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An Examination of Physical Exercise and its Impact on Augmenting Self-Determination Levels of College-Aged Students

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AN EXAMINATION OF PHYSICAL EXERCISE AND ITS IMPACT ON AUGMENTING SELF-DETERMINATION LEVELS OF COLLEGE-AGED STUDENTS

By
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Columbus State University
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DEDICATION

Education is extremely important in my household. This journey started over 4 years ago mainly due to the encouragement of my wife and daughters. After pondering for a few weeks, it was my eldest daughter that helped propel me to make a decision. She was about to begin her own college endeavor enrolling as a dual-student, both high school and college courses. I thought how awesome it would be to have my daughter and I in college at the same time, not to mention practice what I preach to them all the time.

This task has been a most overwhelming; however, as my topic of choice, I am a very self-determined individual. I would like to send a special thank you to my wife and daughters as I love you all so very much. I dedicate this dissertation to my wife Bobbie Jo Christine and daughters Brindi Leigh and Abree Rose Kirsch. Without you I would be empty.

I also dedicate this dissertation to myself. This endeavor has been an arduous task and completing this reaffirms my commitment to not only education, but more importantly service to others.

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Participating in the Columbus State University Doctoral Program has re-shaped my vision in Higher Education. This program has provided a more in-depth understanding of the inner workings of how to operate a Higher Education institution. As a coach for 16 years as well as a father for the past 20 plus years, leadership has been a major part of my life, and this program offered a different perspective on leadership from an administration position.

I would like to thank Dr. Michael D. Richardson and Dr. Pam A. Lemoine for recruiting myself and other colleagues on the idea of obtaining a Doctorate degree. I am grateful for all the instructors, which have provided great insight and imparting their knowledge and wisdom. There is one instructor in particular I would like to send a special thank you. I thoroughly enjoyed the several courses I had with Dr. Edna Lynn Levernier. A special thank you to all the researchers conducting studies in the field of my dissertation topic, especially DeLong's research, which I was able to use as a road map for my own study.

I would like to thank Dr. Robert E. Waller for agreeing to chair my dissertation as well as my other committee members. Thank you to Dr. Richardson for serving on my committee and helping me narrow my topic and a special thank you to Dr. Tom Hackett for serving as my methodologist and helping me understand the SPSS system and more importantly how to analyze the data collected.

Lastly, of course this endeavor would not have been possible without the encouragement, support, and love from the people who mean most. Thank you, my awesome wife Bobbie Jo and my two daughters; Brindi Leigh and Abree Rose.

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EDUCATION

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2013

Master's in Sport and Exercise Science- Athletic Administration & Coaching Education

Thesis: Developing a Professional Athletic Program

Graduated: Summa Cum Laude

Stetson University

1999

Bachelor's in Sport and Exercise Science

Minor: Philosophy

Graduated: Top Five in school of Sport and Exercise Science

TEACHING EXPERIENCE

Albany State University **2013- Present**

Assistant Professor Health and Human Performance/Physical Education

- Currently serve as Co-Chair of department
  - Assess, implement, instruct ASU Health & Wellness course requirements
  - Advise students
  - Evaluate full-time faculty on west campus
  - Hire, evaluate, & supervise part-time staff
  - Develop and improve academic course schedule
  - Oversee west campus facilities

Courses Taught Online

- Introduction to Physical Education
  - **Developed new learning outcomes and redevised course outline**
  - **Established new learning outcomes and design of course content**
- Human Sexuality

- Mental Health

- Personal Health
    - **Revamped entire course with new SLO's & Content**

Traditional Courses (Upper level, Health & Wellness, Competency, & Activity)

- Administration & Supervision

- Fitness I & II
- Strength Training I
    - Assessed and re-designed curriculum for this course
    - Initiated and proposed new course: Advanced Strength Training
    - Developed curriculum, learning outcomes, and overall course design
- First Year Experience
- Various Activity Courses: i.e. Recreation Skills, Volleyball, Tennis etc.…

Served as Faculty Senate Member

- Representing Health & Physical Education (2015 – 2016)

Member of the following Institutional Committees

- ASU College Recruitment Committee – Health Professions
- ***Chair:*** General Education Committee (Core Curriculum)
- Curriculum and New Program Committee
- Health/Wellness Committee
- Health Professions Committee (OWG) for Consolidation
- Intercollegiate Athletics Advisory & Hiring Search Committee

OTHER TITLES/DUTIES SERVED

Albany State University

Health & Wellness Director **2014 - Present**

- Develop Health & Wellness Programs for Faculty & Staff
- Conduct educational seminars for students on
    - Benefits of Fitness, Good Nutrition, Wellness

Oversee all fitness center operations

- Re-designed, Restored, and Improved entire fitness center
- Supervise staff & scheduling
- Wrote new staff (employee) handbook & Fitness Center handbook
- Facility improvement and maintenance

- Maintain budget

Physical Education Building Facility Manager **2013-14 & 2015**

- Event planning
- Facility maintenance
- Supervise staff & scheduling
- Facility enhancement
- Athletic event operations

Associate Head Men's Soccer Coach **2013 - 2015**

- Oversee, implement, and execute both Men's & Women's Strength and Conditioning Programs
- Ensure academic standards of student-athletes
- Instituted - Character education program
- Recruiting
- Training methods & Tactical game plans
- Fund raising
    - **Developed, organized, operated Futsal Soccer League (generated over $15,000 in fund raising money)**

TEACHING EXPERIENCE

South Georgia State College **2009 – 2012**

Instructor - Health & Physical Education

- Contemporary Health/Wellness
- Introductory to Coaching
- Fitness for Life
- Strength Training I
- Various Activity Course: i.e. Golf, Badminton, Tennis, Basketball, etc…

Member of the following Institutional Committees

- Student Discipline Committee
- Math, Science, & Physical Education Curriculum Committee
- Intercollegiate Athletics Academic Improvement Committee

OTHER TITLES/DUTIES SERVED

South Georgia State College

Head Men's & Women's Soccer Coach **2009 - 2012**

Oversee entire operations of both programs

- Recruiting, budgeting, scheduling
- Hiring and maintain assistant coaches
- Facilities improvement: Built New Soccer Complex
- Developed and instituted character education program
- Executed Strength & Conditioning program
- 75% Retention rate; 65% graduation rate of student-athletes

Wellness Center Director **2009 - 2012**

- Supervise staff
- Maintain wellness center & facility improvement
- Maintain budget

TEACHING EXPERIENCE- SECONDARY LEVEL

Nease High School **2006 – 2009**

Instructor in Social Science Department

- Developed and implemented curriculum for Honors Philosophy course
- Psychology
- World History (Ancient History)

Certification

- Highly Qualified Social Science & Physical Education 6 – 12

OTHER TITLES/DUTIES SERVED

NEASE HIGH SCHOOL

Head Men's Soccer Coach

Oversee entire operations of both programs

- Budgeting & scheduling
- Hiring and maintain assistant coaches
- Institute Character Education Program (DICE)
    - Team was involved with several volunteer programs
- Won back to back Florida Class 4-A State Championships
- Ranked in top 25 of the Nation for high school boys soccer (2007 & 2008)

- Moved 6-players on with collegiate scholarships

TEACHING EXPERIENCE- SECONDARY & MIDDLE SCHOOL LEVEL

Lake Mary Preparatory School **2001 – 2005**

Instructor in Social Science Department & Physical Education

- US History
- Ancient World History
- Health & Wellness
- Various Physical Education Activity Courses

Certification

- Highly Qualified Social Science & Physical Education 6 – 12

OTHER TITLES/DUTIES SERVED

LAKE MARY PREPARATORY SCHOOL

Athletic Director

Oversee entire operations athletic programs (8-sports)

- Budgeting, Fund Raising, Scheduling
- Supervise and advised Head Coaches
- Worked with school administration to ensure all athletic teams were following proper procedures, FHSAA laws and mandates, ensure student-athlete eligibility
- Developed overall Athletic Program student-athlete Character Education Program

Head Boys Soccer Coach

- Initiated and built boys soccer program
- Helped start new girls soccer program
- Won 3-District Championships; Team had 4-straight state playoff appearances
- Moved 4-players on that accepted an athletic collegiate scholarship

RELATED EXPERIENCE

Initiated and Operated DSC Futsal Soccer League & SGSC Micro- Soccer League

- Developed league rules and regulations
- Hired and supervised staff, coaches, officials
- Handled advertising, registration, and scheduling
- Budgeting, process payment

RELATED EXPERIENCE

Founder and Operator of Kirsch Soccer Academy

- Oversee entire operations of the business aspect
- Organized Marketing plan
- Designed advertising material and distributed

Sports Coordinator (YMCA)

- Organized and execute sport events
- Advertise, scheduling, and maintain budget
- Supervised staff

Sports Information Assistant in Athletics Department (Stetson University)

- Assist with writing of press releases
- Maintain sport team statistics

AWARDS

- Darton State College Adjunct Teacher of the Year 2014 - 15
- District Coach of the Year 2002, 03, 04, 07, 08
- State of Florida Class 4-A Coach of the Year 2007-08
- St. Johns County Victory with Honors Coach of the Year 2007-08
- Physical Education Teacher of the Year 2004
    - Lake Mary Preparatory School
- Honored as Outstanding Senior in School of Sport & Exercise Science 1999
    - Stetson University
- Earned excellent ratings on all Teacher and Coach Evaluations

CERTIFICATIONS

- NSCAA – National, Advanced National, Premier Coaching Diploma
- United States Soccer Federation National Coaching License
- NSCA-CPT- Strength and Conditioning Certification
- Heart Association- First Aid/CPR/AED
- Currently working on NSCA - CSCS certified Strength and Conditioning

ABSTRACT

Research has demonstrated a positive link with motivation, physical exercise, and academic success. A current trend within higher education has been to increase student retention as well as deemphasize physical education. Students, who possess a higher degree of self-determined behavior, sustain greater overall success. Administrators have intensified efforts focusing on student retention; however, little research exists connecting physical exercise with self-determination and how these elements could provide solutions to address this problem. Motivation is an element, which drives people to accomplish a task and has the propensity to change when engaged in physical exercise. The motivational reasons why people participate in physical exercise has been a topic of research for several years; however, research examining the impact physical exercise may or may not have on altering motivation, particularly self-determination, is scarce. Therefore, the purpose of this study was to investigate the effects of physical exercise on augmenting self-determination levels of college-aged students. The researcher conducted a comparative quantitative study. Participants ($N = 13$) completed the Behavioral Regulation in Exercise Questionnaire (BREQ) in a pre and post method. The data were analyzed using a paired-samples *t*-test, and 84% demonstrated a positive shift along the motivation continuum in the direction towards self-determined behavior when post results were compared to pre results. Results from this study suggests that higher education leaders should devote more research into the potential effects physical education could have on self-determination levels of college students as an aim to increase student retention as well as reinforce the importance of physical education.

