief questionnaire that should take no more than 10-15 minutes of your time.

Your participation in this study is totally voluntary and anonymous. You must be 18 years of age or older to participate in this research.

Please feel free to contact Jen Katz at [deidentified] or [deidentified]

if you have any questions about the study.

Please click in the link below to complete the survey:

<Qualtrics Link to be included here>

Kind regards,

Jen Katz

Physical Education Department

[deidentified]

Full Survey

UNIVERSITY OF CENTRAL FLORIDA

EXPLANATION OF RESEARCH

Title of Project: Factors Related to Physical Education Enrollment at the Community College Level

Principal Investigator: Jennifer Katz, Graduate Student

Faculty Supervisor: Dr. Jeanette Garcia

You are being invited to take part in a research study. Whether you take part is up to you.

The purpose of this research is to understand more about students experience with health and wellness courses and activities. This study is looking to understand more about students' decisions to enroll in various electives, and their exposure to health and wellness courses and activities.

Participants will be asked to complete a brief survey with questions on a scale of 0 – 10 and answer a few questions about their experience with health and wellness courses. This study is being delivered online via Qualtrics and can be taken in any location suitable to the participant provided they have internet access.

The survey takes 10 – 15 minutes to complete, depending on the length of the answers given by the participant.

There will be no identifiable private information gathered during this study. Your identity will be unknown to the researcher.

The researcher will store the unidentified data as per UCF requirements for a period of five years.

You must be 18 years of age or older to take part in this research study.

Study contact for questions about the study or to report a problem: If you have questions, concerns, or complaints contact *Jennifer Katz, Graduate Student, Curriculum & Instruction Program, College of Community Innovation & Education, [deidentified] or Dr. Jeanette Garcia, Dissertation Chair, College of Health Professions & Sciences at [deidentified] or by email at [deidentified].*

IRB contact about your rights in this study or to report a complaint: If you have questions about your rights as a research participant, or have concerns about the conduct of this study, please contact Institutional Review Board (IRB), University of Central Florida, Office of Research, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901, or email irb@ucf.edu.

Have you ever completed a Physical Education/Health and wellness course at [deidentified college]?

-Yes

-No

Self-Efficacy (Exercise Barriers)

A number of situations are described below that can make it hard to stick to an exercise routing. Please rate each of the following on how certain you are that you could still maintain a good exercise routine of 3-5 days per week in the given situations (Bandura, 2006).

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					**Can do Sometimes**					**Certainly can do**

When I am feeling tired

0 1 2 3 4 5 6 7 8 9 10

When I am feeling under pressure from work

0 1 2 3 4 5 6 7 8 9 10

During bad weather

0 1 2 3 4 5 6 7 8 9 10

After recovering from an injury that caused me to stop exercising

0 1 2 3 4 5 6 7 8 9 10

During or after experiencing personal problems

0 1 2 3 4 5 6 7 8 9 10

When I am feeling depressed

0 1 2 3 4 5 6 7 8 9 10

When I am feeling anxious

0 1 2 3 4 5 6 7 8 9 10

After recovering from an illness that caused me to stop exercising

0 1 2 3 4 5 6 7 8 9 10

When I feel physical discomfort when I exercise

0 1 2 3 4 5 6 7 8 9 10

After a vacation

0 1 2 3 4 5 6 7 8 9 10

When I have too much work to do at home

0 1 2 3 4 5 6 7 8 9 10

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Can do Sometimes					Certainly can do

When visitors are present

0 1 2 3 4 5 6 7 8 9 10

When there are other interesting things to do

0 1 2 3 4 5 6 7 8 9 10

If I don't reach my exercise goals

0 1 2 3 4 5 6 7 8 9 10

Without support from my family or friends

0 1 2 3 4 5 6 7 8 9 10

During a vacation

0 1 2 3 4 5 6 7 8 9 10

When I have other time commitments

0 1 2 3 4 5 6 7 8 9 10

After experiencing family problems

0 1 2 3 4 5 6 7 8 9 10

Open ended follow up questions:

1. Tell me one memorable story that would help me understand your experience with health and wellness activities or classes prior to coming to [deidentified college] (Pajares & Zeldin, 1999).

2. What experiences contributed to your decisions to enroll in your electives (Physical Education or otherwise)? (Zeldin & Pajares, 2000).

3a. (If student has NOT taken a [deidentified college] PE/Health course): What would encourage you to engage in a health and wellness course while at [deidentified college]?

3b. (If student HAS taken a [deidentified college] PE/Health course): Write something that stands out as being a useful or valuable aspect of your [deidentified college] PE experience that gives you more confidence in your health and wellness activities (Palmer, 2006).

Demographics:

Gender:
-Male
-Female
-Other _____

Age: _____

Race/Ethnicity:
-African-American
-Asian
-Caucasian
-Hawaiian
-Hispanic
-Multi-Race
-Native American
-Prefer not to answer

Major/Intended Major:
-Architecture
-Art/Studio/Fine Art
-Biomedical Sciences
-Business Administration
-Computer Science
-Criminal Justice
-Dance Performance
-Digital Media
-Early Childhood Education
-Engineering
-Environmental Studies
-Health Sciences (including Medical fields)
-Information Technology
-Logistics Management
-Music Performance
-Musical Theatre
-Physical Education
-Psychology
-Secondary Education
-Sign Language Interpretation
-Theatre
-Unknown/Undecided
-Other: _____

APPENDIX B: SAS REPORTS & TABLES

The SAS System

The PSMATCH Procedure

Data Information	
Data Set	WORK.HISTORY
Output Data Set	WORK.OUTGS
Treatment Variable	PE
Treated Group	1
All Obs (Treated)	1629
All Obs (Control)	84253
Support Region	Extended Treated Group
Lower PS Support	0.018233
Upper PS Support	0.019307
Support Region Obs (Treated)	1629
Support Region Obs (Control)	84252

Propensity Score Information

	Treated (PE = 1)						Control (PE = 0)						Treated - Control
Observations	N	Weight	Mean	Standard Deviation	Minimum	Maximum	N	Weight	Mean	Standard Deviation	Minimum	Maximum	Mean Difference
All	1629		0.0190	0.0001	0.0183	0.0193	84253		0.0190	0.0001	0.0182	0.0193	0.0001
Region	1629		0.0190	0.0001	0.0183	0.0193	84252		0.0190	0.0001	0.0183	0.0193	0.0001
Matched	1629		0.0190	0.0001	0.0183	0.0193	1629		0.0190	0.0001	0.0183	0.0193	65E-10
Weighted Matched	1629	1629.00	0.0190	0.0001	0.0183	0.0193	1629	1629.00	0.0190	0.0001	0.0183	0.0193	65E-10

Matching Information	
Distance Metric	Logit of Propensity Score
Method	Optimal Fixed Ratio Matching
Control/Treated Ratio	1
Caliper (Logit PS)	0.001735
Matched Sets	1629
Matched Obs (Treated)	1629
Matched Obs (Control)	1629
Total Absolute Difference	0.000752

Figure 6. SAS Propensity score reports

The SAS System

The PSMATCH Procedure

Standardized Mean Differences (Treated - Control)						
Variable	Observations	Mean Difference	Standard Deviation	Standardized Difference	Percent Reduction	Variance Ratio
Logit Prop Score	All	0.00365	0.006940	0.52656		0.7673
	Region	0.00365		0.52648	0.01	0.7676
	Matched	0.00000		0.00005	99.99	0.9997
	Weighted Matched	0.00000		0.00005	99.99	0.9997
Grad_Any_Credential	All	0.21342	0.478795	0.44574		1.1998
	Region	0.21342		0.44573	0.00	1.1998
	Matched	0.03192		0.06667	85.04	1.0016
	Weighted Matched	0.03192		0.06667	85.04	1.0016
_successful	All	4.26721	6.030384	0.70762		1.0235
	Region	4.26714		0.70761	0.00	1.0235
	Matched	0.95396		0.15819	77.64	0.8707
	Weighted Matched	0.95396		0.15819	77.64	0.8707
_withdrawals	All	0.40739	1.567558	0.25989		1.4756
	Region	0.40738		0.25988	0.00	1.4756
	Matched	0.22897		0.14607	43.79	1.2619
	Weighted Matched	0.22897		0.14607	43.79	1.2619
_incompletes	All	-0.00022	0.038456	-0.00573		0.7089
	Region	-0.00022		-0.00573	0.00	0.7089
	Matched	-0.00184		-0.04789	0.00	0.4007
	Weighted Matched	-0.00184		-0.04789	0.00	0.4007
Current_CumGPA	All	0.20821	0.865512	0.24056		0.4782
	Region	0.20821		0.24056	0.00	0.4782
	Matched	0.02234		0.02582	89.27	0.7761
	Weighted Matched	0.02234		0.02582	89.27	0.7761
Ret_Tot	All	1.19528	2.166594	0.55168		0.9648
	Region	1.19525		0.55167	0.00	0.9649
	Matched	0.00859		0.00397	99.28	0.8699
	Weighted Matched	0.00859		0.00397	99.28	0.8699

Standard deviation of All observations used to compute standardized differences

Figure 7. SAS Propensity score procedure reports

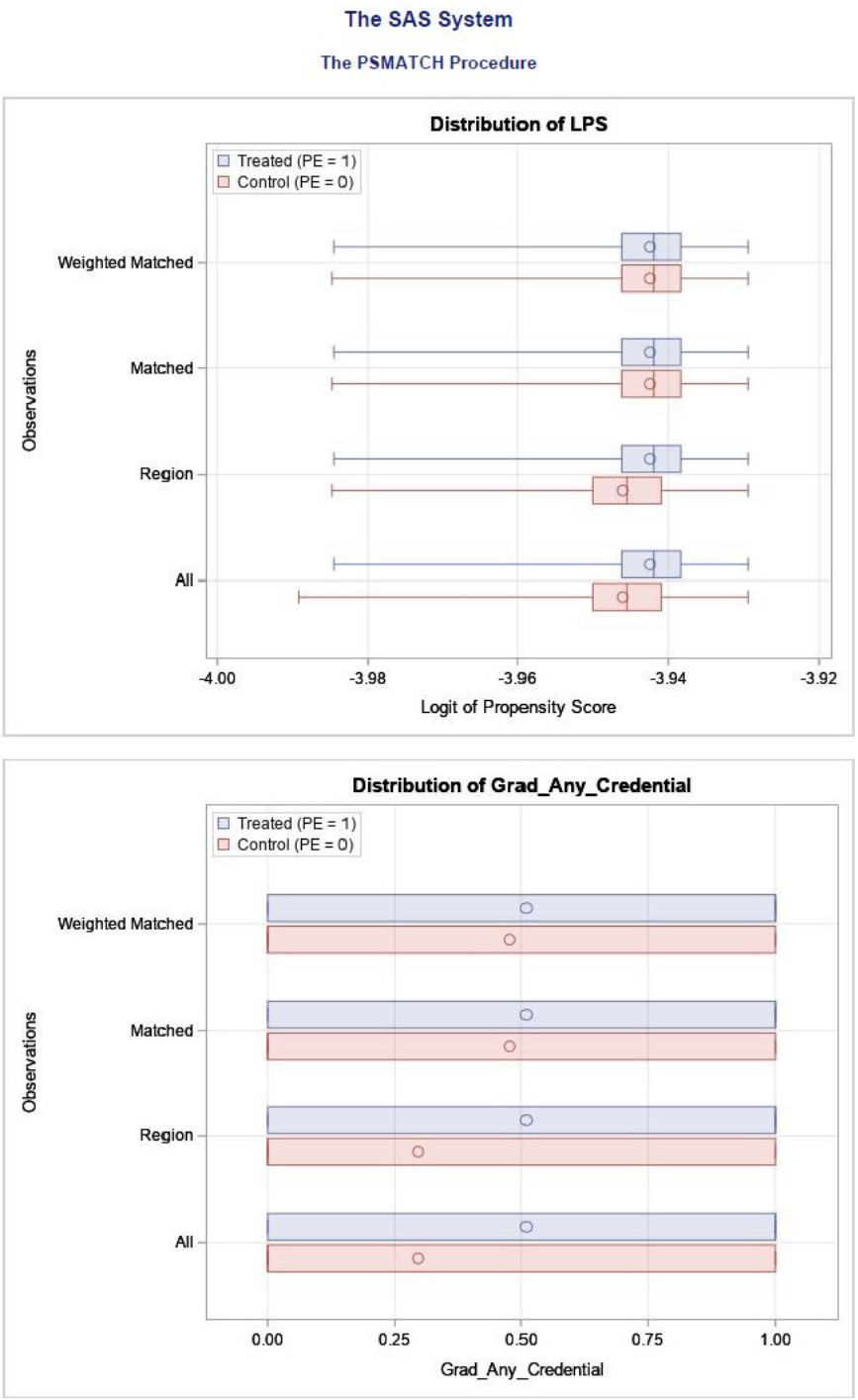


Figure 8. SAS Propensity score box plots

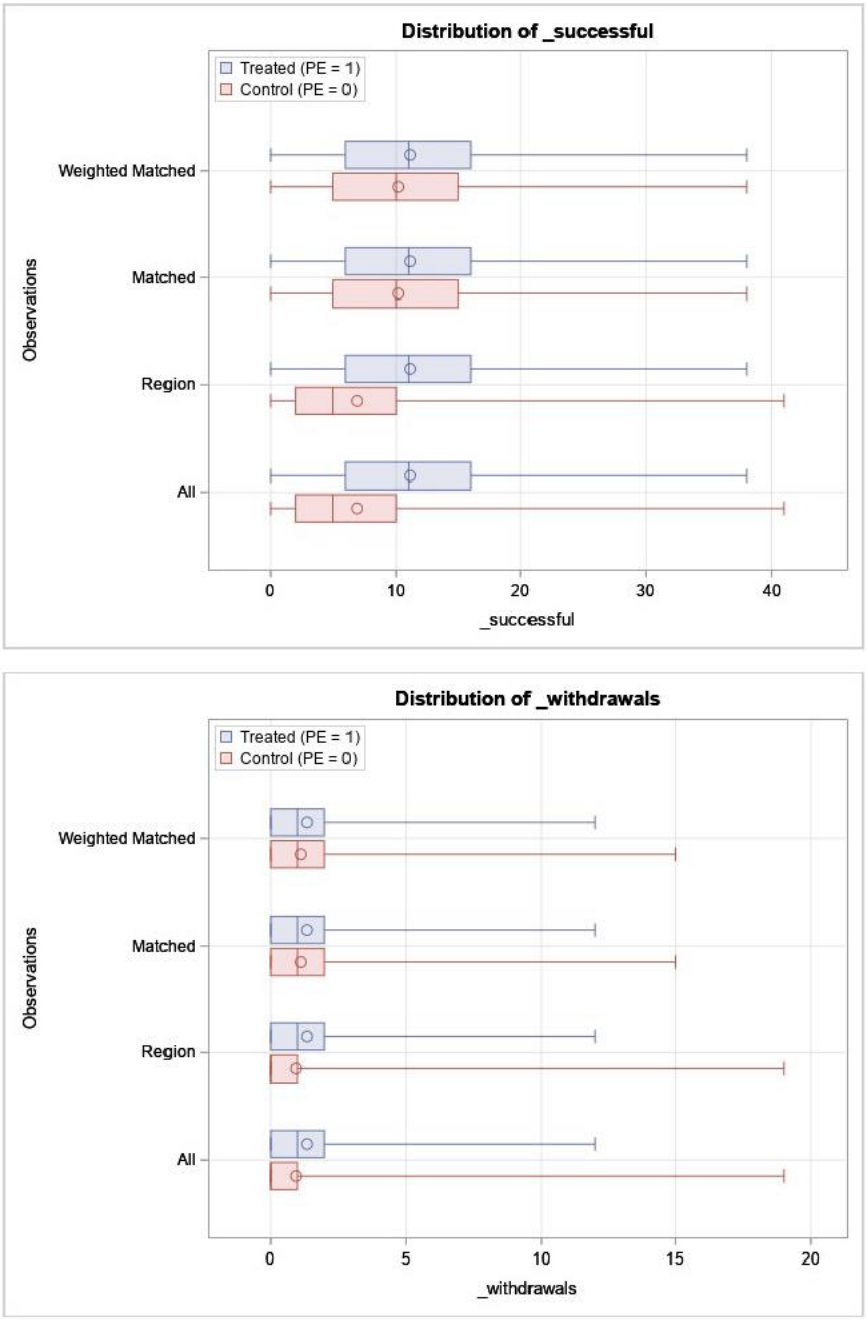


Figure 9. SAS Propensity score box plots 2

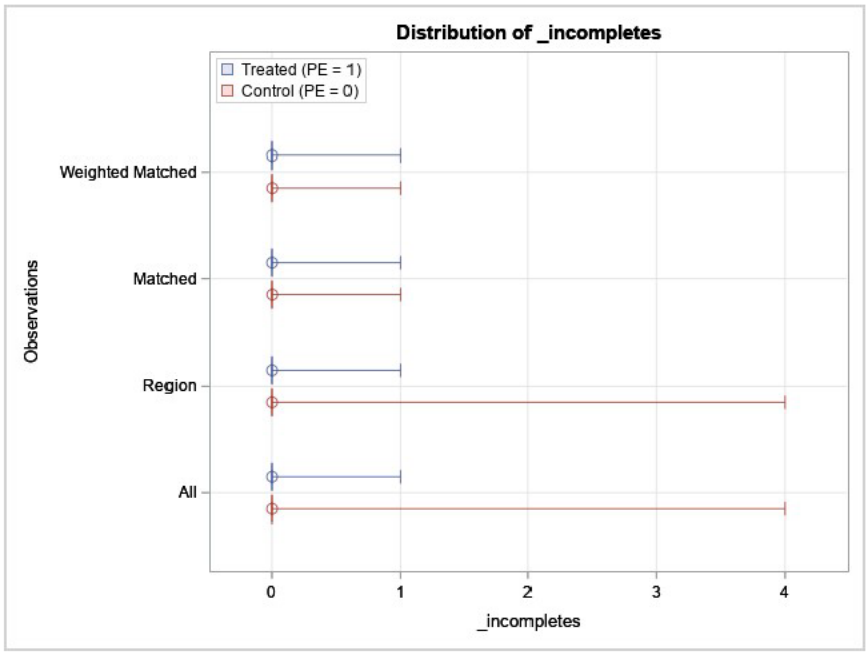


Figure 10. SAS Propensity score box plots 3

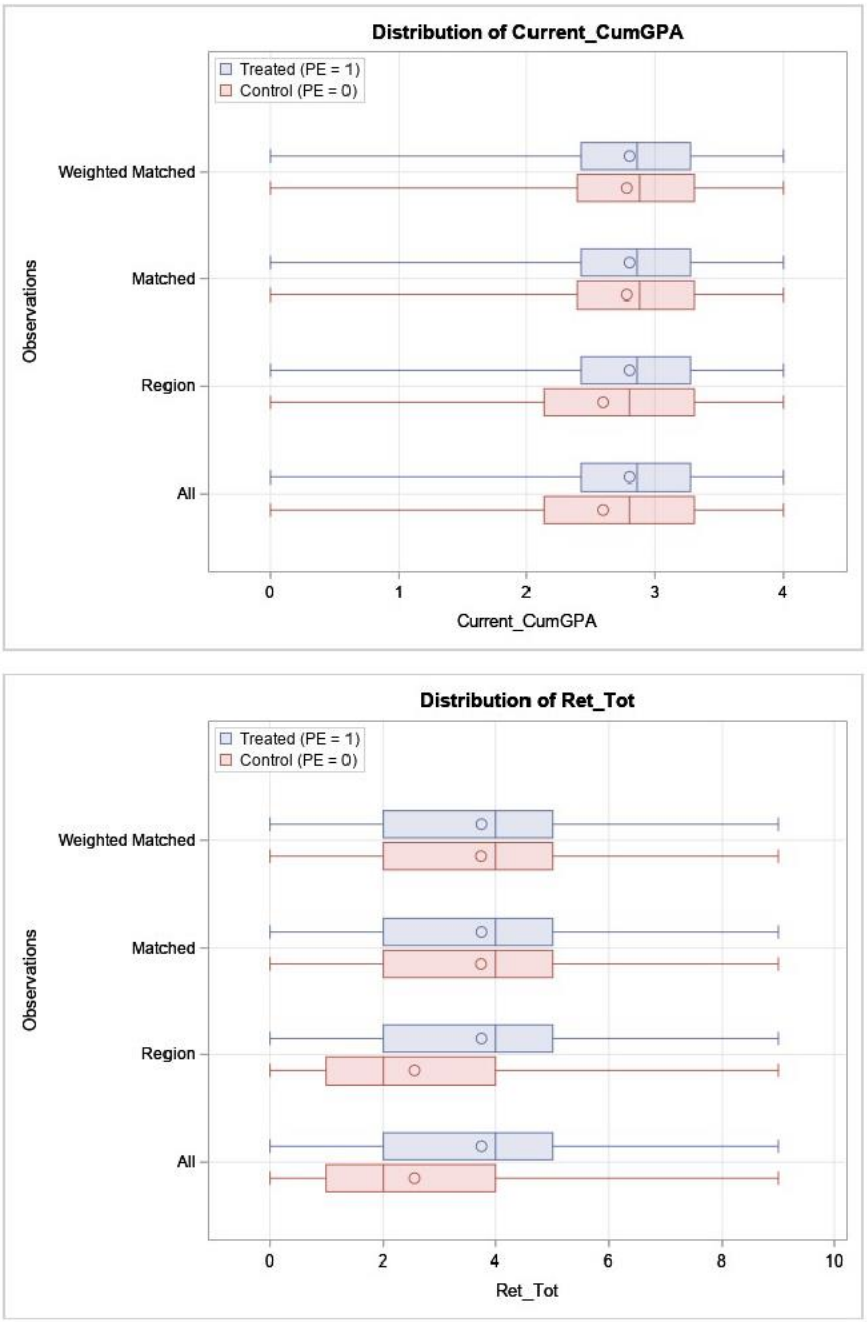


Figure 11. SAS Propensity score box plots 4

Historical *T-test* Results

The SAS System

The TTEST Procedure

Variable: _successful

Weight: _MATCHWGT_ Matched obs ATT weight

PE	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
1		1629	11.1197	6.0654	0.1503	0	38.0000
0		1629	10.1657	6.5000	0.1610	0	38.0000
Diff (1-2)	Pooled		0.9540	6.2864	0.2203		
Diff (1-2)	Satterthwaite		0.9540		0.2203		

PE	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
1		11.1197	10.8249	11.4145	6.0654	5.8640	6.2811
0		10.1657	9.8499	10.4816	6.5000	6.2842	6.7313
Diff (1-2)	Pooled	0.9540	0.5221	1.3858	6.2864	6.1374	6.4429
Diff (1-2)	Satterthwaite	0.9540	0.5221	1.3858			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	3256	4.33	<.0001
Satterthwaite	Unequal	3240.5	4.33	<.0001

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	1628	1628	1.15	0.0053

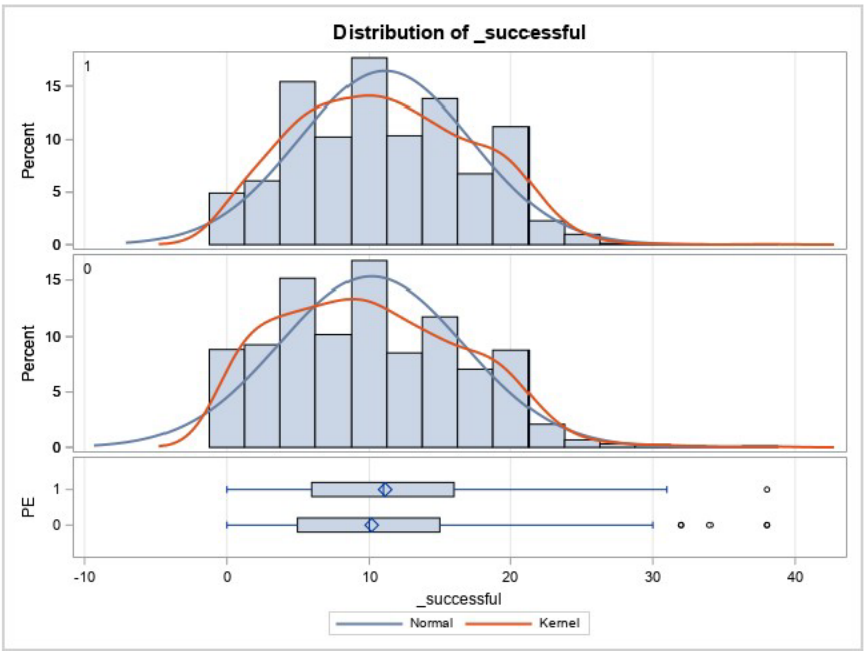


Figure 12. SAS historical charts

Variable: _withdrawals

Weight: _MATCHWGT_ Matched obs ATT weight

PE	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
1		1629	1.3548	1.7115	0.0424	0	12.0000
0		1629	1.1258	1.5236	0.0377	0	15.0000
Diff (1-2)	Pooled		0.2290	1.6203	0.0568		
Diff (1-2)	Satterthwaite		0.2290		0.0568		

PE	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
1		1.3548	1.2716	1.4380	1.7115	1.6547	1.7724
0		1.1258	1.0518	1.1999	1.5236	1.4730	1.5778
Diff (1-2)	Pooled	0.2290	0.1177	0.3403	1.6203	1.5819	1.6606
Diff (1-2)	Satterthwaite	0.2290	0.1177	0.3403			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	3256	4.03	<.0001
Satterthwaite	Unequal	3212.9	4.03	<.0001

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	1628	1628	1.26	<.0001

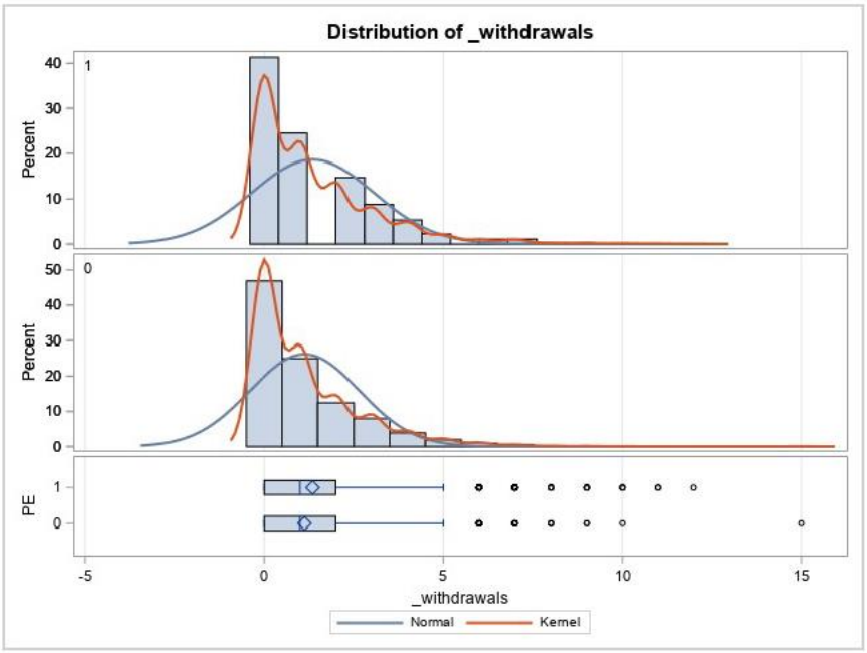


Figure 13. SAS historical charts 2

Variable: _incompletes

Weight: _MATCHWGT_ Matched obs ATT weight

PE	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
1		1629	0.00123	0.0350	0.000868	0	1.0000
0		1629	0.00307	0.0553	0.00137	0	1.0000
Diff (1-2)	Pooled		-0.00184	0.0463	0.00162		
Diff (1-2)	Satterthwaite		-0.00184		0.00162		

PE	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
1		0.00123	-0.00047	0.00293	0.0350	0.0339	0.0363
0		0.00307	0.000380	0.00576	0.0553	0.0535	0.0573
Diff (1-2)	Pooled	-0.00184	-0.00502	0.00134	0.0463	0.0452	0.0475
Diff (1-2)	Satterthwaite	-0.00184	-0.00502	0.00134			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	3256	-1.13	0.2565
Satterthwaite	Unequal	2752.3	-1.13	0.2565

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	1628	1628	2.50	<.0001

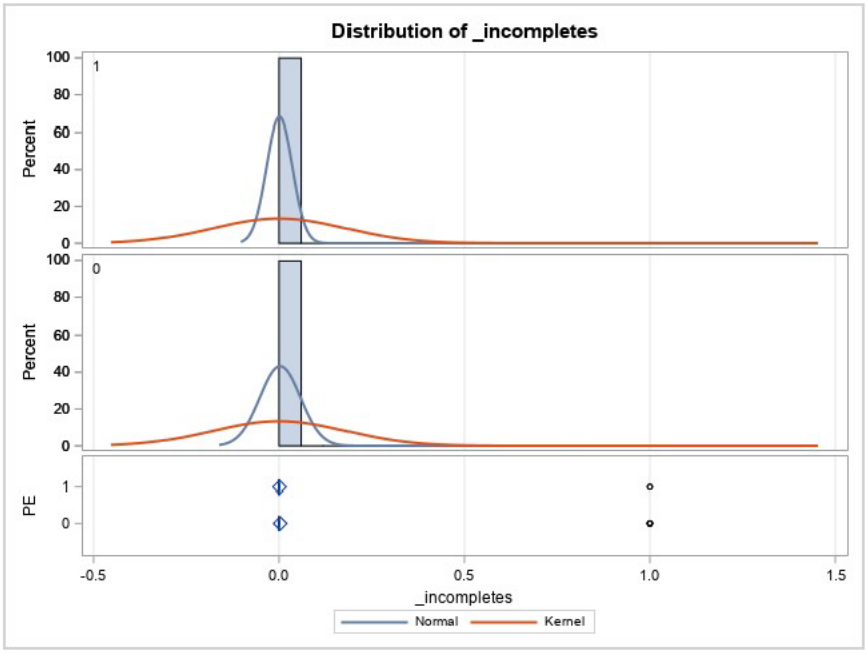


Figure 14. SAS historical charts 3

Weight: _MATCHWGT_ Matched obs ATT weight

PE	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
1		1629	3.7502	2.1471	0.0532	0	9.0000
0		1629	3.7416	2.3021	0.0570	0	9.0000
Diff (1-2)	Pooled		0.00859	2.2260	0.0780		
Diff (1-2)	Satterthwaite		0.00859		0.0780		