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CHAPTER I

INTRODUCTION

Humans have been perceived to have an innate desire to be "active organisms", yet today's society portrays an opposite action (Ryan, Williams, Patrick, & Edwards 2009). The continued trend of sedentary lifestyles has not only been documented in our own country but also has wreaked havoc across the globe (Hales, 2017). Deciphering these trends, and the multitude of health issues alone, has prompted researchers to understand what and how to motivate individuals to engage in physical activity (Ryan et al., 2009). The plethora of benefits physical activity has on the physiological nature have been documented; however, its effect on psychological health, and, in particular, intrinsic motivation as it relates to levels of self-determination, continues to gain leverage (DeLong, 2006). Physical activity has the capacity to reward individuals and contribute to increased energy, happiness, vitality, and develop a relationship with motivation. The relationship of motivation and physical exercise determines individual engagement in physical activity, and motivation has shown a propensity to change with prolonged physical exercise (Ryan et al., 2009).

Exploring the means of how an individual becomes engaged within a happening is an event determined by motivational levels (Sulz, Temple, & Gibbons, 2016). The potential for success is calculated on many levels and variables; one of which is the level of self-determination within an individual (Ryan et al., 2009). The Self-Determination theory postulates that providing students with a social context promotes innate psychological needs and can positively influence student motivation (Sulz et al., 2016). Extrinsic and intrinsic variables have been considered as the two principle variables

identifying motivational practice (Pink, 2009; Sulz et al., 2016). A focus of research has been identifying the motivational reasons why people participate in physical exercise (DeLong, 2006). However, research on the relationship of physical exercise and its impact on motivation, in particular self-determination, are at a nascent stage.

The higher education cycle has led to an increase of resources devoted toward student retention. Focusing on retaining students has become a priority for higher education administrators in an attempt to maintain enrollment (Crosling, Heagrey, & Thomas, 2009). Motivation has always played a role with student success, and studies have demonstrated students who showcase more self-determination are more apt to achieve greater academic success (Sulz et al., 2016). However, more research is necessary to illustrate how to improve self-determination levels within students. The majority of research of physical exercise has focused on motivational factors for individual engagement within an activity; however, discovering the relationship of physical exercise and self-determination levels may provide data to aid the process of student retention. Therefore, the researcher investigated the role, relationship, and potential impact physical exercise may have on self-determination levels within students.

Identifying physiological benefits of participating in a regular physical exercise regimen has been a common occurrence among people throughout history (Bryant & McElroy, 1997). Physical exercise has the capability to reward individuals and contribute to an increase of physical strength, cardiovascular endurance, as well as increase an overall positive psychological well-being (Ferkel, Razon, Judge, & True, 2017). However, sedentary lifestyles are prevalent in our current society, and this problem has become a global epidemic (Ryan et al., 2009). A study conducted by Ferkel

et al. (2017) revealed physical activity not only builds the physical nature but also enhances mental toughness. Mentally tough individuals "have a high sense of self-belief and unshakable faith," traits, which promotes individual success in high-pressure environments (Connaughton, Hanton, & Jones, 2007, p. 259; Ferkel et al., 2017, p. 259).

College demographics have changed over the years. Statistics illustrate a continual trend regarding the lack of physical exercise amongst college-aged students (Egli, Helen, Melton, & Czech, 2012). According to the American College Health Association, the rate of obesity has increased from 12% in 1991 to 36% in 2004. In fall of 2009, almost 33% of college students were classified as overweight or obese, an increase from 2007 of three percent (Egli et al., 2012). A major contributing factor leading to an issue of obesity is a lack of physical activity (Ferkel et al., 2017; Pope & Harvey, 2014). Current research indicated nearly 25% of college students do not participate in even moderate physical activity (Egli et al., 2012; Ferkel et al., 2017). Nearly a quarter of all college-aged students do not meet the ACSM, American College of Sports Medicine, national minimum standards of physical exercise, which is defined as 3 days a week and a duration of 20 minutes of continuous exercise (Hales, 2017).

In addition to not meeting minimum standards for physical exercise, approximately 42% of college-aged students do not participate in vigorous physical exercise (Hales, 2017). Vigorous activity is defined as physical exercise for at least four days a week with a minimum of 30 minutes in duration and intensity levels reach training zone levels (Hales, 2017). The continued trend of lack of physical exercise has led to an increase in the percentage of overweight and obesity among college students. This trend has compelled researchers to examine the cause of these statistics thus leading to an

increase in research studying motivational patterns of people. Numerous researchers have concluded that the motivation to exercise or engage in physical activity can be a function of intrinsic and extrinsic variables of motivation (Deci & Ryan, 2001).

A major contribution and framework for research of this nature is Deci and Ryan's (1985) self-determination theory. Researchers have utilized this theory as an approach to better understand exercise motivation of individuals. A concept, which continues to be researched is the underlying motivation that drives an individual towards accomplishment, and in particular, the influence of self-determination as it relates to physical activity engagement (Edmunds, Ntoumanis, & Duda, 2008). Physical exercise provides a multitude of benefits not solely on the physiological nature but also on psychological health and, in particular, how this phenomenon correlates with self-determination levels of individuals (Ryan et al., 2009). Motivation is a product of people's thoughts, expectations, and goals, which is directed by two main variables: intrinsic and extrinsic (Asijaviciute & Usinskiene, 2014; Pink, 2009). Extrinsic motivation has been defined as using external ploys, such as rewards, monetary benefits, avoid criticism, as well as receiving support or encouragement from others to motivate (Baker, 2004). Intrinsic motivation is derived from within an individual and the engagement of an activity becomes innately rewarding; therefore, motivation becomes self-driven (Lauderdale, Yli-Piipair, Irwin, & Layne, 2015).

The premise of punishment and reward (extrinsic motivation) has been a common practice. However, over the past 20 years, the role of external motivation and its effectiveness has been studied to determine if external motivators continue to be successful (Pink, 2009). Intrinsically motivated individuals tap into levels of self-

determination, which has been associated with promoting sustained success (Lei, 2010). Pink (2009) stated intrinsic motivation coincides with self-determined behavior and promotes self-driven desire. Understanding what motivates individuals to participate in physical exercise has been researched for decades; however, the relationship of physical exercise and its impact on self-determination levels have been scarce.

According to Trudeau and Shephard (2008), physical exercise provides a positive influence on concentration, memory, and psychological well-being; all of which share a relationship with the promotion of self-determined behavior. Intrinsic motivation is associated with physically active individuals and found to contribute positively to the quality of learning and better academic performance whereas extrinsically motivated behavior, in general, is associated with lower academic performance (Baker, 2004). A study by Ntoumanis (2001) indicated a positive relationship with physical activity and its impact on motivation. Escarti and Gutierrez (2001) found students experienced more satisfaction when they possess greater self-determination.

Higher education administrators are seeking ways to develop programs in order to strengthen student retention (Tinto, 2006). While physical education has been de-emphasized over the last decade, statistics illustrate the benefits of how physical exercise could impact enhanced academic success (Ntoumanis, 2001). Pope and Harvey (2015) suggested learning and motivation are two interrelated components in the education setting. According to Asijaviciute and Usinkiene (2014) and Martin and Townsend (2014), a link with increased physical exercise and the learning process exist.

Motivation has also been determined as a key for success in the educational process (Karlin & Shilingford, 2012). Motivation depends on external and internal

factors, such as students' individual differences and abilities, curiosity, personal attitudes of success and failure, self-efficacy, interaction with teachers, students' achievement, as well as rewards and punishment (Asijaviciute & Usinskiene, 2014). Results of a study conducted by Asijaviciute and Usikskiene (2014) indicated both internal and external factors could aid with creating a sustained learning process and is also associated with altering self-determined behavior. While a correlation has been established with physical exercise, motivation, self-determination, and academic success, higher education continues to decrease physical education programs and lessen physical education course requirements (Wery & Margareta, 2013).

Regular physical exercise is associated with improved cognition, mood, and focus in young adults, all of which correlates with improved academic success (Slade & Kies, 2015). Recently, administrators of higher education have invested in resources focused on discovering the relationship with academic performance and physical exercise, yet this new outreach program is at the beginning stages (Slade & Kies, 2015). A body of evidence exist, which demonstrates the impact exercise has on improving the well-being of people and how it transitions into the academics (Fox, 1999; Slade & Kies, 2015). This concept has led to a belief that students, which exhibit self-determined behavior, tend to perform better academically.

The self-determination theory (Deci & Ryan 1985, 2001, 2009) ascertains that motivation towards activities, which are more innate in nature could promote greater sustained success. Self-motivation, a characteristic of self-determined behavior, is a major factor of exercise adherence among psychological elements (Dishman, Ickes, & Morgan, 1980). Studies, such as Van Niekerk (2010), DeLong (2006), Wilson, Mack,

and Grattan (2008), and Asijaviciute and Usikskiene (2014), have focused on researching motivational reasons why individuals participate in physical exercise and how self-determination factors into participation as well. However, little is known regarding the impact physical exercise may have on augmenting self-determination levels within individuals. Leaders of higher education have begun to focus efforts towards retaining students. Evidence exist linking physical exercise with greater academic success (Slade & Kies, 2015). Perhaps, providing more resources into researching physical exercise and self-determination is needed. Therefore, the purpose of this research was to investigate the impact of physical exercise may or may not have on altering self-determination levels of college-aged students in an attempt to address student retention issue of higher education as well as reinforce the importance of physical education.

Statement of the Problem

Physical activity has always been important aspect of society but has continued to decrease amongst people. The use of technology has led to people adopting more sedentary lifestyles. According to the percentages, overweight and obesity rates continue to rise among American youth, and the need for quality physical education programs are more important than ever. This revelation is compounded by the fact that education as a whole has deemphasized the importance of physical education programs.

Physical education has been viewed as a hindrance to increase academics with little value to the educational system. Along with the use of technology, it may contribute to the alarming rates of overweight and obese youths as well as a rise in diabetes. There is a need for physical educators to advocate for the importance of physical education and substantiate the true importance of the physical education

discipline as it relates to motivation and to academic success. Physical activity and exercise go well beyond the numerous physiological benefits. Psychological, spiritual, and emotional health can benefit from a consistent physical exercise program, and all have an influence on the academic success for students.

Motivation has been associated with determining the level at which individuals experience engagement in multiple aspects of life. One particular correlation, which has been discovered is the relationship of motivation as it relates with self-determination. Higher education has emphasized the need to develop programs to increase student retention. However, motivation, particularly self-determination, of students has become overlooked in most school settings.

A climate promoting an orientation towards mastery in physical education classes favors greater intrinsic motivation development and leads to enhanced self-determined behavior. A plethora of studies have explained the motivational factors of why people engage in physical exercise; however, very little research exists assessing physical exercise impact on augmenting self-determination levels of students. Perhaps, the time has come to devote more research examining the impact physical education has on students well beyond the physical nature.

Intrinsic motivation is interrelated with self-determination and is derived from within an individual. An individual pursues an activity for the inherent innate pleasure, and this type of self-determined behavior forecasts into greater all around success in any endeavor. Understanding how to increase self-determined behavior could be a key indicator, which may lead to higher retention levels of students. Individuals, who encompass greater intrinsic motivation develop a high regard for learning, showcase self-

determined behavior, and have an advantage over extrinsic motives promoting achievement for sustained success. Intrinsic motivation influences self-confidence, a characteristic of self-determination, which is a critical variable for achievement endeavors.