PE	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
1		3.7502	3.6458	3.8545	2.1471	2.0758	2.2235
0		3.7416	3.6297	3.8534	2.3021	2.2257	2.3840
Diff (1-2)	Pooled	0.00859	-0.1443	0.1615	2.2260	2.1732	2.2814
Diff (1-2)	Satterthwaite	0.00859	-0.1443	0.1615			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	3256	0.11	0.9123
Satterthwaite	Unequal	3240.3	0.11	0.9123

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	1628	1628	1.15	0.0049

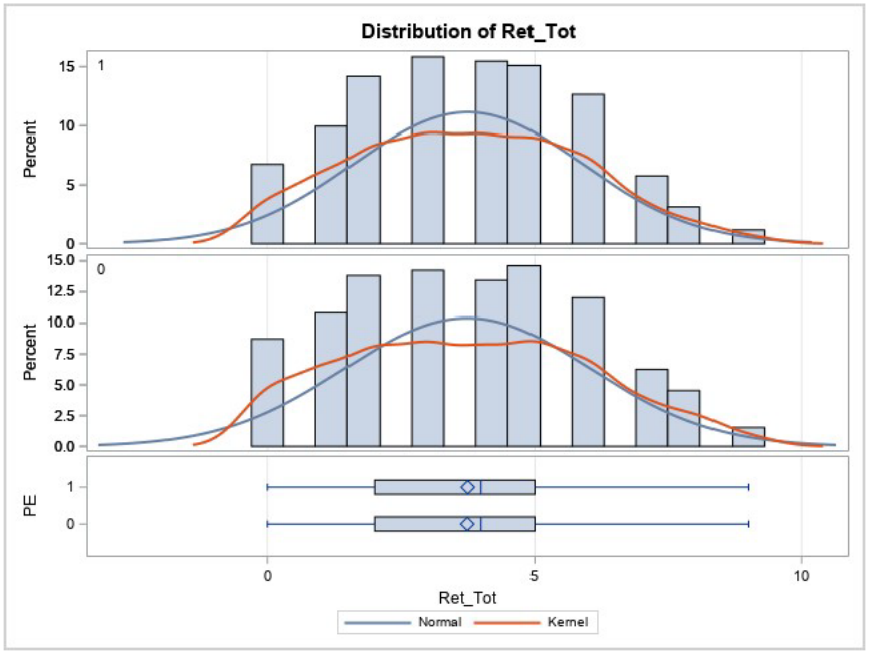


Figure 15. SAS historical charts 4

Weight: _MATCHWGT_ Matched obs ATT weight

PE	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
1		1629	2.8013	0.6962	0.0172	0	4.0000
0		1629	2.7789	0.7902	0.0196	0	4.0000
Diff (1-2)	Pooled		0.0223	0.7447	0.0261		
Diff (1-2)	Satterthwaite		0.0223		0.0261		

PE	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
1		2.8013	2.7674	2.8351	0.6962	0.6731	0.7210
0		2.7789	2.7405	2.8173	0.7902	0.7640	0.8184
Diff (1-2)	Pooled	0.0223	-0.0288	0.0735	0.7447	0.7270	0.7632
Diff (1-2)	Satterthwaite	0.0223	-0.0288	0.0735			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	3256	0.86	0.3919
Satterthwaite	Unequal	3205.1	0.86	0.3919

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	1628	1628	1.29	<.0001

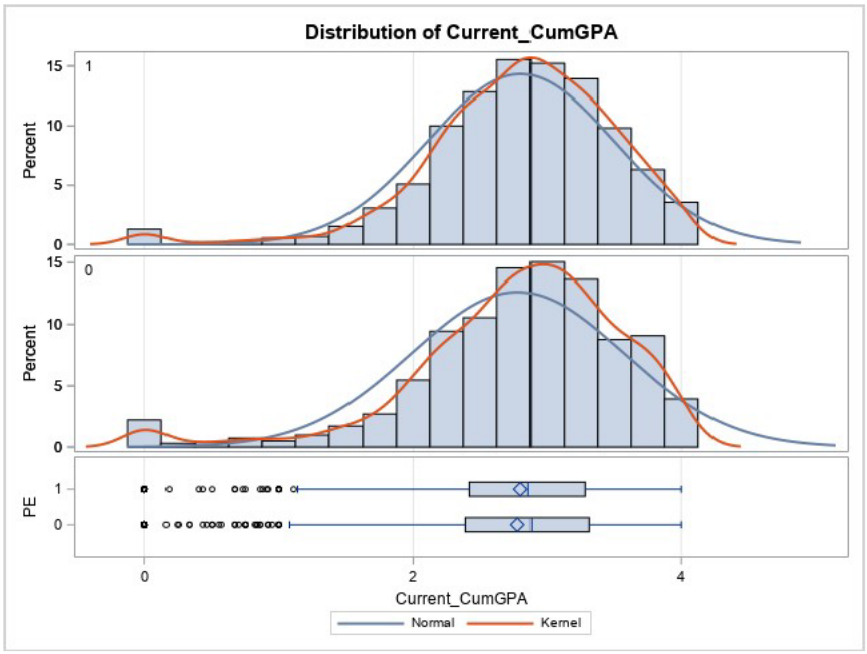


Figure 16. SAS historical charts 5

The SAS System

The FREQ Procedure

Frequency Percent Row Pct Col Pct	Table of PE by Grad_Any_Credential		
	Grad_Any_Credential		
PE	0	1	Total
0	851 26.12 52.24 51.58	778 23.88 47.76 48.38	1629 50.00
1	799 24.52 49.05 48.42	830 25.48 50.95 51.62	1629 50.00
Total	1650 50.64	1608 49.36	3258 100.00

Statistics for Table of PE by Grad_Any_Credential

Statistic	DF	Value	Prob
Chi-Square	1	3.3204	0.0684
Likelihood Ratio Chi-Square	1	3.3209	0.0684
Continuity Adj. Chi-Square	1	3.1939	0.0739
Mantel-Haenszel Chi-Square	1	3.3194	0.0685
Phi Coefficient		0.0319	
Contingency Coefficient		0.0319	
Cramer's V		0.0319	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	851
Left-sided Pr <= F	0.9684
Right-sided Pr >= F	0.0369
Table Probability (P)	0.0053
Two-sided Pr <= P	0.0739

Sample Size = 3258

Figure 17. SAS historical chi-square reports

The SAS System

The GLM Procedure

Dependent Variable: Current_CumGPA

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	80	326.021026	4.075263	8.75	<.0001
Error	3177	1480.091753	0.465877		
Corrected Total	3257	1806.112779			

R-Square	Coeff Var	Root MSE	Current_CumGPA Mean
0.180510	24.46353	0.682552	2.790080

Overall Noncentrality	
Min Var Unbiased Estimate	619.36
Low MSE Estimate	618.97
95% Confidence Limits	(518.6,731.47)

Proportion of Variation Accounted for	
Eta-Square	0.18
Omega-Square	0.16
95% Confidence Limits	(0.14,0.18)

Source	DF	Type I SS	Mean Square	F Value	Pr > F	Noncentrality Parameter				Total Variation Accounted For				Partial Variation Accounte		
						Min Var Unbiased Estimate	Low MSE Estimate	95% Confidence Limits		Semipartial Eta-Square	Semipartial Omega-Square	Conservative 95% Confidence Limits		Partial Eta-Square	Partial Omega-Square	95 Confic Lim
PE	1	0.4066789	0.4066789	0.87	0.3502	-0.128	-0.128	0.0	8.37	0.0002	-0.0000	0.0000	0.0024	0.0003	-0.0000	0.0000
PELL	1	0.5812236	0.5812236	1.25	0.2641	0.247	0.247	0.0	9.47	0.0003	0.0001	0.0000	0.0027	0.0004	0.0001	0.0000
Age	38	53.3591114	1.4041871	3.01	<.0001	76.463	76.414	42.8	120.42	0.0295	0.0197	0.0091	0.0299	0.0348	0.0230	0.0130
Sex	2	32.6552215	16.3276108	35.05	<.0001	68.050	68.007	40.1	105.85	0.0181	0.0176	0.0099	0.0278	0.0216	0.0205	0.0122
Race	3	47.1388632	15.7129544	33.73	<.0001	98.119	98.058	63.5	142.63	0.0261	0.0253	0.0158	0.0372	0.0309	0.0293	0.0191
_courses_attempted	35	191.8799274	5.4822836	11.77	<.0001	376.609	376.372	301.5	462.42	0.1062	0.0972	0.0780	0.1167	0.1148	0.1037	0.0847

Figure 18. SAS historical regression analysis

APPENDIX C: THEMATIC CODEBOOK

Table 10. Q1 codebook

Code	Definition	Example
Sports	Reference to any sports-related experience in their memorable story. Specific sport does not have to be referenced.	"I was a gymnast" or "I played many sports in high school."
Injury/Illness	Reference to any injury, illness, or disease in the memorable story response.	"I tore my ACL in high school." or "I have asthma."
Bodyweight	Reference to body weight, obesity, overweight, gained or lost.	"I have always strugged with my weight" or "I was obese as a child."
Self Confidence	Reference to not feeling good about oneself- physically, emotionally, skill-related, etc.	"I was afraid to use the equipment" or "I don't look like a fitness model"
Motivation	Any reference to motivation - having it, needing it, or lack thereof.	"I needed a class to motivate me to actually exercise." or "I am not motivated to work out."
Clubs	Reference to a club, not including sports.	"I participated in Latin club instead of sports" or "my focus was on SGA in high school."
Parents	Any reference to the influence of a parent within the memorable story response.	"I found my love of ballet when my mom enrolled me" or "my dad was overweight and inspired me to be healthier."
General Knowledge	Reference to the desire to acquire new knowledge, expand on existing knowledge, or the lack of knowledge.	"I wanted to learn about…" or "I never knew how to…"
Military	Any mention of military experience within their memorable story, to include ROTC programs.	"I did ROTC in high school" or "I'm an Army veteran."
Positive	The use of positive language associated with any aspect of the memorable story.	"love", "happy", "feel good", "enjoy", "encourage", etc.
Negative	The use of negative language associated with any aspect of the memorable story.	"hate", "lazy", "fat", "hard", "unmotivated", etc.

Table 11. Q2 codebook

Code	Definition	Example
Parents	Any reference to the influence of a parent within the elective choice response.	"My mom encouraged me to…" or "my dad said…"
Skill	Reference to the desire to acquire new knowledge, expand on existing knowledge, or the lack of knowledge.	"I wanted to learn how to defend myself" or "I wanted to learn more about calories and eating plans."
GPA	Any reference to taking courses based on grade motivation.	"I needed to improve my GPA" or "I thought this class would be easy."
Self Improvement	Any reference to self improvement, whether physical, emotional, or other (not skill-based).	"I needed a class to help me be healthier." or "I wanted to lose weight."
Self Confidence	Reference to how someone feels about themself-physically, emotionally, skill-related, etc.	"I wasn't happy with how I looked" or "I didn't know how to do (insert skill here)…"
Personal Interest/Enjoyment	Any reference to choosing electives based on interest, enjoyment, or predisposition for certain activities.	"I love to draw, so I take art electives" or "I choose electives based on what interests me."
Career Path/Requirement	Reference to completing courses based on degree requirements, intended career, or major.	"I only take classes that count for my degree" or "I am finishing my requirements."

Table 12. Q3 codebook

Code	Definition	Example
Advertising	Reference to better advertising for the PE courses, not knowing the courses existed, or social media needs	"I didn't know we had PE classes" or "They should post on Instagram to show us the classes."
Inclusivity	Any reference to PE courses being inclusive of all students, body types, or ability levels	"I would take the class if there were people like me" or "...as long as they let in non-athletes."
Self Confidence	Reference to self confidence, image, or other concerns related to self perception	"I'd be too afraid of being laughed at" or "I am too overweight to take a PE class."
New Knowledge	Reference to gaining new knowledge or skills through a PE course	"I would take a yoga course to help me deal with stress" or "I'd like to take one to learn about nutrition."
Mentor/Professor	Any reference to considering PE based on mentoring, coaching, or the professor	"I'd like to have a coach who would keep me motivated" or "I'd take a PE class if the professor was well-respected."
Physical Benefits	Reference to taking PE for the physical benefits or outcomes	"I'd take a PE class to lose weight" or "I'd take a PE class to be able to run faster."
Friends/Social	Reference to friends or social support as a motivator to take PE classes	"I'd take PE if my friends signed up, too" or "I'd take PE if the classes had groups that hold me accountable."
Time/Location/Logistics	Reference to PE courses being selected if they are at the right time, campus, or fit into a specific schedule	"I'd take a PE class if it agreed with my work schedule" or "I can't take PE because it isn't offered when I need it."
Other	Reference to other benefits not specifically outlined in the other codes	"I need classes that give me (insert benefit)..."

Table 13. Q4 codebook

Code	Definition	Example
New Knowledge	Reference to new knowledge acquired during PE course completion	"I learned how to defend myself" or "I make better eating choices because of what I learned."
Quality of Instruction	Reference to the quality of instruction (good or bad)	"The professor really helped me feel better about myself" or "I wish the professor would have given me specific advice."
Physical Benefits	Any reference to a physical benefit gained as a result of taking a PE course	"I lost 10 pounds" or "Yoga helped me become more flexible."
Mental Benefits	Any reference to a mental benefit gained as a result of taking a PE course	"The class helped me deal with stress" or "The class was a nice break from my heavy courseload."

APPENDIX D: SELF-EFFICACY FIGURES

The TTEST Procedure

Variable: After_injury_recovery (After_injury_recovery)

Completed_PE	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
No		125	3.8560	2.8333	0.2534	0	10.0000
Yes		53	4.0755	2.4561	0.3374	0	10.0000
Diff (1-2)	Pooled		-0.2195	2.7273	0.4470		
Diff (1-2)	Satterthwaite		-0.2195		0.4220		

Completed_PE	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
No		3.8560	3.3544	4.3576	2.8333	2.5203	3.2358	2.5138	3.2267
Yes		4.0755	3.3985	4.7525	2.4561	2.0616	3.0389	2.0491	3.0181
Diff (1-2)	Pooled	-0.2195	-1.1017	0.6628	2.7273	2.4697	3.0453	2.4652	3.0394
Diff (1-2)	Satterthwaite	-0.2195	-1.0555	0.6166					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	176	-0.49	0.6241
Satterthwaite	Unequal	112.25	-0.52	0.6040
Cochran	Unequal	.	-0.52	0.6047

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	124	52	1.33	0.2452

Figure 19. SE PE comparison - After injury

The TTEST Procedure

Variable: After_family_problems (After_family_problems)

Completed_PE	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
No		125	5.2160	3.2641	0.2920	0	10.0000
Yes		52	5.7115	2.7321	0.3789	0	10.0000
Diff (1-2)	Pooled		-0.4955	3.1185	0.5146		
Diff (1-2)	Satterthwaite		-0.4955		0.4783		

Completed_PE	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
No		5.2160	4.6381	5.7939	3.2641	2.9035	3.7278	2.8960	3.7174
Yes		5.7115	4.9509	6.4722	2.7321	2.2896	3.3881	2.2755	3.3644
Diff (1-2)	Pooled	-0.4955	-1.5112	0.5201	3.1185	2.8232	3.4833	2.8180	3.4764
Diff (1-2)	Satterthwaite	-0.4955	-1.4431	0.4521					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	175	-0.96	0.3369
Satterthwaite	Unequal	113.14	-1.04	0.3024
Cochran	Unequal	.	-1.04	0.3040

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	124	51	1.43	0.1510

Figure 20. SE PE comparison - After family problems

The TTEST Procedure

Variable: After_recovering_illness (After_recovering_illness)

Completed_PE	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
No		125	4.5360	3.1611	0.2827	0	10.0000
Yes		53	4.6792	2.4789	0.3405	0	10.0000
Diff (1-2)	Pooled		-0.1432	2.9759	0.4878		
Diff (1-2)	Satterthwaite		-0.1432		0.4426		

Completed_PE	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
No		4.5360	3.9764	5.0956	3.1611	2.8119	3.6102	2.8046	3.6001
Yes		4.6792	3.9960	5.3625	2.4789	2.0807	3.0671	2.0682	3.0461
Diff (1-2)	Pooled	-0.1432	-1.1059	0.8194	2.9759	2.6948	3.3229	2.6899	3.3164
Diff (1-2)	Satterthwaite	-0.1432	-1.0193	0.7328					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	176	-0.29	0.7694
Satterthwaite	Unequal	123.75	-0.32	0.7467
Cochran	Unequal	.	-0.32	0.7472

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	124	52	1.63	0.0490

Figure 21. SE PE comparison - After illness

The TTEST Procedure

Variable: After_Vacation (After_Vacation)

Completed_PE	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
No		125	6.1120	3.0644	0.2741	0	10.0000
Yes		52	6.3654	2.6199	0.3633	0	10.0000
Diff (1-2)	Pooled		-0.2534	2.9418	0.4854		
Diff (1-2)	Satterthwaite		-0.2534		0.4551		

Completed_PE	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
No		6.1120	5.5695	6.6545	3.0644	2.7259	3.4997	2.7188	3.4899
Yes		6.3654	5.6360	7.0948	2.6199	2.1956	3.2490	2.1821	3.2263
Diff (1-2)	Pooled	-0.2534	-1.2115	0.7047	2.9418	2.6632	3.2860	2.6583	3.2795
Diff (1-2)	Satterthwaite	-0.2534	-1.1552	0.6485					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	175	-0.52	0.6024
Satterthwaite	Unequal	110.81	-0.56	0.5788
Cochran	Unequal	.	-0.56	0.5796

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	124	51	1.37	0.2059

Figure 22. SE PE comparison - After vacation

The TTEST Procedure

Variable: Bad_weather (Bad_weather)

Completed_PE	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
No		125	6.1520	3.0719	0.2748	0	10.0000
Yes		53	6.4906	2.8327	0.3891	1.0000	10.0000
Diff (1-2)	Pooled		-0.3386	3.0032	0.4923		
Diff (1-2)	Satterthwaite		-0.3386		0.4763		

Completed_PE	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
No		6.1520	5.6082	6.6958	3.0719	2.7325	3.5083	2.7254	3.4984
Yes		6.4906	5.7098	7.2713	2.8327	2.3776	3.5048	2.3633	3.4807
Diff (1-2)	Pooled	-0.3386	-1.3101	0.6329	3.0032	2.7195	3.3534	2.7146	3.3468
Diff (1-2)	Satterthwaite	-0.3386	-1.2830	0.6058					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	176	-0.69	0.4925
Satterthwaite	Unequal	105.76	-0.71	0.4788
Cochran	Unequal	.	-0.71	0.4798

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	124	52	1.18	0.5144

Figure 23. SE PE comparison - Bad weather

The TTEST Procedure

Variable: During_After_Personal_Problems (During_After_Personal_Problems)

Completed_PE	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
No		125	5.7120	3.1872	0.2851	0	10.0000
Yes		53	6.1887	3.0638	0.4208	0	10.0000
Diff (1-2)	Pooled		-0.4767	3.1512	0.5165		
Diff (1-2)	Satterthwaite		-0.4767		0.5083		

Completed_PE	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
No		5.7120	5.1478	6.2762	3.1872	2.8351	3.6400	2.8278	3.6298
Yes		6.1887	5.3442	7.0332	3.0638	2.5716	3.7907	2.5561	3.7648
Diff (1-2)	Pooled	-0.4767	-1.4961	0.5427	3.1512	2.8536	3.5187	2.8484	3.5118
Diff (1-2)	Satterthwaite	-0.4767	-1.4849	0.5316					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	176	-0.92	0.3574
Satterthwaite	Unequal	101.69	-0.94	0.3506
Cochran	Unequal	.	-0.94	0.3519

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	124	52	1.08	0.7617

Figure 24. SE PE comparison - Personal problems

The TTEST Procedure

Variable: During_vacation (During_vacation)

Completed_PE	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
No		125	4.1840	3.4882	0.3120	0	10.0000
Yes		52	4.2308	3.2876	0.4559	0	10.0000
Diff (1-2)	Pooled		-0.0468	3.4310	0.5662		
Diff (1-2)	Satterthwaite		-0.0468		0.5524		

Completed_PE	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
No		4.1840	3.5665	4.8015	3.4882	3.1028	3.9837	3.0948	3.9725
Yes		4.2308	3.3155	5.1460	3.2876	2.7552	4.0771	2.7383	4.0485
Diff (1-2)	Pooled	-0.0468	-1.1642	1.0706	3.4310	3.1061	3.8323	3.1003	3.8248
Diff (1-2)	Satterthwaite	-0.0468	-1.1427	1.0492					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	175	-0.08	0.9343
Satterthwaite	Unequal	100.86	-0.08	0.9327
Cochran	Unequal	.	-0.08	0.9328

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	124	51	1.13	0.6420

Figure 25. SE PE comparison - During vacation

The TTEST Procedure

Variable: Feeling_anxious (Feeling_anxious)

Completed_PE	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
No		125	5.5280	3.3806	0.3024	0	10.0000
Yes		53	5.1509	3.0280	0.4159	0	10.0000
Diff (1-2)	Pooled		0.3771	3.2804	0.5377		
Diff (1-2)	Satterthwaite		0.3771		0.5142		

Completed_PE	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
No		5.5280	4.9295	6.1265	3.3806	3.0071	3.8609	2.9994	3.8500
Yes		5.1509	4.3163	5.9856	3.0280	2.5416	3.7465	2.5263	3.7208
Diff (1-2)	Pooled	0.3771	-0.6841	1.4382	3.2804	2.9706	3.6630	2.9651	3.6558
Diff (1-2)	Satterthwaite	0.3771	-0.6422	1.3963					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	176	0.70	0.4841
Satterthwaite	Unequal	108.75	0.73	0.4650
Cochran	Unequal	.	0.73	0.4660

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	124	52	1.25	0.3717

Figure 26. SE PE comparison - Feeling anxious

The TTEST Procedure

Variable: Feeling_Depressed (Feeling_Depressed)

Completed_PE	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
No		125	4.8080	3.4773	0.3110	0	10.0000
Yes		53	4.8868	3.6356	0.4994	0	10.0000
Diff (1-2)	Pooled		-0.0788	3.5248	0.5778		
Diff (1-2)	Satterthwaite		-0.0788		0.5883		

Completed_PE	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
No		4.8080	4.1924	5.4236	3.4773	3.0932	3.9713	3.0852	3.9602
Yes		4.8868	3.8847	5.8889	3.6356	3.0516	4.4983	3.0332	4.4674
Diff (1-2)	Pooled	-0.0788	-1.2190	1.0615	3.5248	3.1919	3.9359	3.1861	3.9282
Diff (1-2)	Satterthwaite	-0.0788	-1.2469	1.0893					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	176	-0.14	0.8917
Satterthwaite	Unequal	94.219	-0.13	0.8937
Cochran	Unequal	.	-0.13	0.8939

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	52	124	1.09	0.6789

Figure 27. SE PE comparison - Feeling depressed

The TTEST Procedure

Variable: Goals_not_reached (Goals_not_reached)

Completed_PE	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
No		124	6.2823	2.8243	0.2536	0	10.0000
Yes		52	6.5577	2.8244	0.3917	0	10.0000
Diff (1-2)	Pooled		-0.2754	2.8243	0.4666		
Diff (1-2)	Satterthwaite		-0.2754		0.4666		

Completed_PE	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
No		6.2823	5.7802	6.7843	2.8243	2.5111	3.2274	2.5046	3.2182
Yes		6.5577	5.7714	7.3440	2.8244	2.3669	3.5026	2.3524	3.4781
Diff (1-2)	Pooled	-0.2754	-1.1964	0.6455	2.8243	2.5562	3.1558	2.5514	3.1495
Diff (1-2)	Satterthwaite	-0.2754	-1.2017	0.6508					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	174	-0.59	0.5558
Satterthwaite	Unequal	95.758	-0.59	0.5564
Cochran	Unequal	.	-0.59	0.5572

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	51	123	1.00	0.9739

Figure 28. SE PE comparison - Goals not reached

The TTEST Procedure

Variable: Other_interesting_things (Other_interesting_things)

Completed_PE	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
No		124	5.0081	2.9755	0.2672	0	10.0000
Yes		52	5.5385	2.6006	0.3606	0	10.0000
Diff (1-2)	Pooled		-0.5304	2.8707	0.4743		
Diff (1-2)	Satterthwaite		-0.5304		0.4488		

Completed_PE	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
No		5.0081	4.4791	5.5370	2.9755	2.6456	3.4002	2.6387	3.3905
Yes		5.5385	4.8144	6.2625	2.6006	2.1794	3.2251	2.1661	3.2025
Diff (1-2)	Pooled	-0.5304	-1.4665	0.4057	2.8707	2.5982	3.2076	2.5933	3.2012
Diff (1-2)	Satterthwaite	-0.5304	-1.4200	0.3592					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	174	-1.12	0.2650
Satterthwaite	Unequal	108.77	-1.18	0.2399
Cochran	Unequal	.	-1.18	0.2417

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	123	51	1.31	0.2778

Figure 29. SE PE comparison - Other interesting things

The TTEST Procedure

Variable: Other_time_commitments (Other_time_commitments)

Completed_PE	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
No		125	3.8880	3.0060	0.2689	0	10.0000
Yes		52	4.5385	3.0387	0.4214	0	10.0000
Diff (1-2)	Pooled		-0.6505	3.0155	0.4976		
Diff (1-2)	Satterthwaite		-0.6505		0.4999		

Completed_PE	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
No		3.8880	3.3558	4.4202	3.0060	2.6739	3.4330	2.6670	3.4233
Yes		4.5385	3.6925	5.3844	3.0387	2.5466	3.7684	2.5309	3.7420
Diff (1-2)	Pooled	-0.6505	-1.6326	0.3316	3.0155	2.7300	3.3683	2.7250	3.3617
Diff (1-2)	Satterthwaite	-0.6505	-1.6429	0.3419					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	175	-1.31	0.1929
Satterthwaite	Unequal	94.53	-1.30	0.1963
Cochran	Unequal	.	-1.30	0.1980

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	51	124	1.02	0.9007

Figure 30. SE PE comparison - Other time commitments

The TTEST Procedure

Variable: Physical_Discomfort_Exercise (Physical_Discomfort_Exercise)

Completed_PE	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
No		125	4.4720	2.9115	0.2604	0	10.0000
Yes		52	4.9038	2.7243	0.3778	0	10.0000
Diff (1-2)	Pooled		-0.4318	2.8582	0.4717		
Diff (1-2)	Satterthwaite		-0.4318		0.4589		

Completed_PE	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
No		4.4720	3.9566	4.9874	2.9115	2.5899	3.3251	2.5832	3.3158
Yes		4.9038	4.1454	5.6623	2.7243	2.2831	3.3785	2.2691	3.3549
Diff (1-2)	Pooled	-0.4318	-1.3627	0.4990	2.8582	2.5876	3.1926	2.5828	3.1863
Diff (1-2)	Satterthwaite	-0.4318	-1.3420	0.4783					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	175	-0.92	0.3611
Satterthwaite	Unequal	101.55	-0.94	0.3489
Cochran	Unequal	.	-0.94	0.3502

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	124	51	1.14	0.5995

Figure 31. SE PE comparison - Physical discomfort

The TTEST Procedure

Variable: Visitors_Present (Visitors_Present)

Completed_PE	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
No		125	4.3840	3.2123	0.2873	0	10.0000
Yes		52	4.5769	2.9195	0.4049	0	10.0000
Diff (1-2)	Pooled		-0.1929	3.1298	0.5165		
Diff (1-2)	Satterthwaite		-0.1929		0.4965		

Completed_PE	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
No		4.3840	3.8153	4.9527	3.2123	2.8574	3.6687	2.8501	3.6584
Yes		4.5769	3.7641	5.3897	2.9195	2.4467	3.6205	2.4316	3.5952
Diff (1-2)	Pooled	-0.1929	-1.2122	0.8264	3.1298	2.8334	3.4960	2.8282	3.4891
Diff (1-2)	Satterthwaite	-0.1929	-1.1774	0.7915					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	175	-0.37	0.7092
Satterthwaite	Unequal	104.41	-0.39	0.6984
Cochran	Unequal	.	-0.39	0.6989

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	124	51	1.21	0.4435

Figure 32. SE PE comparison - Visitors present

The TTEST Procedure

Variable: When_tired (When_tired)

Completed_PE	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
No		125	4.5040	2.5229	0.2257	0	10.0000
Yes		53	4.9811	2.5532	0.3507	0	10.0000
Diff (1-2)	Pooled		-0.4771	2.5319	0.4150		
Diff (1-2)	Satterthwaite		-0.4771		0.4170		

Completed_PE	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
No		4.5040	4.0574	4.9506	2.5229	2.2442	2.8813	2.2384	2.8732
Yes		4.9811	4.2774	5.6849	2.5532	2.1430	3.1590	2.1301	3.1374
Diff (1-2)	Pooled	-0.4771	-1.2962	0.3419	2.5319	2.2927	2.8271	2.2885	2.8216
Diff (1-2)	Satterthwaite	-0.4771	-1.3048	0.3506					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	176	-1.15	0.2518
Satterthwaite	Unequal	96.995	-1.14	0.2554
Cochran	Unequal	.	-1.14	0.2569

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	52	124	1.02	0.8933

Figure 33. SE PE comparison - When tired

The TTEST Procedure

Variable: Without_support (Without_support)

Completed_PE	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
No		125	6.3440	3.2728	0.2927	0	10.0000
Yes		52	6.7692	2.8534	0.3957	0	10.0000
Diff (1-2)	Pooled		-0.4252	3.1563	0.5209		
Diff (1-2)	Satterthwaite		-0.4252		0.4922		

Completed_PE	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
No		6.3440	5.7646	6.9234	3.2728	2.9112	3.7378	2.9037	3.7273
Yes		6.7692	5.9748	7.5636	2.8534	2.3913	3.5386	2.3766	3.5138
Diff (1-2)	Pooled	-0.4252	-1.4532	0.6027	3.1563	2.8575	3.5256	2.8522	3.5186
Diff (1-2)	Satterthwaite	-0.4252	-1.4008	0.5503					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	175	-0.82	0.4154
Satterthwaite	Unequal	108.71	-0.86	0.3895
Cochran	Unequal	.	-0.86	0.3908

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	124	51	1.32	0.2685

Figure 34. SE PE comparison - Without support

The TTEST Procedure

Variable: Work_Pressure (Work_Pressure)

Completed_PE	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
No		125	5.0800	3.0628	0.2739	0	10.0000
Yes		53	5.4151	2.6992	0.3708	0	10.0000
Diff (1-2)	Pooled		-0.3351	2.9600	0.4852		
Diff (1-2)	Satterthwaite		-0.3351		0.4610		