A recent trend in higher education has been the focus towards developing more programs to increase student retention. Studies have illustrated students who demonstrate higher levels of intrinsic motivation, a link with self-determined behavior, have greater academic success as well as sustained academic success. A question that is often posed is how to find a way to encourage or enhance intrinsic motivation or self-determination of students. Discovering methods to enhance this domain would directly reflect higher education's bid to increase overall student retention as well as validate the importance of physical education.

Education over the past decade have reduced and in some instances eliminated physical education programs; however, it is worth noting physical education could have an impact on self-determination. Physical activity provides a positive influence on concentration, memory, and psychological well-being; all of which share a relationship with impacting motivation and its relationship with self-determined behavior. The multitude of benefits physical exercise offers, beyond the physical nature, suggests the need for more research into this realm, and in particular, the relationship of physical exercise and self-determination.

A central emphasis of the research within this domain has focused on the motivational habits of people and why they engage in physical activity. Physical exercise has been associated with increased academic success as well as affecting motivation

levels, particularly self-determination. As higher education continues to seek methods to develop new ways to increase student retention, perhaps examining self-determination levels of students could impact this endeavor, particularly within the physical exercise realm. Focusing efforts within this domain could provide a solution to student retention as well as reinforce the importance of physical education. Therefore, it is prudent to develop new research and investigate physical exercise's impact on augmenting self-determination levels of college-aged students with the practice of participating in a designed physical exercise program.

Research Questions

A recent movement of higher education officials seeking methods to improve student retention have overlooked the importance of self-determination of students. Past research, such as Ferkel et al. (2017), Lauderdale et al. (2015), and Lent (2014), established a relationship does exists with physical exercise, self-determination, and academic success. The concept of motivation, especially factors examining why individuals engage in physical activity, has been a part of the physical education landscape for years (Pope & Harvey, 2015). However, a correlation with physical exercise and self-determination are in an early stage. Individuals who remain consistent with sustained physical exercise display a connection with self-determined behavior, which could translate into an increase of academic success (Ferkel et al., 2017). As such, perhaps the time has come to delve into physical exercise influence on self-determination levels of students. Therefore, the researcher examined whether a relationship exists with physical exercise and self-determination, in particular, the influence physical exercise

may or may not have not have on augmenting self-determination levels of college students.

RQ 1: To what extent is there a difference in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Strength Training I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course?

$H1_o$: There will not be a statistically significant difference in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Strength Training I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course.

$H1_A$: There will be a statistically significant difference in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Strength Training I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course.

RQ 2: To what extent is there difference in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Fitness I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course?

$H2_O$: There will not be a statistically significant difference in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Fitness I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course.

$H2_A$: There will be a statistically significant difference in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Fitness I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course.

RQ 3: To what extent does a difference exist in the level of self-determination of college students as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) between the outcome of a Strength Training I course and a Fitness I course?

$H3_O$: There will not be a statistically significant difference between the level of self-determination of college students as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) between the outcome of a Strength Training I course and a Fitness I course.

$H3_A$: There will be a statistically significant difference between the level of self-determination of college students as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) between the outcome of a Strength Training I course and a Fitness I course.

Methods

Higher education leaders need to discover ways to better understand as well as enhance self-determined behavior within students, which could assist with the retention of students' movement (Cohen, Brawer, & Kisker, 2014). Research has illustrated motivational practices of individuals for why a person engages in physical exercise. Research has also demonstrated individuals who encompass more intrinsic motivation have a propensity for sustained success with physical exercise (Hagger & Chatzisarantis, 2007). Intrinsic motivation has a direct association with self-determination levels. Understanding this notion stimulates the need for further investigation into physical exercise's impact on self-determination levels of students.

The researcher examined to determine to what extent does a relationship exist between physical exercise and self-determination. Descriptive variables, such as gender, ethnicity, and academic major as it relates to self-determination levels, were collected for this research as well. College students completed a pre and post questionnaire, which measures self-determination levels. Students enrolled in Strength Training I and Fitness I courses were utilized for this study. Students had the questionnaire administered prior to the beginning of the course then again at the completion of the course. The researcher compared the post questionnaire results to the pre questionnaire results to determine if a difference with self-determination levels, as registered on the motivation continuum, emerged.

The study was a comparative study and employed a quantitative procedure. The Behavior Regulation in Exercise Questionnaire (BREQ) was utilized as the instrument to measure self-determination levels for this study. Mullan, Markland, and Ingledew (1997)

developed the Behavior Regulation Exercise Questionnaire (BREQ) instrument in order to measure self-determination levels based on the motivational continuum as it relates to why people participate in physical exercise (Murcia, Gimeno, & Camacho, 2006). Mullan, Markland, and Ingledew (1997) developed the original instrument to measure the taxonomy of external, introjected, identified, and intrinsic forms of regulation within exercise behavior based on Deci and Ryan's (1985) continuum concept of extrinsic and intrinsic motivation, described by the organismic integration theory. However, in 2004, the Behavior Regulation Exercise Questionnaire was modified to include amotivation and integrated regulation. This study utilized the most recent BREQ instrument with the taxonomy of external, introjected, identified, integrated, and amotivation regulated behavior.

Conceptual Framework

Leaders in the field of education have cited an important concern with identifying obstacles associated with a student's perseverance for continuing an endeavor to obtain a higher education degree (Mega, Lucia, & De Beni, 2013). The effects of motivation, particularly as it relates to self-determination, has been associated as a major influence on student learning in higher education (Lei, 2010). Motivation has an ability to determine to what extent students actually learn a challenging task and is largely responsible for whether they continue to endure a task (Ormond, 2008). Educational reform has indicated that motivational predisposition of students with respect to their self-determination is now overlooked in most school settings (Hennessey, 2015). An endeavor, although limited, of student service leaders have embarked upon with expectations to increase motivation and self-determination within students has been to

initiate programs to encourage physical activity to improve academic success (Zelaya, 2013). Task oriented students engage in physical activity, which also demonstrates an ability to enrich and cultivate academic achievement and inspire self-determination (Zelaya, 2013). However, research within this specific area is limited.

Teachers encounter struggling students at all levels of education and, this could be attributed to a lack of self-determination a student may possess. Improving students' self-determination could play a major role in fostering academic as well as overall success (Wery & Margerta, 2013). Motivation is a product of people's thoughts, expectations, and goals and is directed by two main classifications: intrinsic and extrinsic variables (Asijaviciute & Usinskiene, 2014). Deci and Ryan (1985, 2000, 2001) defined intrinsic motivation as conducting an activity for its inherent satisfaction and the pleasure derived from within an individual. Intrinsic motivation, synonymous with integrated regulation on the motivation continuum, is considered the closest form of self-determination (Ingledew, Markland, & Sheppard, 2004; Ryan & Deci, 2009). Extrinsic motivation has been defined as activities engaged in as a means to an end, such as to gain reward or avoid criticism, monetary benefits, or receive support or encouragement from an outside source rather than conducting an activity for innate indulgence, which is on the opposite spectrum of exhibiting self-determination (Baker, 2004).

The self-determination theory is an important theory in determining, understanding, and gauging motivational levels within individuals. The self-determination theory provides an important framework to clarify motives for physical activity (DeLong, 2006). The self-determination theory is described as providing motives for individual engagement and is predicted based on self-motives (Lauderdale et

al., 2015). Self-determined motivation leads to volitional and long-lasting behavior across different contexts including the exercise domain (Lauderdale et al., 2015).

Individual motivation is regarded as an innate process which defines the essence of self-determination. Deci and Ryan (1985) developed the self-determination theory to examine varying degrees of motivation as it relates to extrinsic and intrinsic variables. The motivation continuum measures behavior regulations, which characterizes individual self-determination and assesses motives to engage in physical activity. Individual self-determination is affected by a person's fundamental need to fulfill and satisfy the characteristics of competence, autonomy, and relatedness (Lauderdale et al., 2015).

Research utilizing the self-determination theory reveals intrinsic beliefs about exercise motivation are important as it promotes the notion for increased physical activity, frequency, and adherence (Evans, Cooke, Murray, & Wilson, 2014). DeLong (2006) stated intrinsic motivation is the highest level of self-determination. As mentioned within the self-determination theory, motivation is characterized as either extrinsic or instrinsic (Deci & Ryan, 1985; Ingledew et al., 2004, Pink, 2009; Sulz et al., 2016). As individuals move along this continuum towards higher levels of intrinsic motives, they internalize higher levels of self-determination (DeLong, 2006).

The relationship between academic performance and physical activity is an important component regarding student success (Lent, 2014). Physical activity provides a positive influence on concentration, focus, and motivation, which are associated with academic performance (Trudeau & Shephard, 2008). Comprehending a deeper understanding of how physical activity could affect an individual to move across the motivation continuum and leading to greater self-determination may provide additional

insight into sustained student academic success (Pope & Harvey, 2015). Intrinsic motivation, a major component of self-determination, has been linked to physically active individuals and found to contribute positively to the quality of learning and better academic performance whereas extrinsically motivated behavior, in general, is associated with lower academic performance (Lei, 2010). There are several factors, which could influence the trend of increasing student retention. However, leaders and administrators in higher education have not contributed resources to researching the influence physical exercise may have on student motivation and its relationship with developing self-determination with the intent of enhancing academic success (Zelaya, 2013)

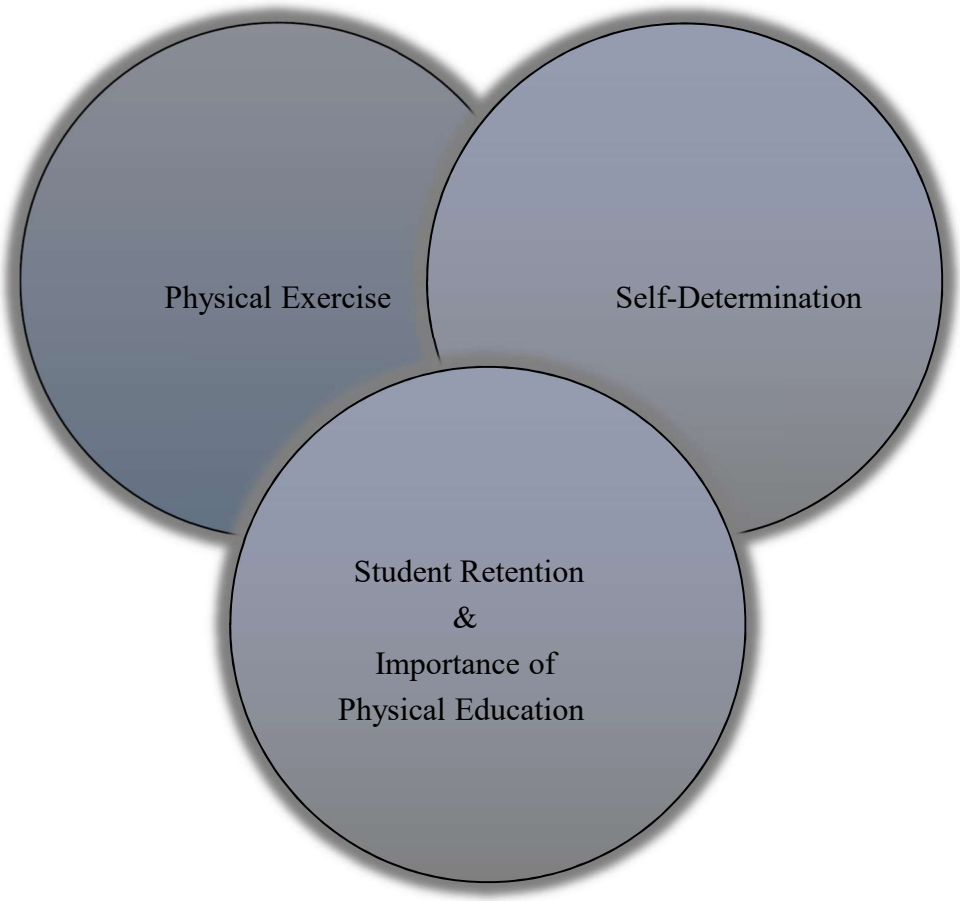


Figure 1. Conceptual Framework Diagram

Providing a conceptual framework to address the issue of student retention in higher education has become paramount. The conceptual framework in Figure 1 illustrates the relationship of physical exercise and self-determination, and how it relates to student retention and the importance of physical education. Higher education leaders are seeking methods to find a solution to this problem. Studies by Ntoumanis (2001), Ryan et al. (2009), and Wilson et al. (2008) have indicated students who demonstrate higher concentrations of self-determined behavior have an opportunity to experience greater sustained academic success. Furthermore, a correlation has been discovered with physical exercise, academics, and self-determination, yet physical education, as a whole, has diminished in the higher education landscape (Wery & Margareta, 2014). The correlation of academic success, physical exercise, and self-determined behavior substantiates the need to investigate physical exercise's impact on self-determination levels. A study of this nature has the potential to provide information, which may benefit the issue of student retention in higher education as well as validate the importance of physical education.