Completed_PE	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
No		5.0800	4.5378	5.6222	3.0628	2.7244	3.4979	2.7174	3.4881
Yes		5.4151	4.6711	6.1591	2.6992	2.2656	3.3397	2.2520	3.3168
Diff (1-2)	Pooled	-0.3351	-1.2926	0.6224	2.9600	2.6805	3.3052	2.6755	3.2987
Diff (1-2)	Satterthwaite	-0.3351	-1.2486	0.5784					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	176	-0.69	0.4907
Satterthwaite	Unequal	110.47	-0.73	0.4688
Cochran	Unequal	.	-0.73	0.4699

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	124	52	1.29	0.3044

Figure 35. SE PE comparison - Work pressure

The TTEST Procedure

Variable: Work_at_home (Work_at_home)

Completed_PE	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
No		125	4.0080	3.2241	0.2884	0	10.0000
Yes		52	4.4038	2.9656	0.4112	0	10.0000
Diff (1-2)	Pooled		-0.3958	3.1510	0.5200		
Diff (1-2)	Satterthwaite		-0.3958		0.5023		

Completed_PE	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
No		4.0080	3.4372	4.5788	3.2241	2.8679	3.6822	2.8605	3.6718
Yes		4.4038	3.5782	5.2295	2.9656	2.4853	3.6777	2.4700	3.6519
Diff (1-2)	Pooled	-0.3958	-1.4221	0.6304	3.1510	2.8526	3.5196	2.8473	3.5127
Diff (1-2)	Satterthwaite	-0.3958	-1.3920	0.6003					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	175	-0.76	0.4475
Satterthwaite	Unequal	103.22	-0.79	0.4324
Cochran	Unequal	.	-0.79	0.4336

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	124	51	1.18	0.5046

Figure 36. SE PE comparison - Work at home

The TTEST Procedure

Variable: After_family_problems (After_family_problems)

Gender	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Female		115	5.1826	3.0767	0.2869	0	10.0000
Male		39	6.3590	3.2484	0.5202	0	10.0000
Diff (1-2)	Pooled		-1.1764	3.1205	0.5782		
Diff (1-2)	Satterthwaite		-1.1764		0.5940		

Gender	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
Female		5.1826	4.6142	5.7510	3.0767	2.7240	3.5353	2.7163	3.5245
Male		6.3590	5.3060	7.4120	3.2484	2.6547	4.1864	2.6330	4.1467
Diff (1-2)	Pooled	-1.1764	-2.3188	-0.0339	3.1205	2.8057	3.5156	2.7998	3.5076
Diff (1-2)	Satterthwaite	-1.1764	-2.3636	0.0108					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	152	-2.03	0.0437
Satterthwaite	Unequal	62.705	-1.98	0.0521
Cochran	Unequal	.	-1.98	0.0538

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	38	114	1.11	0.6483

Figure 37. SE Gender comparison - After family problems

The TTEST Procedure

Variable: After_injury_recovery (After_injury_recovery)

Gender	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Female		116	3.5172	2.6060	0.2420	0	10.0000
Male		39	5.0513	3.1284	0.5009	0	10.0000
Diff (1-2)	Pooled		-1.5340	2.7450	0.5081		
Diff (1-2)	Satterthwaite		-1.5340		0.5563		

Gender	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
Female		3.5172	3.0380	3.9965	2.6060	2.3083	2.9924	2.3019	2.9834
Male		5.0513	4.0372	6.0654	3.1284	2.5567	4.0318	2.5358	3.9935
Diff (1-2)	Pooled	-1.5340	-2.5378	-0.5302	2.7450	2.4689	3.0912	2.4637	3.0842
Diff (1-2)	Satterthwaite	-1.5340	-2.6481	-0.4199					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	153	-3.02	0.0030
Satterthwaite	Unequal	56.777	-2.76	0.0078
Cochran	Unequal	.	-2.76	0.0085

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	38	115	1.44	0.1441

Figure 38. SE Gender comparison - After injury

The TTEST Procedure

Variable: After_recovering_illness (After_recovering_illness)

Gender	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Female		116	4.2155	3.0866	0.2866	0	10.0000
Male		39	5.4615	2.9544	0.4731	0	10.0000
Diff (1-2)	Pooled		-1.2460	3.0543	0.5653		
Diff (1-2)	Satterthwaite		-1.2460		0.5531		

Gender	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
Female		4.2155	3.6479	4.7832	3.0866	2.7340	3.5444	2.7264	3.5336
Male		5.4615	4.5038	6.4193	2.9544	2.4145	3.8076	2.3948	3.7715
Diff (1-2)	Pooled	-1.2460	-2.3629	-0.1291	3.0543	2.7471	3.4395	2.7413	3.4318
Diff (1-2)	Satterthwaite	-1.2460	-2.3498	-0.1423					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	153	-2.20	0.0290
Satterthwaite	Unequal	67.981	-2.25	0.0275
Cochran	Unequal	.	-2.25	0.0291

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	115	38	1.09	0.7775

Figure 39. SE Gender comparison - After illness

The TTEST Procedure

Variable: After_Vacation (After_Vacation)

Gender	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Female		115	6.0957	3.0232	0.2819	0	10.0000
Male		39	7.1026	2.8727	0.4600	0	10.0000
Diff (1-2)	Pooled		-1.0069	2.9863	0.5534		
Diff (1-2)	Satterthwaite		-1.0069		0.5395		

Gender	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
Female		6.0957	5.5372	6.6541	3.0232	2.6766	3.4738	2.6691	3.4632
Male		7.1026	6.1713	8.0338	2.8727	2.3477	3.7023	2.3285	3.6671
Diff (1-2)	Pooled	-1.0069	-2.1002	0.0864	2.9863	2.6850	3.3644	2.6793	3.3567
Diff (1-2)	Satterthwaite	-1.0069	-2.0833	0.0695					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	152	-1.82	0.0708
Satterthwaite	Unequal	68.677	-1.87	0.0663
Cochran	Unequal	.	-1.87	0.0683

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	114	38	1.11	0.7364

Figure 40. SE Gender comparison - After vacation

The TTEST Procedure

Variable: Bad_weather (Bad_weather)

Gender	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Female		116	6.0172	3.0701	0.2851	0	10.0000
Male		39	6.9744	2.8607	0.4581	0	10.0000
Diff (1-2)	Pooled		-0.9571	3.0195	0.5589		
Diff (1-2)	Satterthwaite		-0.9571		0.5395		

Gender	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
Female		6.0172	5.4526	6.5819	3.0701	2.7195	3.5255	2.7119	3.5148
Male		6.9744	6.0470	7.9017	2.8607	2.3379	3.6868	2.3188	3.6518
Diff (1-2)	Pooled	-0.9571	-2.0613	0.1470	3.0195	2.7157	3.4003	2.7100	3.3926
Diff (1-2)	Satterthwaite	-0.9571	-2.0333	0.1190					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	153	-1.71	0.0888
Satterthwaite	Unequal	69.676	-1.77	0.0804
Cochran	Unequal	.	-1.77	0.0826

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	115	38	1.15	0.6304

Figure 41. SE Gender comparison - Bad weather

The TTEST Procedure

Variable: During_After_Personal_Problems (During_After_Personal_Problems)

Gender	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Female		116	5.7414	3.2946	0.3059	0	10.0000
Male		39	6.5897	2.8351	0.4540	0	10.0000
Diff (1-2)	Pooled		-0.8484	3.1867	0.5898		
Diff (1-2)	Satterthwaite		-0.8484		0.5474		

Gender	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
Female		5.7414	5.1355	6.3473	3.2946	2.9183	3.7832	2.9102	3.7717
Male		6.5897	5.6707	7.5088	2.8351	2.3170	3.6538	2.2981	3.6191
Diff (1-2)	Pooled	-0.8484	-2.0137	0.3169	3.1867	2.8661	3.5886	2.8601	3.5805
Diff (1-2)	Satterthwaite	-0.8484	-1.9388	0.2421					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	153	-1.44	0.1524
Satterthwaite	Unequal	75.215	-1.55	0.1254
Cochran	Unequal	.	-1.55	0.1278

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	115	38	1.35	0.2904

Figure 42. SE Gender comparison - Personal problems

The TTEST Procedure

Variable: During_vacation (During_vacation)

Gender	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Female		115	3.9217	3.3825	0.3154	0	10.0000
Male		39	5.5385	3.8172	0.6112	0	10.0000
Diff (1-2)	Pooled		-1.6167	3.4962	0.6479		
Diff (1-2)	Satterthwaite		-1.6167		0.6878		

Gender	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
Female		3.9217	3.2969	4.5466	3.3825	2.9946	3.8867	2.9862	3.8748
Male		5.5385	4.3011	6.7758	3.8172	3.1196	4.9195	3.0941	4.8728
Diff (1-2)	Pooled	-1.6167	-2.8967	-0.3368	3.4962	3.1435	3.9388	3.1368	3.9299
Diff (1-2)	Satterthwaite	-1.6167	-2.9928	-0.2406					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	152	-2.50	0.0136
Satterthwaite	Unequal	59.526	-2.35	0.0221
Cochran	Unequal	.	-2.35	0.0233

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	38	114	1.27	0.3314

Figure 43. SE Gender comparison - During vacation

The TTEST Procedure

Variable: Feeling_anxious (Feeling_anxious)

Gender	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Female		116	5.0517	3.4055	0.3162	0	10.0000
Male		39	6.9487	2.6945	0.4315	2.0000	10.0000
Diff (1-2)	Pooled		-1.8970	3.2435	0.6004		
Diff (1-2)	Satterthwaite		-1.8970		0.5349		

Gender	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
Female		5.0517	4.4254	5.6780	3.4055	3.0165	3.9105	3.0081	3.8987
Male		6.9487	6.0753	7.8222	2.6945	2.2021	3.4726	2.1841	3.4397
Diff (1-2)	Pooled	-1.8970	-3.0831	-0.7109	3.2435	2.9172	3.6526	2.9111	3.6443
Diff (1-2)	Satterthwaite	-1.8970	-2.9611	-0.8329					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	153	-3.16	0.0019
Satterthwaite	Unequal	81.963	-3.55	0.0006
Cochran	Unequal	.	-3.55	0.0009

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	115	38	1.60	0.0995

Figure 44. SE Gender comparison - Feeling anxious

The TTEST Procedure

Variable: Feeling_Depressed (Feeling_Depressed)

Gender	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Female		116	4.7414	3.6549	0.3394	0	10.0000
Male		39	5.8718	3.3496	0.5364	0	10.0000
Diff (1-2)	Pooled		-1.1304	3.5815	0.6629		
Diff (1-2)	Satterthwaite		-1.1304		0.6347		

Gender	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
Female		4.7414	4.0692	5.4136	3.6549	3.2375	4.1970	3.2285	4.1843
Male		5.8718	4.7860	6.9576	3.3496	2.7375	4.3169	2.7151	4.2759
Diff (1-2)	Pooled	-1.1304	-2.4401	0.1793	3.5815	3.2213	4.0333	3.2145	4.0242
Diff (1-2)	Satterthwaite	-1.1304	-2.3961	0.1352					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	153	-1.71	0.0902
Satterthwaite	Unequal	70.764	-1.78	0.0792
Cochran	Unequal	.	-1.78	0.0814

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	115	38	1.19	0.5468

Figure 45. SE Gender comparison - Feeling depressed

The TTEST Procedure

Variable: Goals_not_reached (Goals_not_reached)

Gender	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Female		114	6.3158	2.8759	0.2694	0	10.0000
Male		39	7.1026	2.5005	0.4004	3.0000	10.0000
Diff (1-2)	Pooled		-0.7868	2.7862	0.5169		
Diff (1-2)	Satterthwaite		-0.7868		0.4826		

Gender	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
Female		6.3158	5.7821	6.8494	2.8759	2.5449	3.3068	2.5377	3.2966
Male		7.1026	6.2920	7.9131	2.5005	2.0435	3.2226	2.0268	3.1920
Diff (1-2)	Pooled	-0.7868	-1.8080	0.2344	2.7862	2.5043	3.1403	2.4990	3.1331
Diff (1-2)	Satterthwaite	-0.7868	-1.7481	0.1745					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	151	-1.52	0.1300
Satterthwaite	Unequal	75.011	-1.63	0.1072
Cochran	Unequal	.	-1.63	0.1096

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	113	38	1.32	0.3260

Figure 46. SE Gender comparison - Goals not reached

The TTEST Procedure

Variable: Other_interesting_things (Other_interesting_things)

Gender	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Female		114	5.0088	2.9404	0.2754	0	10.0000
Male		39	6.3077	2.6572	0.4255	0	10.0000
Diff (1-2)	Pooled		-1.2989	2.8718	0.5327		
Diff (1-2)	Satterthwaite		-1.2989		0.5068		

Gender	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
Female		5.0088	4.4632	5.5544	2.9404	2.6019	3.3809	2.5946	3.3705
Male		6.3077	5.4463	7.1691	2.6572	2.1716	3.4245	2.1539	3.3920
Diff (1-2)	Pooled	-1.2989	-2.3515	-0.2463	2.8718	2.5812	3.2367	2.5757	3.2292
Diff (1-2)	Satterthwaite	-1.2989	-2.3092	-0.2886					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	151	-2.44	0.0159
Satterthwaite	Unequal	72.243	-2.56	0.0125
Cochran	Unequal	.	-2.56	0.0136

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	113	38	1.22	0.4815

Figure 47. SE Gender comparison - Other interesting things

The TTEST Procedure

Variable: Other_time_commitments (Other_time_commitments)

Gender	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Female		115	3.9130	2.9782	0.2777	0	10.0000
Male		39	5.1026	3.4089	0.5459	0	10.0000
Diff (1-2)	Pooled		-1.1895	3.0915	0.5729		
Diff (1-2)	Satterthwaite		-1.1895		0.6125		

Gender	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
Female		3.9130	3.3629	4.4632	2.9782	2.6367	3.4221	2.6293	3.4116
Male		5.1026	3.9975	6.2076	3.4089	2.7859	4.3934	2.7632	4.3516
Diff (1-2)	Pooled	-1.1895	-2.3213	-0.0577	3.0915	2.7796	3.4829	2.7737	3.4749
Diff (1-2)	Satterthwaite	-1.1895	-2.4151	0.0360					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	152	-2.08	0.0395
Satterthwaite	Unequal	58.902	-1.94	0.0569
Cochran	Unequal	.	-1.94	0.0585

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	38	114	1.31	0.2791

Figure 48. SE Gender comparison - Other time commitments

The TTEST Procedure

Variable: Physical_Discomfort_Exercise (Physical_Discomfort_Exercise)

Gender	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Female		115	4.4609	2.8846	0.2690	0	10.0000
Male		39	4.8974	3.1187	0.4994	0	10.0000
Diff (1-2)	Pooled		-0.4366	2.9448	0.5457		
Diff (1-2)	Satterthwaite		-0.4366		0.5672		

Gender	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
Female		4.4609	3.9280	4.9937	2.8846	2.5538	3.3145	2.5467	3.3044
Male		4.8974	3.8865	5.9084	3.1187	2.5487	4.0193	2.5279	3.9811
Diff (1-2)	Pooled	-0.4366	-1.5147	0.6415	2.9448	2.6477	3.3177	2.6421	3.3101
Diff (1-2)	Satterthwaite	-0.4366	-1.5706	0.6975					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	152	-0.80	0.4249
Satterthwaite	Unequal	61.523	-0.77	0.4444
Cochran	Unequal	.	-0.77	0.4456