Significance of the Study

Higher education, over the last decade, has evolved with the changing societal needs of students (Cohen et al., 2014). Online learning, military students, non-traditional students, as well as the move on when ready program have become important elements for institutional success and continued growth. Competition amongst colleges and universities is evident thus leading to a need to discover ways of developing new programs to strengthen student retention (Cohen et al., 2014). The researcher understood the importance of student retention for colleges and universities and contends that

discovering techniques for developing self-determination within individuals offers a possible solution. Studies, such as Wilson et al. (2008), Slade and Kies (2015), Standage, Duda, and Ntoumanis (2003), and Ferkel et al. (2017), have established an association of self-determined behavior with academic success. Increasing self-determination within an individual has the potential to become a factor supporting higher education leaders with student retention.

Physical exercise has shown to provide a plethora of benefits for individuals physiologically, emotionally, and psychologically (Hales, 2017). As stated in the introduction, past studies have been written discussing the motivational patterns and reasons why people engage in physical activity. Two main variables, which amplify physical exercise as it relates to motivation are extrinsic and intrinsic elements (Ferkel et al., 2017; Pink, 2009). Intrinsic motivation, which coincides with self-determination, has been linked to positively affect academic success. Deci and Ryan (1985, 2001) developed the self-determination theory, which focuses on the importance of self-determined behavior and its impact on the potential to increase individual overall success.

The relationship of self-determination, academic success, student retention, and physical exercise has led the researcher to consider a correlational relationship could exist with these variables, and it would behoove higher education administrators to develop methods to enhance self-determined behavior of students. As mentioned, past studies have illustrated motivational reasons behind physical exercise and how it relates to self-determined behavior; however, very little research exists understanding physical exercise's impact with augmenting self-determination levels of students, particularly college students. A study by Vazou, Gavrilou, Mamalaki, Papanastasiou, and Sioumala

(2012) revealed the importance of intrinsic motivation, an association with self-determined behavior, had on both academic achievement and physical activity participation. Thus, more research is needed in order to discover whether a link exist with physical exercise and self-determination and if it is a possibility for cultivating student academic success, which could factor into greater student retention.

Physical education has become reduced over the last decade or so in higher education (Ferkel et al., 2017). However, a study of this nature, even with marginal validation, could ascertain the importance of physical education. Required physical education courses to graduate are becoming scarce; however, a study of this significance could force leaders of higher education to rethink their position on the importance of physical education as a whole. Physical exercise is an element, which could provide insight into increasing student retention as it relates to enhancing self-determined behavior of students (Sulz et al., 2016). The researcher recognized the plethora of studies on the motivation behind why people participate in physical activity. The researcher also acknowledges the little attention exhibited towards investigating the relationship of physical exercise's impact on self-determination of students. Therefore, the researcher sought to conduct a study assessing physical exercise's impact on self-determination levels of college students as it relates to student retention in a higher education setting and how it factors into the importance of physical education.

Procedures

Professionals in the higher education, physical education, and the psychology fields have sought to discover the motivational factors that lead people to engage in physical exercise (Murray & Wilson, 2014). This phenomenon has increased steadily

over the years due to the rapid epidemic of health-related issues in which people suffer throughout the world. Seeking a more profound understanding of the motivation behavior of individuals as it relates to physical exercise and self-determination levels of college students is a complex conundrum. A study of this nature requires a precise measuring instrument as well as a detailed study, which will assess specific variables. The researcher conducted a quantitative study on the impact of physical exercise may or may not have on self-determination levels of students. The researcher utilized a comparative quantitative research design to measure self-determination levels of students.

The researcher administered the Behavioral Regulation in Exercise Questionnaire survey two times (pre and post) within a collegiate academic semester in a designed physical education course. A 10-week period within the semester was the time frame as participants completed the pre and then post questionnaire phase. The researcher requested a colleague of the Health and Human Performance Department to administer both the pre and post questionnaires. The researcher assembled the participants into a classroom and describe the purpose of the study as well as ensured confidentiality of each participant. The researcher also explained to participants each would again complete the same BREQ questionnaire at the completion of the semester. The selected person to administer the pre-questionnaire and post-questionnaire phases was provide a physical copy of the questionnaire, reviewed instructions, and collected all completed questionnaires. Participants were granted the opportunity to decline to participate in the study during administration of the first pre-questionnaire phase.

The population for this study included students registered and participating in a traditional Strength Training I and Fitness I course offered at Albany State University. A

traditional course is defined as a course, which took place in the fitness center on the Albany State University campus, and was conducted face-to-face with an instructor. Traditional courses of this nature meet 3 days a week for a 50-minute duration. The participants included a mix of college students with the age range of 18 to 40. An average number of students for a traditional physical education course conducted at ASU is 20 to 30 students. The researcher proposed to survey two classes: one Fitness I and one Strength Training I, which included the potential of 25 to 30 participants in each course.

Several instruments exist, which measures motivational reasons that drive people to participate in physical activity, which include: The Situational Intrinsic Motivation Scale (SIMS), the Motivation for Physical Activity and Exercise/Work-out Questionnaire (MPAQ), the Physical Activity and Leisure Motivation Scale (PALMS), the Exercise Motivation Inventory (EMI-2), and the Exercise Causality Orientation Scale (ECOS). Although these surveys, scales, and questionnaires were developed with the intentions of measuring motivational factors for the reasons people engage in physical exercise, none are specific to measuring self-determination levels.

Mullan et al. (1997) developed the Behavior Regulation Exercise Questionnaire (BREQ) instrument, which seeks to measure self-determination levels based on the motivational continuum as it relates to why people participate in physical exercise (Murcia et al., 2006). The BREQ scale has 24 questions, which measure the stages of behavior regulation on the motivation continuum. The main purpose of this measuring instrument is to discover reasons underlying peoples' decisions to engage or not engage in physical exercise on an individual basis. In simple terms, this scale was established to

understand the thought process as to determine the motivational intentions of an individual to exercise based on the following measurements; amotivation, external regulation, introjected regulation, identified regulation, and integrated regulation behavior.

The researcher selected to use the BREQ to collect data for the purpose of analyzing self-determination levels of participants as it relates to physical exercise. Each question was designed to elicit an individual motive for why one might engage in physical exercise. The rationale for each question is to determine whether an individual is participating in exercise due to extrinsic or external motivation or a more innate experience to exercise as individuals move along the motivation continuum to measure and assess self-determination levels.

The procedure to conduct the intended study included a pre and post questionnaire phase in order to demonstrate a comparative analysis. The researcher sought to compare self-determination levels prior to taking a Strength Training I course and Fitness I course to self-determination levels at the completion of each course. The researcher also sought to compare the post questionnaire phase results between each physical education course. The results collected were analyzed in a comparative structure investigating variation of self-determination levels from pre and post questionnaire results. The researcher decided not to analyze and compare descriptive variables of the participants to examine whether a pattern existed regarding gender, ethnicity, or academic major. The researcher acknowledged the focus for analyzing the pre and post questionnaire was to examine if a cause and effect relationship existed between physical exercise and self-determination levels.

Limitations/Delimitations

The researcher has been involved with physical exercise for the majority of his life as well as lectured, discussed, and researched motivation to better understand all the intricacies of this phenomenon. Individuals, which participate in physical exercise on a consistent regular basis may experience physiological benefits as well as sustain more individual success in other aspects of one's life (Hales, 2017). Individuals who are consistent with physical exercise could possess higher levels of intrinsic motivation as well as display increased self-determined behavior (Pink, 2009; Zeyla, 2013). Therefore, the researcher felt a study of this nature could reveal that physical exercise may have an impact on enhancing individual self-determination levels. The researcher also acknowledged a study of this nature may demonstrate how physical exercise could have an effect on augmenting self-determination levels amongst college students, which may lead to greater academic success as well as enhanced student retention. Reaffirming the importance of physical education requirements could also be another factor from this research topic.

A limitation of this research, which could affect the outcome is the bias of the researcher. The researcher has a great deal of experience within this field of study and has developed a strong foundation of understanding motivation and a belief that the power of self-determination leads to greater success for people. The experience and deep seeded belief of the researcher that physical exercise does and can affect self-determination levels could be a deterrent when administering the pre and post questionnaire for this study. The researcher could have been an instructor for some of the participants who participated in this study, which could potentially be viewed as study

manipulation; however, it would only be construed if the researcher's bias became apparent and influential towards the participants.

Limitations concerning the participants included several items, which could have potential to alter the data collection and results. Participants seriousness and attention to each question on the questionnaire could have been construed of light conjecture. Participants understanding of motivation, motivational variables, self-determination, as well as the intent of each question on the questionnaire may not have been comprehended. Another concern for the participants, which could influence the study, was the fact each subject may felt compelled to adjust question answers on the post questionnaire as related to the pre questionnaire. Another potential limitation concerning the participants' participating in this study was the reason why they decided to register for each physical exercise course. The reasons motivating a student to enroll in a Strength Training I or Fitness I course include, but not limited to: ASU physical education requirement, part of their academic major, need for credit number purposes, personal choice, or financial aid due to needing course credits..

The researcher understood any study has potential hazards, limitation, or delimitations, which could affect data collection and results, which were produced. One issue was discovering what can be controlled and, more importantly, detecting elements that are out of the researcher's control. The researcher decided to utilize an outside source to administer the pre and post questionnaire, which should reduce or eliminate research bias during the questionnaire process. However, a potential risk, which could have developed, involved ensuring the administrator followed and provided explicit instructions for the participants during and after the administering process of the

questionnaire. The researcher decided not to debrief the participants on a large scale regarding the study nor allowed the participants to know the study was for a degree for the researcher. The researcher explained the purpose of the study to the participants but did not define terms nor reveal the comparative nature and variables of the study. This potential delimitation of the study should not impact the results or data collected for the study; however, the seriousness that each subject displayed while completing the questionnaire could have impacted data results.