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	38	114	1.17	0.5231

Figure 49. SE Gender comparison - Physical discomfort

The TTEST Procedure

Variable: Visitors_Present (Visitors_Present)

Gender	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Female		115	4.2609	3.1375	0.2926	0	10.0000
Male		39	5.3590	3.0991	0.4963	0	10.0000
Diff (1-2)	Pooled		-1.0981	3.1279	0.5796		
Diff (1-2)	Satterthwaite		-1.0981		0.5761		

Gender	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
Female		4.2609	3.6813	4.8404	3.1375	2.7777	3.6051	2.7699	3.5941
Male		5.3590	4.3544	6.3636	3.0991	2.5327	3.9941	2.5121	3.9562
Diff (1-2)	Pooled	-1.0981	-2.2432	0.0470	3.1279	2.8123	3.5239	2.8064	3.5159
Diff (1-2)	Satterthwaite	-1.0981	-2.2482	0.0520					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	152	-1.89	0.0600
Satterthwaite	Unequal	66.335	-1.91	0.0610
Cochran	Unequal	.	-1.91	0.0629

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	114	38	1.02	0.9617

Figure 50. SE Gender comparison - Visitors present

The TTEST Procedure

Variable: When_tired (When_tired)

Gender	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Female		116	4.4655	2.6058	0.2419	0	10.0000
Male		39	5.4615	2.4371	0.3902	0	10.0000
Diff (1-2)	Pooled		-0.9960	2.5649	0.4748		
Diff (1-2)	Satterthwaite		-0.9960		0.4592		

Gender	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
Female		4.4655	3.9863	4.9448	2.6058	2.3081	2.9922	2.3017	2.9832
Male		5.4615	4.6715	6.2515	2.4371	1.9917	3.1408	1.9754	3.1110
Diff (1-2)	Pooled	-0.9960	-1.9340	-0.0581	2.5649	2.3069	2.8884	2.3021	2.8819
Diff (1-2)	Satterthwaite	-0.9960	-1.9119	-0.0801					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	153	-2.10	0.0376
Satterthwaite	Unequal	69.436	-2.17	0.0335
Cochran	Unequal	.	-2.17	0.0352

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	115	38	1.14	0.6500

Figure 51. SE Gender comparison - When tired

The TTEST Procedure

Variable: Without_support (Without_support)

Gender	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Female		115	6.2870	3.2573	0.3037	0	10.0000
Male		39	7.5897	2.7788	0.4450	0	10.0000
Diff (1-2)	Pooled		-1.3028	3.1445	0.5827		
Diff (1-2)	Satterthwaite		-1.3028		0.5388		

Gender	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
Female		6.2870	5.6852	6.8887	3.2573	2.8838	3.7428	2.8757	3.7314
Male		7.5897	6.6889	8.4905	2.7788	2.2710	3.5813	2.2525	3.5473
Diff (1-2)	Pooled	-1.3028	-2.4540	-0.1516	3.1445	2.8273	3.5426	2.8213	3.5345
Diff (1-2)	Satterthwaite	-1.3028	-2.3758	-0.2298					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	152	-2.24	0.0268
Satterthwaite	Unequal	76.152	-2.42	0.0180
Cochran	Unequal	.	-2.42	0.0194

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	114	38	1.37	0.2635

Figure 52. SE Gender comparison - Without support

The TTEST Procedure

Variable: Work_at_home (Work_at_home)

Gender	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Female		115	4.0522	3.1507	0.2938	0	10.0000
Male		39	4.8462	3.3759	0.5406	0	10.0000
Diff (1-2)	Pooled		-0.7940	3.2085	0.5945		
Diff (1-2)	Satterthwaite		-0.7940		0.6153		

Gender	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
Female		4.0522	3.4701	4.6342	3.1507	2.7895	3.6204	2.7816	3.6093
Male		4.8462	3.7518	5.9405	3.3759	2.7589	4.3508	2.7364	4.3095
Diff (1-2)	Pooled	-0.7940	-1.9686	0.3807	3.2085	2.8848	3.6147	2.8787	3.6065
Diff (1-2)	Satterthwaite	-0.7940	-2.0239	0.4359					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	152	-1.34	0.1837
Satterthwaite	Unequal	61.964	-1.29	0.2017
Cochran	Unequal	.	-1.29	0.2035

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	38	114	1.15	0.5691

Figure 53. SE Gender comparison - Work at home

The TTEST Procedure

Variable: Work_Pressure (Work_Pressure)

Gender	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Female		116	5.0431	3.0798	0.2860	0	10.0000
Male		39	6.1282	2.8394	0.4547	0	10.0000
Diff (1-2)	Pooled		-1.0851	3.0219	0.5593		
Diff (1-2)	Satterthwaite		-1.0851		0.5371		

Gender	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev		95% UMPU CL Std Dev	
Female		5.0431	4.4767	5.6095	3.0798	2.7280	3.5365	2.7204	3.5258
Male		6.1282	5.2078	7.0486	2.8394	2.3205	3.6593	2.3015	3.6246
Diff (1-2)	Pooled	-1.0851	-2.1901	0.0199	3.0219	2.7179	3.4030	2.7122	3.3953
Diff (1-2)	Satterthwaite	-1.0851	-2.1562	-0.0140					

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	153	-1.94	0.0542
Satterthwaite	Unequal	70.369	-2.02	0.0472
Cochran	Unequal	.	-2.02	0.0491

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	115	38	1.18	0.5761

Figure 54. SE Gender comparison - Work pressure

REFERENCES

A brief history of the Midwest District. (2019). *SHAPE America*. Retrieved from https://www.shapeamerica.org/about/districts/midwest/History.aspx

Abrignani, M. G. (2018). Physical exercise and risk of arterial hypertension and diabetes mellitus. Let's move, it is never too late. *European Journal of Preventive Cardiology, 25*(10), 1063–1064. doi:10.1177/2047487318781116

Aimé, A., Villatte, A., Cyr, C., & Marcotte, D. (2017). Can weight predict academic performance in college students? An analysis of college women's self-efficacy, absenteeism, and depressive symptoms as mediators. *Journal of American College Health, 65*(3), 168–176. doi: 10.1080/07448481.2016.1266639

Ali, M. S., Groenwold, R. H. H., Belitser, S. V., Pestman, W. R., Hoes, A. W., Roes, K. C. B., … Klungel, O. H. (2013). Balance measures for determining optimal caliper width in propensity score matching: A simulation study. *Pharmacoepidemiology and Drug Safety, 22*, 133–134. Retrieved from https://search.ebscohost.com/login.aspx?direct=true&db=edswsc&AN=000334876100257&site=eds-live&scope=site

Almstedt, H. C., Canepa, J. A., Ramirez, D. A., & Shoepe, T. C. (2011). Changes in bone mineral density in response to 24 weeks of resistance training in college-age men and women. *Journal of Strength and Conditioning Research*, *25*(4), 1098–1103.

An, S., Ji, L. J., Marks, M., & Zhang, Z. (2017). Two sides of emotion: Exploring positivity and negativity in six basic emotions across cultures. *Frontiers in Psychology, 8*(APR), 1–14. doi: 10.3389/fpsyg.2017.00610

Annesi, J. J., Porter, K. J., Hill, G. M., & Goldfine, B. D. (2017). Effects of instructional physical activity courses on overall physical activity and mood in University students. *Research Quarterly for Exercise and Sport, 88*(3), 358–364. doi:10.1080/02701367.2017.1336280

Ardoy, D. N., Fernández-Rodríguez, J. M., Jiménez-Pavón, D., Castillo, R., Ruiz, J. R., & Ortega, F. B. (2014). A physical education trial improves adolescents' performance and academic achievement: the EDUFIT study. *Scandinavian Journal of Medicine and Science in Sports, 24*(1), e52-e61. doi:10.1111/sms.12093

Assunção, A. R., Bottaro, M., Ferreira-Junior, J. B., Izquierdo, M., Cadore, E. L., & Gentil, P. (2016). The chronic effects of low- and high-intensity resistance training on muscular fitness in adolescents. *PLoS ONE, 11*(8), e0160650 (1-11). doi:10.1371/journal.pone.0160650

Auerbach, R. P., Mortier, P., Bruffaerts, R., Alonso, J., Benjet, C., Cuijpers, P., … Kessler, R. (2018). WHO World mental health surveys International college student project: Prevalence and distribution of mental disorders. *Journal of Abnormal Psychology, 127*(7), 623–638. doi:10.1016/j.jaac.2018.07.723

Austin, P. C. (2008). A critical appraisal of propensity-score matching in the medical literature between 1996 and 2003, *27*, 2037–2049. doi: 10.1002/sim

Austin, P. C. (2011). Optimal caliper widths for propensity-score matching when estimating differences in means and differences in proportions in observational studies. *Pharmaceutical Statistics*, *10*(2), 150–161. doi: 10.1002/pst.433

Austin, P. C. (2017). Double propensity-score adjustment: A solution to design bias or bias due to incomplete matching. *Statistical Methods in Medical Research*, *26*(1), 201–222. doi: 10.1177/0962280214543508

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

Bandura, A. (1991). Social Cognitive Theory of self-regulation. *Organizational Behavior and Human Decision Processes*, *50*, 248–287. doi: 0749-5978/91

Bandura, A. (1994). Self-efficacy. In V. S. Ramachaudran (Ed.), *Encyclopedia of human behavior* (Vol. 4, pp. 71-81). New York: Academic Press. (Reprinted in H. Friedman [Ed.], *Encyclopedia of mental health*. San Diego: Academic Press, 1998).

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY, US: W.H. Freeman/Times Books/Henry Holt & Co.

Bandura, A. (2001). Social Cognitive Theory: An agentic perspective. *Annual Review of Psychology*, *52*(1), 1–26.

Bandura, A. (2004). Health promotion by social cognitive means. *Health Education & Behavior, 31*(2). 143-164. doi:10.1177/1090198104263660

Bandura, A. (2006). Guide for constructing self-efficacy scales. *Self-Efficacy Beliefs of Adolescents*, 307–337. doi:10.1017/CBO9781107415324.004

Barr-Anderson, D., Neumark-Sztaner, D., Schmitz, K. H., Ward, D. S., Conway, T. L., Pratt, C., … Pate, R. R. (2008). But I like PE: Factors associated with enjoyment of physical education class in middle school girls. *Research Quarterly for Exercise and Sport*, *79*(1), 18–27. doi: 10.1038/jid.2014.371

Barrack, M. T., West, J., Christopher, M., & Pham-Vera, A. M. (2019). Disordered eating among a diverse sample of first-year college students. *Journal of the American College of Nutrition*, *38*(2), 141–148. doi:10.1080/07315724.2018.1487345

Barrett, J. E., Plotnikoff, R. C., Courneya, K. S., & Raine, K. D. (2007). Physical activity and type 2 Diabetes: Exploring the role of gender and income. *Diabetes Education*, *33*(1), 128-143. doi: 10.1177/0145721706297453.

Bauman, A. E., Sallis, J. F., Dzewaltowski, D. A., & Owen, N. (2002). Toward a better understanding of the influences on physical activity: The role of determinants, correlates, causal variables, mediators, moderators, and confounders. *American Journal of Preventive Medicine*, *23*(2 SUPPL.), 5–14. doi: 10.1016/S0749-3797(02)00469-5

Becker, S. P., Jarrett, M. A., Luebbe, A. M., Garner, A. A., Burns, G. L., & Kofler, M. J. (2018). Sleep in a large, multi-university sample of college students: sleep problem prevalence, sex differences, and mental health correlates. *Sleep Health*, *4*(2), 174–181. doi:10.1016/j.sleh.2018.01.001

Beville, J. M., Umstattd Meyer, M. R., Usdan, S. L., Turner, L. W., Jackson, J. C., & Lian, B. E. (2014). Gender differences in college leisure time physical activity: Application of the theory of planned behavior and integrated behavioral model. *Journal of American College Health, 62*(3), 173–184. doi: 10.1080/07448481.2013.872648

Bhutani, S., Schoeller, D. A., Walsh, M. C., & Mcwilliams, C. (2018). Frequency of eating out at both fast-food and sit-down restaurants was associated with high Body Mass Index in non-large metropolitan communities in Midwest. *American Journal of Health Promotion, 32*(1), 75–83. doi:10.1177/0890117116660772

Biddle S. (2016). Physical activity and mental health: Evidence is growing. *World psychiatry : official journal of the World Psychiatric Association (WPA), 15*(2), 176–177. doi: 10.1002/wps.20331

Blank, M. J. (2015). Building sustainable health and education partnerships: Stories From local communities. *Journal of School Health, 85*(11), 810-816. doi:10.1111/josh.12311

Bradshaw, M., Kent, B. V., Henderson, W. M., & Setar, A. C. (2017). Subjective social status, life course SES, and BMI in young adulthood. *Health Psychology, 36*(7), 682–694. doi:10.1037/hea0000487

Brannagan, K. (2011). The role of exercise self-efficacy, perceived exertion, event-related stress, and demographic factors in predicting physical activity among college freshmen. *Health Education Journal, 70*(4), 365–373. doi: 10.1177/0017896910387315

Bray, S. R. (2007). Self-efficacy for coping with barriers helps students stay physically active during transition to their first year at a university. *Research Quarterly for Exercise and Sport*, *78*(2), 61–70. doi:10.1080/02701367.2007.10599404

Bray, S. R., & Born, H. A. (2004). Transition to university and vigorous physical activity: Implications for health and psychological well-being. *Journal of American College Health*, *52*(4), 181–188. Retrieved from http://web.a.ebscohost.com.proxy.worc.ac.uk/ehost/pdfviewer/pdfviewer?sid=f6ee74f9-c4de-4bbc-beda-c4414b57d141%40sessionmgr4007&vid=1&hid=4112

Calestine, J., Bopp, M., Bopp, C. M., & Papalia, Z. (2017). College student work habits are related to physical activity and fitness. *International Journal of Exercise Science*, *10*(7), 1009–1017. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/29170702%0Ahttp://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=PMC5685070

Cardinal, B. J., Sorensen, S. D., & Cardinal, M. K. (2012). Historical perspective and current status of the Physical Education graduation requirement at American 4-year colleges and universities. *Research Quarterly for Exercise and Sport*, *83*(4), 503–512. doi:10.1080/02701367.2012.10599139

Carr, M. M., Lydecker, J. A., White, M. A., & Grilo, C. M. (2019). Examining physical activity and correlates in adults with healthy weight, overweight/obesity, or binge-eating disorder. *International Journal of Eating Disorders*, *52*, 159–165. doi:10.1002/eat.23003

Carrick-Ranson, G., Hastings, J. L., Bhella, P. S., Fujimoto, N., Shibata, S., Palmer, M. D., … Levine, B. D. (2014). The effect of lifelong exercise dose on cardiovascular function during exercise. *Journal of Applied Physiology*, *116*(7), 736–745. doi:10.1152/japplphysiol.00342.2013

Centers for Disease Control and Prevention. (2017). *Selected health conditions and risk factors, by age: United States, selected years 1988 – 1994 through 2015 – 2016 Trend Tables*. Retrieved from https://www.cdc.gov/nchs/data/hus/2017/053.pdf

Centers for Disease Control and Prevention. (2010). *The association between school based physical activity, including physical education, and academic performance*. Atlanta, GA: U.S. Department of Health and Human Services. Retrieved from https://www.cdc.gov/healthyyouth/health_and_academics/pdf/pa-pe_paper.pdf

Charles, J. M., & Charles, P. K. (2016). Trends toward the future in physical activity programming. *Quest*, *68*(3), 361–374. doi:10.1080/00336297.2016.1180539

Chekroud, S. R., Gueorguieva, R., Zheutlin, A. B., Paulus, M., Krumholz, H. M., Krystal, J. H., & Chekroud, A. M. (2018). Association between physical exercise and mental health in 1·2 million individuals in the USA between 2011 and 2015: A cross-sectional study. *Lancet Psychiatry*, *5*(9), 739–746. doi: 10.1016/S2215-0366(18)30227-X

Coleman, M. (2015). Oxford dictionary of psychology (4th ed). Oxford, UK: Oxford University Press.

Cornick, J. E. (2015). Factor structure of the Exercise Self-Efficacy Scale. *Measurement in Physical Education and Exercise Science*, *19*(4), 208–218. doi: 10.1080/1091367X.2015.1074579

Church, T. S., Thomas, D. M., Tudor-Locke, C., Katzmarzyk, P. T., Earnest, C. P., Rodarte, R. Q., … Bouchard, C. (2011). Trends over 5 decades in U.S. occupation-related physical activity and their associations with obesity. *PLoS ONE*, *6*(5), 1–8. doi:10.1371/journal.pone.0019657

Coster, M., Fritz, J., Karlsson, C., Rosengren, B., & Karlsson, M. (2018). Extended physical education in children aged 6-15 years was associated with improved academic achievement in boys. *Acta Paediatrica*, *6*, 1083. doi: 10.1111/apa.14278

Daly, C., & Last, J. (2017). An analysis of free-choice electives in an undergraduate medical degree. *BMC Medical Education*, *17*(1), 1–13. doi:10.1186/s12909-017-0955-7

Danbert, S. J., Pivarnik, J. M, & Mudd, L. M. (2014). College student academic success: The effects of meeting ACSM physical activity recommendations. *Medicine & Science in Sports & Exercise*, *46*, 385. doi:10.1249/01.mss.0000494330.97738.92

Davenport, J. (1980). The Eastern legacy: The early history of Physical Education for women. *Quest*, *32*(2), 226–236. doi:10.1080/00336297.1980.10483715

Davis, T., & Otto, B. (2016). Juxtaposing the Black and White gender gap: Race and gender differentiation in college enrollment predictors*. *Social Science Quarterly*, *97*(5), 1245–1266. doi: 10.1111/ssqu.12287

DuCharme, K. A., & Brawley, L. R. (1995). Predicting the intentions and behavior of exercise initiates using two forms of self-efficacy. *Journal of Behavioral Medicine, 18*(5), 479–497. doi:10.1007/BF01904775

Egli, T., Bland, H. W., Melton, B. F., & Czech, D. R. (2011). Influence of age, sex, and race on college students' exercise motivation of physical activity. *Journal of American College Health, 59*(5), 399–406. Retrieved from http://www.tandfonline.com/doi/abs/10.1080/07448481.2010.513074

Elliott, R. W., & Paton, V. O. (2018). U.S. higher education reform: Origins and impact of student curricular choice. *International Journal of Educational Development, 61*, 1–4. doi:10.1016/j.ijedudev.2017.11.008

Ennis, C. D. (2017). Educating students for a lifetime of physical activity: Enhancing mindfulness, motivation, and meaning. *Research Quarterly for Exercise and Sport, 88*(3), 241–250. doi: 10.1080/02701367.2017.1342495

Everett, B., Salamonson, Y., & Davidson, P. M. (2009). Bandura's exercise self-efficacy scale: Validation in an Australian cardiac rehabilitation setting. *International Journal of Nursing Studies, 46*(6), 824–829. doi: 10.1016/j.ijnurstu.2009.01.016

Farren, G. L., Zhang, T., Martin, S. B., & Thomas, K. T. (2017). Factors related to meeting physical activity guidelines in active college students: A social cognitive perspective. *Journal of American College Health, 65*(1), 10–21. doi: 10.1080/07448481.2016.1229320

Fedewa, A. L., & Ahn, S. (2011). The effects of physical activity and physical fitness on children's achievement and cognitive outcomes: A meta-analysis. *Research Quarterly for Exercise and Sport*, *82*(3), 521–535. doi:10.1080/02701367.2011.10599785

Felez-Nobrega, M., Hillman, C. H., Cirera, E., & Puig-Ribera, A. (2017). The association of context-specific sitting time and physical activity intensity to working memory capacity and academic achievement in young adults. *European Journal of Public Health*, *27*(4), 741–746. doi:10.1093/eurpub/ckx021

Ferkel, R. C., Hutchinson, Z. T., Razon, S., True, L., Zupin, D., Jones, L. M., & Judge, L. W. (2019). The Benefits of health-related fitness education in Secondary PE. *The Physical Educator*, *76*(4), 883–906. doi: 10.18666/tpe-2019-v76-i4-8724

Florida Department of Education. (2019a). *Florida colleges.* Retrieved from http://www.fldoe.org/schools/higher-ed/fl-college-system/colleges/

Florida Department of Education. (2019b). *General education core course options*. Retrieved from http://www.fldoe.org/policy/articulation/general-edu-core-course-options.stml

Fox, C. K., Barr-Anderson, D., Neumark-Sztaner, D., & Wall, M. (2010). Physical activity and sports team participation: Associations with academic outcomes in Middle School and High School students. *Journal of School Health*, *80*(1), 31–37. Retrieved from https://www.researchgate.net/profile/Daheia_Barr-Anderson/publication/40849944_Physical_Activity_and_Sports_Team_Participation_Assoc

iations_With_Academic_Outcomes_in_Middle_School_and_High_School_Students/links/5716018108ae6177286cc962.pdf

Fradkin, C., Wallander, J. L., Elliott, M. N., Tortolero, S., Cuccaro, P., & Schuster, M. A. (2015). Associations between socioeconomic status and obesity in diverse, young adolescents: Variation across race/ethnicity and gender. *Health Psychology, 34*(1), 1–9. doi:10.1037/hea0000099

Fraenkel, J. R., & Wallen, N. E. (2006). *How to design and evaluate research in education.* New York, NY: McGraw Hill.

Fredrickson, B. L. (1998). What are good positive emotions? *Review of General Psychology, 2*(3), 300–319. doi: 10.1037/1089-2680.2.3.300.What

Fredrickson, B. L. (2001). The role of positive emotions. *American Psychology, 56*(3), 218–226.

Freisling, H., Arnold, M., Soerjomataram, I., O'Doherty, M. G., Ordóñez-Mena, J. M., Bamia, C., … Jenab, M. (2017). Comparison of general obesity and measures of body fat distribution in older adults in relation to cancer risk: Meta-analysis of individual participant data of seven prospective cohorts in Europe. *British Journal of Cancer, 116*(11), 1486–1497. doi:10.1038/bjc.2017.106

Fried, R. R., Karmali, S., Irwin, J. D., & Salmoni, A. (2018). Making the grade: Mentors' perspectives of a course-based, smart, healthy campus pilot project for building mental health resiliency through mentorship and physical activity. *International Journal of Evidence Based Coaching and Mentoring, 16*(2), 84–98. doi:10.24384/000566

Garcia, J. M., Sirard, J. R., Deutsch, N. L., & Weltman, A. (2016). The influence of friends and psychosocial factors on physical activity and screen time behavior in adolescents: A mixed-methods analysis. *Journal of Behavioral Medicine*, *39*(4), 610–623. doi: 10.1007/s10865-016-9738-6

Gao, Z., Xiang, P., Lochbaum, M., & Guan, J. (2013). The impact of achievement goals on cardiorespiratory fitness: Does self-efficacy make a difference? *Research Quarterly for Exercise and Sport*, *84*(3), 313–322. doi: 10.1080/02701367.2013.814908

Graham, M. A., & Jones, A. L. (2002). Freshman 15: Valid theory or harmful myth? *Journal of American College Health*, *50*(4), 171–173.

Guedes, C. (2007). Physical Education and Physical Activity. *Journal of Physical Education, Recreation & Dance*, *78*(8), 31–48. doi:10.1080/07303084.2007.10598076

Hagger, M. S., Chatzisarantis, N., & Biddle, S. J. H. (2010). The influence of self-efficacy and past behaviour on the physical activity intentions of young people. *Journal of Sports Sciences, 19*(9), 711-725. doi: 10.1080/02640410152475847

Hales, C. M., Carroll, M. D., Fryar, C. D., & Ogden, C. L. (2017). *Prevalence of obesity among adults and youth: United States, 2015-2016*. Retrieved from https://www.cdc.gov/obesity/data/adult.html

Hamaguchi, K., Kurihara, T., Fujimoto, M., Iemitsu, M., Sato, K., Hamaoka, T., & Sanada, K. (2017). The effects of low-repetition and light-load power training on bone mineral density

in postmenopausal women with sarcopenia: a pilot study. *BMC Geriatrics*, *17*(1), 1–7. doi:10.1186/s12877-017-0490-8

Hayes, M. W., & Prus, J. (2014). Student use of quantitative and qualitative information on RateMyProfessors.com for course selection. *College Student Journal*, *48*(4), 675–688. Retrieved from http://suproxy.su.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=ofm&AN=100358663&site=eds-live

Healy, C. C., Mitchell, J. M., & Mourton, D. L. (1987). Age and grade differences in career development among community college students. *The Review of Higher Education, 10*(3), 247–258. doi: 10.1353/rhe.1987.0021

Hegberg, N. J., & Tone, E. B. (2015). Physical activity and stress resilience: Considering those at-risk for developing mental health problems. *Mental Health and Physical Activity*, *8*, 1–7. doi: 10.1016/j.mhpa.2014.10.001

Hortz, B., Petosa, R. L., Grim, M. L., & Stevens, E. (2015). Building self-efficacy for exercise among rural high school students: It takes ongoing practice. *American Journal of Health Education*, *46*(6), 351–356. doi: 10.1080/19325037.2015.1077489

Houston, M., Minich, D., Sinatra, S. T., Kahn, J. K., & Guarneri, M. (2018). Recent science and clinical application of nutrition to Coronary Heart Disease. *Journal of the American College of Nutrition*, *37*(3), 169–187. doi: 10.1080/07315724.2017.1381053

Hu, L., Motl, R. W., McAuley, E., & Konopack, J. F. (2007). Effects of self-efficacy on physical activity enjoyment in college-aged women. *International Journal of Behavioral Medicine*, *14*(2), 92–96. doi: 10.1007/BF03004174

Hutchins, M., Drolet, J., & Ogletree, R. (2010). Physical activity patterns and self-efficacy of selected college students. *Health Educator, 42*(2), 84–88.

Ishihara, T., Morita, N., Nakajima, T., Okita, K., Yamatsu, K., & Sagawa, M. (2018). Direct and indirect relationships of physical fitness, weight status, and learning duration to academic performance in Japanese schoolchildren. *European Journal of Sport Science*, *18*(2), 286–294. doi: 10.1080/17461391.2017.1409273

Jabs, J., & Devine, C. M. (2006). Time scarcity and food choices: An overview. *Appetite*, *47*, 196–204. doi: 10.1016/j.appet.2006.02.014

Janssen, I., & LeBlanc, A. G. (2010). Systematic review of the health benefits of physical activity and fitness in school-aged children and youth. *International Journal of Behavioral Nutrition and Physical Activity, 7*. doi: 10.1186/1479-5868-7-40

Jaret, C. & Reitzes, D. C. (2009). Currents in a stream: College student identities and ethnic identities and their relationship with self-esteem, efficacy, and Grade Point Average in an Urban university. *Social Science Quarterly, 90*(2), 345–367. doi: 10.1111/j.1540-6237.2009.00621.x

Joinson, A. (1999). Social desirability, anonymity, and Internet-based questionnaires. *Behavior Research Methods, Instruments & Computers*, *31*(3), 433–438. doi: 10.3758/BF03200723

Kennard, J. A. (1977). The history of Physical Education. *Signs*, *2*(4), 835–842.

Kruger, D. J., Greenberg, E., Murphy, J. B., DiFazio, L. A., & Youra, K. R. (2014). Local concentration of fast-food outlets is associated with poor nutrition and obesity. *American Journal of Health Promotion*, *28*(5), 340–344. doi:10.4278/ajhp.111201-QUAN-437

Lackman, J., Smith, M. L., & McNeill, E. B. (2015). Freshman college students' reasons for enrolling in and anticipated benefits from a basic college physical education activity course. *Frontiers in public health*, *3*, 162. doi: 10.3389/fpubh.2015.00162

Langdon, J., Johnson, C., & Melton, B. (2017). Factors contributing to the uptake and maintenance of regular exercise behaviour in emerging adults. *Health Education Journal*, *76*(2), 182–193. doi: 10.1177/0017896916654934

Larson, M., Orr, M., & Warne, D. (2013). Using student health data to understand and promote academic success in higher education settings. *College Student Journal*, 590–603.

Lavrakas, P. J. (2008). *Encyclopedia of survey research methods* (Vols. 1-0). Thousand Oaks, CA: Sage Publications, Inc. doi: 10.4135/9781412963947

Lee, L. L., Avis, M., & Arthur, A. (2007). The role of self-efficacy in older people's decisions to initiate and maintain regular walking as exercise - Findings from a qualitative study. *Preventive Medicine*, *45*(1), 62–65. doi:10.1016/j.ypmed.2007.04.011

Lee, B. A., & Oh, D. J. (2016). The effects of long-term aerobic exercise on cardiac structure, stroke volume of the left ventricle, and cardiac output. *Journal of Exercise Rehabilitation*, *12*(1), 37–41. doi:10.12965/jer.150261

Leshchinskii, D., & Maksy, M. M. (2019). Factors associated with student performance in finance electives: An empirical study at a US private college. *The Journal of Applied Business and Economics*, *21*(7), 53-72. Retrieved from https://search.proquest.com/docview/2336296803?accountid=10003

Lodewyk, K. R., & Sullivan, P. (2016). Associations between anxiety, self-efficacy, and outcomes by gender and body size dissatisfaction during fitness in high school physical education. *Physical Education and Sport Pedagogy*, *21*(6), 603–615. doi: 10.1080/17408989.2015.1095869

Lombardi, J. A., & Dupain, M. (2014). Assessment and evaluation of student health behaviors at a state-supported regional university. *American Journal of Health Studies*, *29*(3), 205–214.

Long, V., Cates, S., Blitstein, J., Deehy, K., Morgan, R., Fantacone, J., … Hersey, J. (2013). Supplemental Nutrition Assistance Program education and evaluation study (Wave II). *US Department of Agriculture*. Retrieved from https://fns-prod.azureedge.net/sites/default/files/SNAPEdWaveII_Summary.pdf

Loprinzi, P. D., Cardinal, B. J., Cardinal, M. K., & Corbin, C. B. (2018). Physical Education and sport: Does participation relate to physical activity patterns, observed fitness, and personal attitudes and beliefs? *American Journal of Health Promotion*, *32*(3), 613–620. doi:10.1177/0890117117698088

Lox, C., Martin Ginis, K. A., Gainforth, H. L., & Petruzzello, S. J. (2019). *The psychology of exercise: Integrating theory and practice* (5th ed). New York, NY: Routledge.