Another delimitation of this study included participants utilized for this study were specific to students who enrolled into the WELL 1161 Fitness I and WELL 1105 Strength Training I physical education courses. Students enrolled in other physical education courses were not provided an opportunity to participate in this study. Also, another delimitation was the time frame for this study. This study was conducted only during the 2018 Summer semester at ASU. The sample size was another delimitation of this study. A last delimitation for this study was a few participants completed the pre-questionnaire phase but were unable to complete the post-questionnaire phase because they lost their code or could not remember their code, therefore, the researcher could not compare results.

Definition of Terms

A majority of studies conducted usually require terms, which may need to be further clarified and defined. Many of the terms for this particular research could be construed as general in nature; however, the researcher felt obliged to expound upon a few terms, which warranted additional depth analysis. The central variable for this study was self-determination; however, it is hard to neglect the correlation with motivation and

the need to provide in-depth understanding of definitions for all terms associated with both of these variables. Therefore, several terms associated with self-determination, motivation, and the motivation continuum were defined for a deeper comprehension for the purpose of this study. Other terms to be defined were physical exercise routine, descriptive variables, which may be utilized for the study, and traditional collegiate course.

Motivation is a dynamic phenomenon and associated with production and behavior. Motivation comes from the Latin word *movere* (which means "to move") (Lundenberg & Orenstein, 2008). Motivation is connected with direction and intensity of one's effort (Weinberg & Gould, 2007). Sustained persistence towards attaining a goal is a main concept with motivation as well as fortitude (Robbins & Judge, 2009). Individuals, based on certain variables, are enticed by situations or activities and motivated to continue a task (Weinberg & Gould, 2007). Richardson (2009) characterized motivation with three components. Behavior is energized, behavior is directed or channeled, and behavior is reinforced or redirected.

Sport and exercise psychology developed three approaches to motivation; however, the one, which applies to this study was the trait-centered view as it relates to self-determination. An individual described as trait-centered is regarded as a person with an innate direction which allows this person to excel and engage in activity from more intrinsic elements of motivation, as well as display higher levels of self-determination (Williams, 2006). *Self-determination* can be defined as having three innate psychological traits, which include competence, autonomy, and relatedness (Deci & Ryan, 2009). Self-confidence is another characteristic associated with self-determination. Self-

determination is a concept, which invokes innate desire and requires little outside influence for engagement.

Motivation is divided into three categories, intrinsic, extrinsic, and amotivation. Student motivation, both intrinsic and extrinsic, are acknowledged as a major factor directing people's ambitions to accomplish an endeavor (Pink, 2009). *Intrinsic motivation* is characterized as more self-directed behavior. Intrinsic motivation is associated with participation in an activity out of curiosity, engagement for the sake of participating in a task, and a desire to achieve a goal (Shia, 1998). Intrinsic motivation is thought to be the highest level of self-determination. Deci and Ryan's self-determination theory (1985) supports that intrinsic beliefs about exercise motivation are important to promote because they could promote increased physical activity frequency and adherence (Evans et al., 2014).

Extrinsic motivation indicates behaviors or motives, which are external and separated from non-innate components. Individuals identified as extrinsically motivated engage in an activity for a benefit, reward, or to avoid a negative consequence, and it correlates with lower self-determination (Deci & Ryan, 1985, 2000). Extrinsic motivation of an individual is related to pursuit of an activity as determined from outside forces that direct the behavior of an individual. *Amotivation* is defined as behaviors, which are neither extrinsically nor intrinsically motivated, rather amotivated behaviors are non-regulated and non-intentional (Baker, 2004). Amotivation is associated as a non-relevant experience, and the engagement is nonintentional (Deci & Ryan, 2000).

The motivation continuum was an important feature for the purpose of this study, particularly as it related to the measuring instrument, and the researcher felt it was

important to define. The *motivation continuum* is identified as a five-stage taxonomy process in which an individual will measure along this continuum as to the reasons of why one might engage in physical activity (Mullan et al., 1997). Figure 2 illustrates the stages of behavior regulation along the motivation continuum. *External regulation* falls at the lower end of the motivation continuum, furthest removed from self-determined behavior, and illustrates more extrinsic means for motivation. *Introjection regulation* is the second stage of the continuum as the action becomes more internalized but still linked to external reasons.

The third stage of the continuum moves towards more autonomous behavior. This stage exhibits more self-determined behavior as an individual begins to value the benefit of the activity and is labeled as *identified regulation* on the motivation continuum; however, external purpose remains in this stage (Deci & Ryan, 2000). The fourth stage of the motivation continuum correlates with more pure intrinsic means to engage in an activity, which is described as *integrated regulation*. Integrated regulation is considered a stage removed furthest from extrinsic motivation and identifies with higher levels of self-determination (DeLong, 2006). This stage has also been referred as intrinsic regulation; however, both serve as the closest form to self-determined behavior (Deci et al., 2001; DeLong, 2006; Mullan et al., 1997) The motivation continuum also includes a fifth stage, amotivation stage. This stage is defined as neither an extrinsic nor intrinsic means for engagement in an activity (Wilson, Rodgers, Loitz, & Scime, 2006).

Individuals employ motivation as an illustrated behavior when engaged in a physical exercise regimen. Participating in a consistent physical exercise routine requires motivation by nature in some capacity (Pink, 2009). A consistent *physical exercise*

routine can be defined by the principles of training, which include; mode, frequency, duration, intensity, and overload principle. However, for the purpose of this study, physical exercise focuses on the principles of frequency, duration, and intensity. The ACSM defines a consistent physical exercise routine as associated with engaging in physical activity at a minimum of 3 days a week for at least 20 minutes with moderate to high levels of intensity (Hales, 2017).

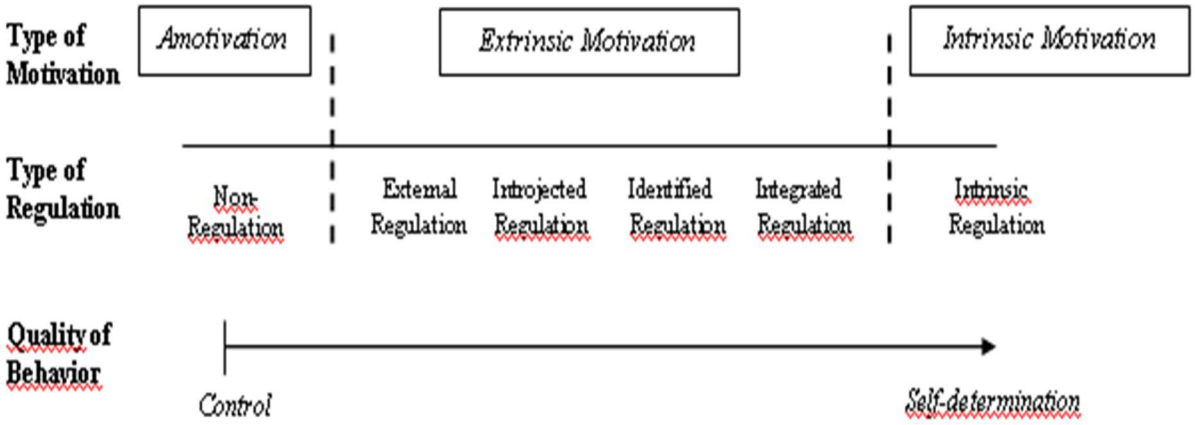


Figure 2. Motivation Continuum/Continuum of Self-Determination (Deci & Ryan, 2001).

The researcher may or may not include descriptive variables in this study to illustrate correlation as well as comparison. One variable that participants revealed was gender, which includes male and female only. A second variable included within the study was academic major. Participants divulged their academic course major. Academic major is defined as a student's main subject of study in their college endeavor. A third descriptive variable was ethnicity. Ethnicity is defined as an individual ideology of common ancestry or culture.

Higher education has evolved and now includes courses outside of the traditional sense of classes. The researcher utilized students enrolled in traditional course.

Traditional courses, for the purpose of this study, can be defined as courses offered for a specific time frame and days for the duration of a full semester. Traditional courses include a face-to-face interaction element of instructor and student.

Summary

Leaders and administrators of higher education have recently begun a process to pursue methods for student retention rates to improve the quality of the institution as well as focus on a continuous process to increase academic success for students. Academic success has always been a part of the university landscape with the necessity for higher education administrators to create an expansion of student retention programs. Enhanced retention rates of students not only aid the institution but advance the students in their endeavor to complete a college degree. College can become more of an independent study in regards the burden falls much more onto the student; however, providing advanced services which help students along their path is paramount not only for the student but the success of the institution as well.

Physical education is one of many academic spectrums across the education continuum. Studies, such as Escarti and Guiterrez (2001), Karlin and Shillingford (2012), and Ferkel et al. (2017) have been conducted and have demonstrated the many benefits physical education encompasses to broaden the advancement of students beyond just the physiological aspect. Physical education has been included at the elementary, middle, and secondary school levels throughout history. Post-secondary institutions also include physical education in teacher education, sport and exercise science, or health and human performance degree programs. Certain colleges and universities also may have specific physical education requirements students must complete in order to graduate.

However, over the past decade, the focus on physical education has diminished, particularly in higher education. Although a multitude of benefits exist, physical education required courses in colleges and universities are becoming reduced to a minimum or eliminated completely.

Physical exercise has been associated to enhance academic success of students. The multitude of physiological benefits of physical exercise have been documented; however, the benefits from the promotion of positive psychological health are just as numerous and important as well. An important ingredient of physical exercise is motivation and how it relates to why individuals engage in physical activity. Furthermore, the significance of self-determination levels of individuals relates to overall fortitude and sustained physical exercise success. As noted, studies have revealed a correlation with physical exercise and self-determined behavior as well as a relationship of self-determination and academic success. Individuals, which illustrate higher self-determination levels have a propensity to foster greater academic success and it also applies to sustaining a physical exercise regimen.

A relationship exist with self-determination and physical exercise. A major point of emphasis for the majority of studies on this topic have been the motivational factors of why people participate in physical exercise. Two consistent variables of motivation, extrinsic and intrinsic, are regarded as principal elements of why people begin, as well as sustain physical exercise. However, within these variables reside the important factor of self-determination. Self-determination levels play a major role for individual success in multiple aspects of a person's life, and it is no different in academia and the physical exercise realm.

An issue the researcher discovered was the lack of research on the specific impact physical exercise has on self-determination levels. Although studies have demonstrated correlations with extrinsic and intrinsic motivation and how people move across the motivation continuum throughout physical activity, the impact physical exercise has on augmenting self-determination levels is insufficient. Research within this domain could lead higher education administrators to focus on ways to try and enhance self-determination of students, which could have the potential to lead to higher student retention. As noted, physical exercise may be an avenue to better understand the possibility of augmenting self-determination levels of students for the betterment of student retention as well as illustrate the importance of physical education.

The researcher conducted a study for the purpose of investigating the potential effects physical exercise could have on augment self-determination levels of college students. Research identifying this phenomenon could be significant on a multitude of capacities. Investigating physical exercise's effect on self-determination could have the potential to affect the recent trend of de-emphasizing the importance of physical education in the college setting. It could potentially assist higher education's mission of student retention. Lastly, an investigation into physical exercise impact on self-determination levels could play a significant role with continuing to cultivate student academic success.

Higher education is constantly transitioning with the ever-changing nature of generations of students and society as a whole. A recent transition of higher education has focused on developing ways to enhance student retention. Education as a whole has also de-emphasized the need for physical education. A relationship exists between

physical exercise and self-determination and how these variables factor into academic success. Physical exercise correlates with self-determined behavior. Therefore, the purpose of this study was to investigate physical exercise's impact on augmenting self-determination levels of college students with the practice of participating in a designed physical exercise course. The importance of this study could reach across the higher education landscape as to address student retention as well as re-establish the importance of physical education.

CHAPTER II

REVIEW OF RESEARCH AND RELATED LITERATURE

Introduction

Motivation and its relationship with self-determination has been associated with determining the level at which individuals experience engagement in multiple aspects of life (Ryan et al., 2009; Pink, 2009). A significant body of literature has examined and analyzed motivation and self-determination as a major impact in regards to student overall success in higher education (Lei, 2010). Physical activity has been correlated as one of several platforms to encourage motivation development within individuals, and more particularly, physical activity provides an opportunity to foster and impact self-determination levels (Maltby & Day, 2001). Majority of research literature conducted has focused on the relationship of motivation and the factors of why individuals engage in physical exercise; however, very few studies exist researching the effects physical exercise has on self-determination levels. Therefore, the purpose of this research investigated the potential effects of physical exercise on self-determination levels of individuals.

Asijaviciute and Usinskiene (2014) as well as Pink (2009) stated motivation is a product of people's thoughts, expectations, and goals, and is directed by two main variables; intrinsic and extrinsic. The section of defining terms defined terms specifically associated with motivation. This section also defined important terms the researcher found to be unique to this study in order illustrate clearly purpose and meaning to the reader. A section detailing past contributors regarding theories that pertain to individual motivation leading to the self-determination theory followed the defining terms section.

The background and significance section focused on cultivating the link of physical exercise, motivation, and self-determination and how all of these variables factor into individual engagement and success.

The theoretical framework section detailed two overarching domains; intrinsic motivation and self-determination. Under the intrinsic motivation domain, the following topic and theories were discussed: achievement theory, expectancy-value theory, transtheoretical theory, cognitive evaluation theory, the need-achievement theory, attribution theory, and the competence motivation theory. The domain of self-determination detailed the self-determination theory developed by Deci and Ryan (1985) and served as the foundation for this study. This section explained the multiple traits synonymous with self-determined behavior, such as competence, autonomy, and relatedness. This section also discussed the social constructs and factors relevant to the self-determination theory. The researcher felt it was important to have a section discussing past as well as current trends of physical exercise and health of people. Therefore, a section of this nature exposes the effects of physical exercise as it relates to health and wellness levels of people.

Deci and Ryan (1985 & 2000), Standage et al. (2003), Sibley, Hancock, and Bergman (2013), and Lauderdale et al. (2015) conducted studies, which demonstrated a relationship with motivation variables and self-determination levels. The research section provided insight of what past studies and journal reviews have concluded regarding the relationship of self-determination and physical exercise. Several studies conducted in the field of physical exercise and motivation have focused on the motivational factors of why individuals engage in physical exercise; however, very few

studies have focused on physical exercise impact on augmenting self-determination levels of individuals. Chapter II concludes with a brief summary of past research literature. There are several factors, which influence motivation and self-determination within individuals; however, further examination of physical exercise's impact on motivation is needed, in particular, its impact on fostering self-determination within students.

Definition of Terms

Motivation comes from the Latin word *movere* (which means "to move") (Lundenberg & Orenstein, 2008). However, this definition is narrow in scope. Porter (1998) expanded the definition of motivation as it is the willingness to exert effort towards a goal. Motivation is connected with direction and intensity of one's effort (Weinberg & Gould, 2007). Motivation also includes a process, which accounts for individual persistence of effort toward attaining a goal (Robbins & Judge, 2009). The directional aspect of motivation applies to the effort an individual seeks out, approaches, or is attracted to certain situations or activities. Intensity refers to how much of an effort an individual puts forth in a particular situation or activity (Weinberg & Gould, 2007). Persistence refers to the longevity or how an individual sustains an endeavor.

Richardson (2009) described motivation as characterized by three central factors. First, behavior is energized (energetic forces within individuals drive them to behave certain ways and forces in the environment often trigger these devices). Second, behavior is directed or channeled (behavior is directed toward something - a goal or objective). Third, behavior is reinforced or redirected (drives in individuals or their surroundings either reinforce the intensity of the drive and the direction of their energy or dissuade them from their present course of action or causes them to redirect their efforts).

Individuals employ motivation when engaged in a physical exercise regimen. Motivation is the foundations of any physical performance, whether it involves sport, recreation, leisure, or personal direction (Williams, 2006). Participating in a consistent physical exercise routine requires motivation by nature. A consistent physical activity, or physical exercise routine, can be defined by the principles of training, which include mode, frequency, duration, intensity, and overload principle (Hales, 2017). However, for the purpose of this study, physical activity, or physical exercise, will focus on the principles of frequency, duration, and intensity. The ACSM defines a consistent physical exercise routine as engaging in physical activity at a minimum of 3 days a week for at least 30 minutes with moderate to high levels of intensity (Hales, 2017).

Lauderdale et al. (2015) stated self-determination is associated with motivation, in particular, intrinsic motivation, and is affected by the extent a person's fundamental needs are met. Sibley et al. (2013) stated self-determined behavior is autonomous by nature. Furthermore, self-determination is a concept, which invokes innate desire and requires little outside influence for engagement (Sibley et al., 2013). Self-determination encompasses three innate psychological traits, which include competence, autonomy, and relatedness (Deci & Ryan, 2009).

Although there are a plethora of individual viewpoints and orientations regarding motivation, three theories, generally, have been accepted as mainstream within physical exercise (Weinberg & Gould, 2007, 2015). Sport and exercise psychology classifies three approaches to motivation as theories, or approaches of learning, to understand how people are motivated. The three theories are the trait-centered view, situational-centered view, and the interactional-view. The trait-centered theory, also referred as the

participant-centered view, contends motivated behavior is primarily a function of individual characteristics (Weinberg & Gould, 2007, 2015). This theory is associated with personality, needs, and goals of a student, athlete, or exerciser. Deci and Ryan (2009) stated an individual described as trait-centered has an innate personal make-up, which allows him or her to excel and engage in activities as more intrinsically motivated. This theory proclaims individuals display higher levels of self-determination.

The second theory is a direct contrast of the trait-centered theory. The situation-centered orientation contends motivation levels are determined primarily by a situation (Pink, 2009; Weinberg & Gould, 2007, 2015). This theory contends that a situation influences individual motivation. The situation-centered theory aligns with extrinsic elements of motivation. Sport and exercise psychology specialist believe this orientation of motivation is not considered the most effective method for individual practice and individuals demonstrate lower levels of self-determination (Weinberg & Gould, 2007, 2015).

The third motivational theory is considered by most exercise psychologist as the most common. The interactional-view theory contends motivation results neither solely from individual participant factors nor solely from situational factors (Weinberg & Gould, 2007; Williams, 2006). This motivational orientation is a combination of both trait-centered and situational-centered. Based on defining all three motivational theories within an exercise psychology component, the self-determination theory would most closely resemble the trait-centered motivation orientation (Weinberg & Gould, 2007, 2015).

Motivation is comprised of three variables: intrinsic, extrinsic, and amotivation. However, people's behaviors and actions are driven by two primary motivational elements: intrinsic and extrinsic variables (Pink, 2009). Student motivation, both intrinsic and extrinsic, are acknowledged as a major factor directing people's ambitions to accomplish an endeavor. However, in a changing generational society, a debate as to which element is more effective for persistence and sustainable success continues to be researched (Pink, 2009). As new generations' rise and develop so do the motivational factors for this generation, and understanding, which type of motivational factor is a key ingredient to increase purposeful success (Pink, 2009).

DeLong (2006) stated intrinsic motivation is a more self-directed element of motivation. Intrinsically motivated individuals engage in a behavior for the satisfaction derived from taking part in the behavior; individuals will become intrinsically motivated if they are meeting innate psychological needs (Ingledew et al., 2014). Intrinsic motivation has been defined as participation in an activity purely out of curiosity and the sake of participating and completing a task (Shia, 1998). Intrinsic motivation is derived from within an individual, as well as an indicator of self-determination. The drive to continue an activity becomes innately rewarding to pursue because the individual finds it self-enjoyable (Lauderdale et al., 2015).

Intrinsic motivation is considered the highest level of self-determination and associated with competence, mastery, and positive attitude towards a task (Pink, 2009; Ryan et al., 2009). Deci and Ryan's self-determination theory (1985) supports intrinsic beliefs regarding exercise motivation are important as they could promote increased physical activity frequency and adherence (Evans et al., 2014). Furthermore, individuals

characterized as intrinsically motivated to exercise do not do so to achieve an outcome, rather to engage in the physical activity as an end in of itself, which implies self-determined behavior (DeLong, 2006).

Amotivation refers to behaviors, which are neither extrinsically nor intrinsically motivated. Rather, amotivated behaviors are non-regulated and non-intentional (Baker, 2004). Amotivation results from not valuing nor has meaning for conducting an activity (Deci & Ryan, 2000). Individuals do not experience feelings of competence, do not desire a result, and do not participate in an activity for an inherent reward or consequence. Amotivation is associated as a non-relevant experience, and the engagement is nonintentional (Deci & Ryan, 2000). Amotivation falls at the far left of the motivation continuum, which reveals a state of lacking intention (Markland, 2007).

Extrinsic motivation is defined as motives, which are outside of and separated from non-innate factors (Weinberg & Gould, 2007). Extrinsic motivation contrasts with intrinsic motivation (DeLong, 2006). Motivation levels to pursue an activity are determined from outside forces, which could impact the behavior of an individual (Wilson et al., 2008). Individuals characterized as extrinsically motivated perform an activity for some benefit, reward, or to avoid a negative consequence and encompass lower self-determination (Deci & Ryan, 1985, 2000).

Extrinsic motivation can vary with the level of degree in which a person participates in an activity (Wilson et al., 2008). Extrinsically motivated behaviors are invariantly non-autonomous; however, extrinsic motivation is multidimensional and is also categorized into three levels of regulation within the motivation continuum (Deci & Ryan, 2000; Markland, 2007). A taxonomy of human motivation reveals different

motivational levels as well as different reasons behind behaviors. The Organismic Integration Theory (OIT) details the different forms of motivation from amotivation, intrinsic motivation, and the varying degrees of extrinsic motivation as a five-tier motivation continuum (Deci & Ryan, 2000; Sibley et al., 2013). The motivation continuum is a sliding scale in which motivation levels, as to why an individual remains engaged in an activity, may change (Markland, 2007).