Manfredini, F., Lamberti, N., Guerzoni, F., Napoli, N., Gasbarro, V., Zamboni, P., … López-Soto, P. J. (2019). Rehabilitative exercise reduced the impact of Peripheral Artery Disease on vascular outcomes in elderly patients with claudication: A three-year single center retrospective study. *Journal of Clinical Medicine, 8*(210), 1–14. doi:10.3390/jcm8020210

Marcotte, D., Diallo, T. M. O., & Paré, M. (2018). Adjustment to college and prediction of depression during post-secondary transition. *European Journal of Psychology of Education, 33*(4), 727–748. doi:10.1007/s10212-017-0346-9

McKinney, L., Novak, H., Hagedorn, L.S., Serra, L., & Luna-Torres, M. (2019). Giving up on a course: An analysis of course dropping behaviors among Community College students. *Research in Higher Education, 60*(2), 184–202. doi: 10.1007/s11162-018-9509-z

McLeod, S. (2016). Bandura – Social Learning Theory. *Simplypsychology.org*. Retrieved from https://www.simplypsychology.org/bandura.html

McPherson, A., Mackay, L., Kunkel, J., & Duncan, S. (2018). Physical activity, cognition and academic performance: An analysis of mediating and confounding relationships in primary school children. *BMC Public Health, 18*(936), 1–9. doi: 10.1186/s12889-018-5863-1

Mears D. (2008). The effects of physical education requirements on physical activity of young adults. *American Secondary Education, 36*(3), 70–83

Meckel, Y., Galily, Y., Nemet, D. A. N., & Eliakim, A. (2011). Changes in weight indexes and aerobic fitness of physical education students over three years of college. *Journal of Human Sport & Exercise, 6*(1), 112–121. doi:10.4100/jhse.2011.61.13

Melnyk, B., Kelly, S., Jacobson, D., Arcoleo, K., & Shaibi, G. (2014). Improving physical activity, mental health outcomes, and academic retention in college students with Freshman 5 to thrive: COPE/Healthy lifestyles. *Journal of the American Association of Nurse Practitioners*, *26*(6), 314–322. doi:10.1002/2327-6924.12037

Melton, B., Hansen, A., & Gross, J. (2010). Trends in physical activity interest in the college and university setting. *College Student Journal*, *44*(3), 785.

Mihalopoulos, N. L., Auinger, P., & Klein, J. D. (2008). The Freshman 15: Is it real? *Journal of American College Health*, *56*(5), 531–533. doi:10.3200/JACH.56.5.531-534

Miles, M. B. & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.) Thousand Oaks, CA: SAGE Publications.

Mikkelsen, K., Stojanovska, L., Polenakovic, M., Bosevski, M., & Apostolopoulos, V. (2017). Exercise and mental health. *Maturitas*, *106*, 48–56. doi: 10.1016/j.maturitas.2017.09.003

Murru, E. C., & Ginis, K. A. M. (2010). Imagining the possibilities: The effects of a possible selves intervention on self-regulatory efficacy and exercise behavior. *Journal of Sport and Exercise Psychology*, *32*(4), 537–554. doi:10.1123/jsep.32.4.537

National Center for Education Statistics. (2018). *Undergraduate enrollment.* Retrieved from https://nces.ed.gov/programs/coe/indicator_cha.asp

National Student Clearinghouse Research Center. (2018). *Term enrollment estimates: Spring 2018*. Retrieved from http://nscresearchcenter.org/currenttermenrollmentestimate-spring2018/

NCAA Research. (2019). *Estimated probability of competing in college athletics.* Retrieved from https://ncaaorg.s3.amazonaws.com/research/pro_beyond/2019RES_ProbabilityBeyondHSFiguresMethod.pdf

Nealen, P. M. (2016). Exercise and lifestyle predictors of resting heart rate in healthy young adults. *Journal of Human Sport and Exercise, 11*(3), 348–357. doi:10.14198/jhse.2016.113.02

O'Donoghue, G., Kennedy, A., Puggina, A., Aleksovska, K., Buck, C., Burns, C., … Boccia, S. (2018). Socio-economic determinants of physical activity across the life course: A "DEterminants of DIet and Physical ACtivity" (DEDIPAC) umbrella literature review. *PLoS ONE, 13*(1), 1–24. doi: 10.1371/journal.pone.0190737

Overview of Title IX of the Education Amendments of 1972. (2015). *The United States Department of Justice.* Retrieved from https://www.justice.gov/crt/overview-title-ix-education-amendments-1972-20-usc-1681-et-seq

Owen, T. R. (2003). Retention implications of a relationship between age and GPA. *College Student Journal, 37*(2), 181. Retrieved from https://eds.b.ebscohost.com/eds/pdfviewer/pdfviewer?vid=14&sid=db92dba7-4491-42f4-b740-de271fa294b3%40pdc-v-sessmgr03

Padberg, F. T., Johnston, M. V., Sisto, S. A., Burnand, K. G., Wakefield, T. W., & Perkowski, P. (2004). Structured exercise improves calf muscle pump function in chronic venous insufficiency: A randomized trial. Journal of Vascular Surgery, 39(1), 79–87. doi:10.1016/j.jvs.2003.09.036

Pajares, F. & Zeldin, A. L. (1999). Inviting self-efficacy revisited: The role of invitations in the lives of women with mathematics-related careers. *Journal of Invitational Theory and Practice, 6*(1), 48.

Palmer, D. H. (2006). Sources of self-efficacy in a science methods course for primary teacher education students. *Research in Science Education, 36*(4), 337-353.

Park, R. J. (2007a). 'Embodied Selves': The rise and development of concern for physical education, active games and recreation for American women, 1776–1865. *The International Journal of the History of Sport, 24*(12), 1508–1542. doi:10.1080/09523360701618933

Park, R. J. (2007b). Science, service, and the professionalization of Physical Education: 1885–1905. *The International Journal of the History of Sport, 24*(12), 1674–1700. doi:10.1080/09523360701619055

Pasqualini, L., Ministrini, S., Lombardini, R., Bagaglia, F., Paltriccia, R., Pippi, R., … Pirro, M. (2019). Effects of a 3-month weight-bearing and resistance exercise training on circulating osteogenic cells and bone formation markers in postmenopausal women with low bone mass. *Osteoporosis International, 30*(4), 797–806. doi:10.1007/s00198-019-04908-9

Pauline, J. S. (2013). Physical activity behaviors, motivation, and self-efficacy among college students. *College Student Journal*, *47*(1), 64–74. doi: 10.3868/s110-003-014-0039-x

Pekrun, R. (2006). The control-value theory of achievement emotions: Assumptions, corollaries, and implications for educational research and practice. *Educational Psychology Review*, *18*(4), 315–341. doi: 10.1007/s10648-006-9029-9

Pellegrini, A. D., & Bohn, C. M. (2005). The role of recess in children's cognitive performance and school adjustment. *Educational Researcher*, *34*(1), 13–19. doi: 10.3102/0013189X034001013

Phillips, D., Gregory, B., Hart, J., Arville, P., Dilworth, Q., & Burns, R. D. (2019) Effect of acute vigorous intensity physical activity on cognitive control in college-aged students. *International Journal of Kinesiology in Higher Education, 3*(4), 106-116. doi: 10.1080/24711616.2019.1633708

Poobalan, A. S., Aucott, L. S., Clarke, A., & Smith, W. C. S. (2012). Physical activity attitudes, intentions and behaviour among 18-25 year olds: A mixed method study. *BMC Public Health*, *12*(1), 1–10. doi: 10.1186/1471-2458-12-640

Physical Education. (2019). *Florida Department of Education.* Retrieved from http://www.fldoe.org/academics/standards/subject-areas/physical-edu/

Physical Education. (2016). *Rollins College.* Retrieved from https://www.rollins.edu/catalogue/curriculum/physical_education.html

Respondek, L., Seufert, T., Stupnisky, R., & Nett, U. E. (2017). Perceived academic control and academic emotions predict Undergraduate University student success: Examining effects on dropout intention and achievement. *Frontiers in Psychology*, *8*, 243. doi: 10.3389/fpsyg.2017.00243

Roberts, K., Dowell, A. & Nie, J. (2019). Attempting rigour and replicability in thematic analysis of qualitative research data; a case study of codebook development. *BMC Medical Research Methodology, 19***,** 66. doi:10.1186/s12874-019-0707-y

Romero, S. A., Minson, C. T., & Halliwill, J. R. (1985). The cardiovascular system after exercise. *Journal of Applied Physiology*, *122*(4), 925–932. doi:10.1152/japplphysiol.00802.2016

Scherr, S., Müller, P., & Fast, V. (2013). Single comments or average ratings: Which elements of RateMyProfessors.com™ shape university students' judgments and course choice intentions? *Educational Assessment, Evaluation and Accountability*, *25*(2), 131–141. doi:10.1007/s11092-013-9164-z

Schwarzer, R., Luszczynska, A., Ziegelmann, J. P., Scholz, U., & Lippke, S. (2008). Social-cognitive predictors of physical exercise adherence: Three longitudinal studies in rehabilitation. *Health Psychology, 27*(1 SUPPL.), 54–63. doi:10.1037/0278-6133.27.1(Suppl.).S54

Sigal, R. J., Alberga, A. S., Goldfield, G. S., Prud'homme, D., Hadjiyannakis, S., Gougeon, R., … Kenny, G. P. (2014). Effects of aerobic training, resistance training, or both on

percentage body fat and cardiometabolic risk markers in obese adolescents: The healthy eating aerobic and resistance training in youth randomized clinical trial. *Journal of the American Medical Association (JAMA) Pediatrics*, *168*(11), 1006–1014. doi:10.1001/jamapediatrics.2014.1392

Simonton, K. L., & Garn, A. C. (2019). Negative emotions as predictors of behavioral outcomes in middle school physical education. *European Physical Education Review*, 1–18. https://doi.org/10.1177/1356336X19879950

Slentz, C. A., Duscha, B. D., & Johnson, J. L. (2004). Effects of the amount of exercise on body weight, body composition and measures of central obesity. *Journal of the American Medical Association (JAMA) Internal Medicine*, *13*(4), 31–39. doi:10.1016/j.accreview.2004.03.059

Smith-Jackson, T., & Reel, J. J. (2012). Freshmen women and the "Freshman 15": Perspectives on prevalence and causes of college weight gain. *Journal of American College Health*, *60*(1), 14–20.

Spence, J. C., Blanchard, C. M., Clark, M., Plotnikoff, R. C., Storey, K. E., & McCargar, L. (2010). The role of self-efficacy in explaining gender differences in physical activity among adolescents: a multilevel analysis. *Journal of Physical Activity and Health, 7*(2) 176-183. doi: 10.1123/jpah.7.2.176

Stanish, H. I., Curtin, C., Must, A., Phillips, S., Maslin, M., & Bandini, L. G. (2015). Enjoyment, barriers, and beliefs about physical activity among adolescents with and without Autism

Spectrum Disorder. *Adapted Physical Activity Quarterly*, *32*(4), 302–317. doi: 10.1123/APAQ.2015-0038

Strachan, S. M., Perras, M. G. M., Brawley, L. R., & Spink, K. S. (2016). Exercise in challenging times: The predictive utility of identity, self-efficacy, and past exercise. *Sport, Exercise, and Performance Psychology*, *5*(3), 247–258. doi: 10.1037/spy0000064

Taxonomy List. (2019). *Florida Department of Education*. Retrieved from https://flscns.fldoe.org/TaxonomyList.aspx

Teyhen, D. S., Rhon, D. I., Butler, R. J., Shaffer, S. W., Goffar, S. L., McMillian, D. J., … Plisky, P. J. (2016). Association of physical inactivity, weight, smoking, and prior injury on physical performance in a military setting. *Journal of Athletic Training*, *51*(11), 866–875. doi: 10.4085/1062-6050-51.6.02

The United States Department of Justice. (2019). *Overview of Title IX of the Education Amendments of 1972.* Retrieved from https://www.justice.gov/crt/overview-title-ix-education-amendments-1972-20-usc-1681-et-seq

Thielmann, I., Heck, D. W., & Hilbig, B. E. (2016). Anonymity and incentives: An investigation of techniques to reduce socially desirable responding in the Trust Game. *Judgment and Decision Making*, *11*(5), 527–536.

Ting, D. H., & Choi Lee, C. K. (2012). Understanding students' choice of electives and its implications. *Studies in Higher Education*, *37*(3), 309–325.

Trost, S. G., Sallis, J. F., Pate, R. R., Freedson, P. S., Taylor, W. C., & Dowda, M. (2003). Evaluating a model of parental influence on youth physical activity. *American Journal of Preventive Medicine*, *25*(4), 277–282. doi: 10.1016/S0749-3797(03)00217-4

University of Central Florida. (2019). *Counseling and psychological services.* Retrieved from https://caps.sdes.ucf.edu/

van der Heijden, K. B., Vermeulen, M. C. M., Donjacour, C. E. H. M., Gordijn, M. C. M., Hamburger, H. L., Meijer, A. M., van Rijn, K. J., Vlak, M., & Weysen, T. (2018). Chronic sleep reduction is associated with academic achievement and study concentration in higher education students. *Journal of Sleep Research, 27*(2), 165–174. doi: 10.1111/jsr.12596

Vella, E. J., Turesky, E. F., & Hebert, J. (2016). Predictors of academic success in web-based courses: age, GPA, and instruction mode. *Quality Assurance in Education: An International Perspective*, *24*(4), 586.

Wald, A., Muennig, P. A., O'Connell, K. A., & Garber, C. E. (2014). Associations between healthy lifestyle behaviors and academic performance in U.S. Undergraduates: A secondary analysis of the American College Health Association's National College Health Assessment II. *American Journal of Health Promotion*, *28*(5), 298–305. doi: 10.4278/ajhp.120518-QUAN-265

Welk, G. J., Wood, K., & Morss, G. (2003). Parental influences on physical activity in children: An exploration of potential mechanisms. *Pediatric Exercise Science*, *15*, 19–33.

Weston, R. E., Zeng, H., & Battle, J. (2020). Physical activity and GPA: Results from a national sample of black students. *Journal of Human Behavior in the Social Environment, 30*(1). doi: 10.1080/10911359.2019.1687387

Wilk, P., Clark, A. F., Maltby, A., Tucker, P., & Gilliland, J. A. (2018). Exploring the effect of parental influence on children's physical activity: The mediating role of children's perceptions of parental support. *Preventive Medicine, 106*(October 2017), 79–85. doi: 10.1016/j.ypmed.2017.10.018

Wilson-Frederick, S. M., Thorpe Jr, R. J., Bell, C. N., Bleich, S. N., Ford, J. G., & Laveist, T. A. (2014). Examination of race disparities in physical inactivity among adults of similar social context. *Health & Human Services, 24*(3), 363–369.

Wladis, C., Wladis, K., & Hachey, A. C. (2014). The role of enrollment choice in online education: Course selection rationale and course difficulty as factors affecting retention. *Journal of Asynchronous Learning Network, 18*(3), 1–15. doi: 10.24059/olj.v18i3.391

Wright, P. M., Ding, S., & Li, W. (2005). Relations of perceived physical self-efficacy and motivational responses toward physical activity by urban high school students. *Perceptual and Motor Skills, 101*(2), 651–656. doi: 10.2466/PMS.101.6.651-656

Wu, Y., Ding, Y., Tanaka, Y., & Zhang, W. (2014). Risk factors contributing to Type 2 Diabetes and recent advances in the treatment and prevention. *International Journal of Medical Sciences, 11*(11), 1185–1200. doi:10.7150/ijms.10001

Zeldin, A., & Pajares, F. (2000). Against the odds: Self-efficacy beliefs of women in mathematical, scientific, and technological careers. *American Educational Research Journal, 37*(1), 215-246. Retrieved from http://www.jstor.org/stable/1163477