External regulation is at the lower end of the continuum. External regulation is the least autonomous and most externally controlled form of extrinsic motivation (Mulland, Markland, & Ingledew 2008; Sibley et al., 2013). This stage indicates behaviors are induced to satisfy an external demand, receive an external reward, or avoid a negative effect (Deci & Ryan, 2000). Individuals experience this level as a behavior as an external perceived locus of causality (Deci & Ryan, 2000; Teixeria et al., 2012).

The next stage on the motivation continuum is introjected regulation, a closer form of external regulation of behavior. Introjected regulation is defined as an internalization process is beginning as a reason to conduct an activity; however, it is still centrally linked to external reasons (Ryan et al., 2009). Introjected regulation is the second most externally controlled form of motivation (Ingledew & Markland, 2008; Markland, 2007; Sibley et al., 2013). The activity is beginning to take on value, but individuals engage out of guilt or obligation rather than choice. Sibley et al. (2013) stated an individual participates in an activity due to an external source.

The next stage of the motivation continuum continues to move toward autonomous behavior and is described as identified regulation. Identified regulation is defined as an individual is shifting to choose freely to participate in an activity because

they begin to value the benefit (Deci & Ryan, 2000; Markland, 2007; Ryan et al., 2009). The stage of identified regulation begins to shift towards self-determined behavior and holds internal value (Deci & Ryan, 2000; Markland, 2007; Ryan et al., 2009; Sibley et al., 2013). An individual at this stage is approaching a more self-determined reason for conducting an activity as the choice to engage in an activity becomes more of a self-choice not for an outside purpose. However, extrinsic motives still exist in this stage.

The final stage of the motivation continuum, as one approaches purely intrinsic means, is integrated regulation, also referred as intrinsic regulation (Markland, 2007). Sibley et al. (2013) stated integrated regulation is a behavior, which has become integrated into an individual's definition of self. Integrated regulation is measured the furthest from extrinsic motivation (external regulation) and closest to intrinsic motivation, which identifies and is most synonymous with self-determined behavior. Integration occurs when identified regulation has become autonomous and assimilated to self (Deci & Ryan, 2000; Ryan et al., 2009). This level identifies with self-examination, and an individual that participates in an activity at this level does so for the sake of the activity itself and would be classified as a self-determined behavior. An individual, at this stage, internalizes the behavior to engage in an activity with value and regulated by the self (DeLong, 2006).

It is noteworthy to define both a traditional as well as online education courses. Higher education has evolved over the years and offer courses beyond the traditional sense of classes (McClellan, Stringer, & Associates, 2009). Higher Education includes offering online version of courses. This is no different in the physical education department. Traditional courses in the higher education realm can be defined as a

conventional teacher-student interaction in a classroom environment (Lundenberg & Orenstein, 2008). Traditional education courses are conducted as a face-to-face class environment, which conventionally has a set time and day, which students must attend for the entire defined semester. Traditional courses have been the foundation for higher education; however, with technology advances, a growing demand for distant learning has become apparent (Karlin & Shillingford, 2012).

Distant learning, or online learning, over the last 10 years has become a significant phenomenon in higher education (Johnson, 2003). Distant learning, also referred to as e-learning, has expanded and is driven largely by the increase of non-traditional or post-traditional learners who desire flexibility in scheduling, geographic location, and access to course resources (Bichsel, 2013). Distant learning also contributes to increase enrollment and revenue as well as an opportunity to enhance an institution's reputation and provide an institution with a greater reach across the globe for students (McClellan, Stringer, & Associates, 2009). Online courses differ from the traditional course setting as it does not include a classroom style environment (Bichsel, 2013). Online courses are defined as technology based and disregard the teacher-student face-to-face interaction. Online courses put more of an onus on independent student learning (Karlin & Shillingford, 2012).

Contributors

Numerous educators throughout history have made monumental contributions to the field of physical exercise, motivation, and self-determination. A plethora of researchers have conducted several studies and written books, articles, and journals regarding motivation and the relationship with physical exercise. A question that has

arisen throughout history is, why do people do what they do (Richardson, 2009)? Past psychologist, such as Skinner, Hull, and Pavlov, have developed theories to help explain this phenomenon and whether behaviors are innate or learned, which relates to understanding motivational factors within the process of decision making (Weinberg & Gould, 2007).

Abraham Maslow, in the 1940s, developed a "hierarchy needs" theory. In reviewing Maslow's work, Owens (1998) stated his theory hypothesized that every human being has a hierarchy of needs, which exist on five levels: physiological, safety, social, esteem, and self-actualization. Fredrick Herzberg, in the 1950s, contributed to human behavior. Lundenberg and Orenstein (2008) acknowledged Herzberg's theory centered on the idea of what motivates people to do well in a work environment. Herzberg's theory had a direct correlation with extrinsic and intrinsic motivational variables and how they related with self-determined behaviors.

Edwin Locke, in the late 1960s, proposed the aspect of goal setting and how it is a major motivational factor (Ormond, 2008). In this theory, Ormond (2008), contended people's motivational prowess was driven by a goal, but a question that remains is whether the goal was innate in nature, self-determined, or derived from an external source. One of the most widely accepted explanation of motivation is Vroom's expectancy theory in 1964. Vroom's contribution is based on the concept that motivation is determined on an individual's expectancy, instrumentality, and valence.

The theories mentioned above are more associated with external or extrinsic variables as it relates to motivational theory. Deci and Ryan (1985), however, are regarded as two major contributors with the concept of intrinsic motivation. Robbins and

Judge (2009) site Deci's cognitive evaluation theory as a shift between extrinsic and intrinsic variables and vice versa. Hagger and Chatzisarantis (2007) stated the self-determination theory, derived by Deci and Ryan, provides a viable theoretical frame work for examining exercise behavior. In reviewing, Deci and Ryan's self-determination theory, it distinguishes different forms of motivational variables as they move across the motivation continuum from non-autonomous to completely autonomous forms of behavioral regulation (Teixeira, Carraca, Markland, Silva, & Ryan, 2012).

Background and Significance

Motivation has a capacity to determine to what extent students actually learn a challenging task and is largely responsible for whether they continue to endure the task (Ormond, 2008). Throughout history, people have operated on the motivation premise of punishment and reward (extrinsic motivation), and it was only enhanced during the Industrial Revolution (Pink, 2009). However, over the past 20 years, a change of external motivation and its effectiveness has come into question. Intrinsically motivated individuals develop high regard for learning, showcase higher self-determination, and have an advantage over extrinsic motives promoting achievement for sustained success (Lei, 2010). Intrinsic motivation personifies self-determination, a critical variable in achievement endeavors (Kasvussanu & Roberts, 1996). Motivation for students is considered a dynamic, multifaceted phenomenon with a multitude of direction. The benefits of establishing positive health habits with physical exercise has potential to impact student motivation levels and potentially augment self-determination levels (Pink, 2009).

Past motivational theories have reviewed motivation as a unitary phenomenon (Brunet & Sabiston, 2011). However, careful reflection suggests motivation is hardly a unitary phenomenon (Deci & Ryan, 2000). Graham and Weiner (1991) stated motivation is played on multiple dimensions and illustrate individual differences. Individual differences play a central role in the study of the motivational process and in understanding levels of self-determination (Berliner & Calfee, 1991). Research on motivation has proliferated over the past four decades, and, as a result, much has been learned regarding the nature of students' motivation (Wigfield, 1997).

Over the last three decades, research has shown the quality of the experience and performance can be different, perhaps greater, when an individual is engaged in activity for intrinsic as opposed to extrinsic reasons and how this behavior connects with self-determination (Deci & Ryan, 2000). Wery and Margareta (2013) stated over the past half century a variety of crucial motivational beliefs, values, and goals have been identified and examined in relationship to student success. Educational reform and the move away from student-centered approaches have indicated that motivational orientation, particularly self-determined behavior of students, is now overlooked in most school settings (Hennessey, 2015). Wery and Margareta (2013) stated, beyond more solid teaching methods, improving the motivation of students, as well as reinforcing their own self-determination, is a key for academic success, particularly sustainable academic success, and physical exercise could provide a platform for it to emerge.

One of the most important concerns in the field of educational psychology is an attempt to understand why some students stop trying when faced with difficulties, whereas others rise to the occasion using strategies and perseverance to continue to

achieve (Mega, Lucia, & De Beni, 2013). A push for more research on understanding motivation, in particular, the association of intrinsic and extrinsic variables with self-determination is required in order to discover reasons to increase sustainable student engagement (Young, Sturts, & Ross, 2015). This concept has fueled the concern with the physical inactivity epidemic the country faces. According Slade and Kies (2015), and Hales (2017), one in five adults engage in high levels of exercise, and one in four are largely inactive.

A task force of the National Health Objectives developed a campaign with Healthy People 2010 (now of Healthy People of 2020) and in a stated mission encouraged institutions of higher education to make health objectives a priority to combat the physical inactivity amongst our students (DeLong, 2006). Educational reform has continued to change over the past several years, and it includes physical education, yet only a small percentage of higher education institutions require a health-related or physical education course (Young et al., 2015). A review by Escarti and Guiterrez (2001) indicated a positive relationship with physical activity, motivation, and self-determined behavior. Delving into the motives of individuals as an attempt to better understand motivational reasons to engage in physical exercise may or may not provide valuable information for administrators with regards to physical education reform and how it relates with self-determination levels within people.

Intrinsic motivation is associated with self-determination and has been a staple for individual success, but in the past, the belief was extrinsic motivation was the best method for productivity and engagement in an activity (Williams, 2006). Intrinsic motivation was first acknowledged within experimental studies of animal behavior,

where it was discovered organisms engaged in behaviors when reinforced (White, 1959 as cited in Deci & Ryan, 2000). Research has examined a change in current generational student motivation, which has an effect on the student learning process as well as student engagement in physical exercise (Young et al., 2015). *Drive*, a book by Daniel Pink (2009), examined the trend of motivational change of people and the move towards intrinsic and self-determined behavior of individuals as a greater factor for engagement.

A theory exists which believes today's generation are not as motivated with external tactics. However, an increase of self-driven motives and intrinsic motivation has become the driving force in regards to productivity, activity, and academic success (Martin et al., 2014). Student's enjoyment, hope, and pride, which are elements of innate and self-determined behavior, relate positively to achievement with engaging in any activity (Mega et al., 2013). Research on intrinsic motivation has indicated it plays a significant role in a person's decision making process and, in particular, producing sustained student success as well as demonstrates self-determined behavior (Karlin & Shillingford, 2013).

Intrinsically motivated behaviors are those behaviors a person engages in to feel competent and self-determined (Karlin & Shillingford, 2013). Another term associated with intrinsic motivation is self-driven, and it has been theorized an individual that garners elements of becoming more self-driven has potential to reduce levels of stress (Hennessey, 2015). Self-driven is the direct opposite of extrinsic motivation, which is defined as providing motives or incentives to induce a student to accomplish a task (Mega et al., 2013). Students, who demonstrate more positive self-concept, autonomy, and mastery skills reveal higher levels of self-determination, which is considered a factor

leading to higher levels of perseverance (Lei, 2010). External motivational ploys, such as the carrot and stick ideology, has shown to work in short doses. However, when the initial external ploy to motivate wears off, it could affect or worsen an individual's overall well-being and long-term success as well as reduce self-determined behavior (Pink, 2009). Despite the belief of the importance of intrinsic motivation, both variables have shown to be effective in the student engagement process (Mega et al., 2013). Hennessey (2015) revealed utilizing extrinsic motivation strategies may induce motivational levels and also could lead to an increase of an individuals' overall self-determination. However, researchers are quick to point out higher levels of intrinsic motivation within individuals have a more positive effect with increased self-determination in the academic realm (Hennessey, 2015).

Intrinsic motivation leads to deeper, more long-lasting individual engagement, which has an association with self-determined behavior (Hennessey, 2015). According to Mega et al. (2013) students should strive to utilize internal drive for pursuing physical exercise, and students who endorse an increase in intellectual ability through effort draw from self-determination. Mihalyi Csikszentmihalyi (from Pink, 2009) described the experiences of intrinsically motivated as "flow" and contends people completely engrossed in a task view the activity as worth doing for its own sake, a display of self-determination, rather than as a means to an end (Hennessey, 2015). The flow theory detailed by Csikszentmihalyi asserts a mental state of operation in which an individual performing an activity is fully immersed, fully involved, and enjoys the process of the activity (Pink, 2009). The flow theory has been defined as being in the zone, which

demonstrates an individual engaged in an activity often resulting in immersion and concentrated focus on a task.

Increasing students' desire to engage in physical exercise, which follows a path of the flow concept, may result as a positive reinforcement of self-determined behavior (Pink, 2009). A study conducted by Maltby and Day (2001) found intrinsically motivated students are associated with consistent physical exercise, have better psychological well-being, and illustrate a more concentrated effort (Lauderdale et al., 2015). Martin et al. (2014) stated an increase of self-driven motives and self-determined behavior found in our current generation of students could lead to higher activity engagement. This statement aligns with the flow theory and is a phenomenon, which could have a positive effect on individual success.

Karlin and Shillingford (2013) conducted a study related to intrinsic motivation and the academic pursuit of nontraditional students. This study revealed intrinsic factors, including self-determined behaviors, outweighed external rewards. Intrinsic motivation was linked to lower perceived stress and higher levels of self-efficacy, which stimulates self-determination. However, verbal rewards (positive feedback), which may be considered as extrinsic motivation, enhanced students' pursuit of an education but also is believed to increase intrinsic motivational levels (Karlin & Shillingford, 2013). The results of this study may have revealed both motivational variables are effective; however, the study did endorse items of innate desires more so than external sources for sustained academic success (Karlin & Shillingford, 2013).

Learning and motivation are two interrelated components, which cannot exist without one another in the process of education (Pope & Harvey, 2015). A study

conducted by Asijaviciute and Usinskiene (2014) aimed to analyze the impact and significance of students' motivation on the learning process. The study was conducted in a quantitative research process, which included first year students from the programs of public administration, social work, communication, psychology, and management at Mykolas Romeris University. The respondents were provided with 10 open-ended questions. The results revealed both internal and external variables affected the learning process (Asijaviciute & Usinskiene, 2014).

The study found motivation was determined as the key for success in the educational process. Asijavicuite and Usinskiene (2014) noted motivation depended on external and internal factors, such as students' individual differences and abilities, curiosity, personal attitudes to success and failure, self-efficacy, interaction with teachers, students' achievement, and some outside experiences, such as rewards and punishment (Asijaviciute & Usinskiene, 2014). Although the results illustrated both internal and external factors, creating a sustained learning process was marginally associated with higher levels of self-determined behaviors. This study also revealed external factors could increase innate levels, thus leading to sustainable academic success (Asijaviciute & Usinskiene, 2014). The study further mentioned, although intrinsic motivation could factor into more sustained academic results, in order to attract student's initial attention, it could behoove to start with activities motivated by extrinsic means, which later could potentially change to intrinsic motivation and lead to self-determined behavior. Furthermore, the results found creating a suitable atmosphere for students can improve learning and increase their intrinsic motivation (Asijaviciute & Usinskiene, 2014).

A study conducted at Big State Community College by Martin et al. (2014) regarding motivation and academic success revealed the importance of empowerment, mastery, and intrinsic motivation. The study interviewed students who graduated as well as others who dropped out. The study demonstrated students who completed their degree scored higher in clear goals, self-empowerment, and internal motivation, all factors that correlate with self-determined behavior. Furthermore, students who graduated felt it was important to work towards a vocation they could master, which helped their academic success and could be tied to self-determined behavior (Martin et al., 2014).

Theoretical Framework

Intrinsic Motivational Theories Domain

Several theories have been developed throughout history and continue to expound today to better grasp the concept of motivation. These theories detail motives for why individuals engage in any activity. A question that continues to surface in regards to accomplishment is, why do people do what they want to do and what is the driving force behind these decisions to complete a task? Theories of motivation have assisted in the creation of regulations and meaning, which enhance human performance and the purpose behind why individuals decide to pursue endeavors (Graham & Weiner, 2000). These theories include external factors, self-driven dynamics, as well as how motivational reasons shift across the motivation continuum.

In the 1960s, David McClelland introduced the achievement theory of motivation based on Maslow's hierarchy of needs theory (Hales, 2017). The achievement theory describes motivation as patterns of beliefs and feelings about success, effort, ability, errors, feedback, and standards of evaluation (Elliot & Dweck, 2005). Learners, based on

the achievement theory, either approach or avoid mastery or performance goals (Wery & Margareta, 2013). Mastery goals illustrate the aim to learn in which individuals compare their ability to themselves, whereas, performance goals aim is to learn enough to appear as or more competent than others. Mastery goals are considered to be the most adaptive motivation orientation, which correlates with intrinsic motivation as well as self-determined behaviors. Mega et al. (2013) stated students who enter college with confidence and academic choice will perform significantly better than students who do not. This type of confidence promotes mastery of a specific field of study and associates with traits of self-determined behavior.

The study by Mega et al. (2013) found students who pursue mastery, approach goals with more persistence and experience more success due to self-regulated education, an indicator of self-determined behavior. An important endeavor for an individual to discover is their strengths and their likes as it could aid with pursing an education an individual can master. This concept may increase self-determined levels within an individual and aid academic success as well as future productivity. Teresa Amiable, a professor at Harvard University, stated "the desire to do something because you find it deeply satisfying and personally challenging inspires the highest levels of creativity, whether it is in the arts, sciences, or business and ultimately will lead to a higher level of sustained learning" (Pink, 2009, p. 84).

The study by Mega et al. (2013) suggests the importance of intrinsic motivation, and the association it has with self-determination, as well as how it affects sustained academic success. Pink (2009) stated the importance of developing intrinsic motivation and the relationship with self-determination is crucial for overall sustained success. This

concept is magnified and advanced by a quote by W. H. Auden (1939), which illustrates a person immersed within self-determined behavior as he discussed pursuit of mastery and innate motivation. Auden wrote in a poem, "you need not see what someone is doing to know if it is his vocation; you have only to watch his eyes; a cook mixing a sauce, a surgeon making a primary incision, a clerk completing a bill of lading, wear the same rapt expression, forgetting themselves in a function. How beautiful it is, that eye-on-the-object look" (Pink, 2009, p. 113).

Martin Fishbein, in the 1970s, introduced the expectancy-value theory, which sought to understand motivation and the importance of intrinsic and extrinsic factors (Wery & Margareta, 2013). Wery and Margareta (2013) outlined the expectancy-value theory describing motivation as being influenced by the relative value of a task along with the probability of success in completing the task. The expectancy-value motivational theory outlines the probability of individual success from start to finish and is based on goal-orientation (Wery & Margareta, 2013). The probability in this model for success is influenced by self-perceptions and self-efficacy, elements of self-determined behavior. Both factors play a role with student success; however, students who are believed to have higher levels of intrinsic motivation, a self-determined trait, tend to persist longer with task completion (Elliot & Dweck, 2005).

The Transtheoretical model of motivation posits health behavior involves a progressive six stage change (Prochaska & Velicer, 1997). The advantage of this model delineates the individual's readiness for change. The Transtheoretical model outlines the process of how an individual may change a behavior (Hales, 2017). Motivation of an individual, whether extrinsic or intrinsic, is at the forefront and determines to a large

extent whether an individual seeks a behavioral change. The transformation for a behavioral change aligns with the behavior modification plan and is associated with altering motivation levels as it pertains to modifying self-determination (Prochaska & Velicer, 1997). The stages a person progresses through for a behavior modification change are; pre-contemplation, contemplation, preparation, action, maintenance stage, and either adopts or terminates the plan (DiClemente, Prochaska, & Gibertini, 1985).

Self-determination is connected with intrinsic motivation, which exist in the relationship between individuals and activities. Prochaska and Velicer (1997) stated self-evaluation, combine with cognitive thinking, has the potential to motivate an individual to want to change. Ryan et al. (2009) stated the understanding of intrinsic motivation must consider how the characteristics of an activity are experienced and engaged by the individual and how these experiences are affected by situational and contextual factors and supports, which could promote a change in behavior. Miller and Rollnick (2002) stated motivation is required for a behavioral change and focus, effort, and energy are needed to move through the stages. A central aspect of the transtheoretical model has a relationship with Locke and Latham's goal-setting theory, which is associated with elements of self-determined behavior (Ryan et al., 2009).

The cognitive evaluation theory was first introduced by Deci & Ryan (1985) as an account of the effects on intrinsic motivation of external events, such as rewards, threats, and feedback (Ryan et al., 2009). The cognitive evaluation theory is within the framework of the self-determination theory and is a sub-theory, which focuses on the determinants of intrinsic motivation. This theory outlines a social psychology of intrinsic motivation. Deci and Ryan (1985) specifically addressed the social and environmental

factors, which facilitate and fosters self-motivation as well as self-determination. Riley and English (2016) stated self-determination is associated with the development of competency, autonomy, and relatedness all of which are significant psychological needs, which coincides with the framework of the cognitive evaluation theory. Therefore, the researcher defined the cognitive evaluation theory for the purpose of understanding the relationship with intrinsic motivation and self-determination. The social contexts of sport and exercise are applicable as empirical studies have supported the general principles of competency, autonomy, and relatedness, and how exercise could affect these principles as it relates to self-determination (Ryan et al., 2009).

The need achievement theory of motivation, developed by Atkinson and McClelland in 1961, is considered as an interactional view (Weinberg & Gould, 2007). This theory considers both personal and situational factors as important predictors of behavior. Khuon (2014) stated people with a high need for achievement set and meet high standards of achievement and may be motivated intrinsically and extrinsically. Five components make up this theory, which include personality factors or motives, situational factors, resultant tendencies, emotional reactions, and achievement-related behaviors (Weinberg & Gould, 2007). Weinberg and Gould (2007) wrote an important contribution of the need-achievement motivational theory is its predictors of preference and performance as it relates to motivation.

Heider, in 1985 and then popularized by Weiner in 1986, developed the attribution theory as another theory related with motivation. This theory focuses on how people explain their successes and failures within an activity (Williams, 2006). Attribution theory seeks to explain how people try to determine why people do what they

do (Aronson, Wilson, & Akert, 2003). The attribution theory utilizes basic attribution categories to explain success and failure. Stability, locus of causality, and locus of control are three aspects to provide an explanation of why an individual sustains or terminates an exercise program (Williams, 2006). This theory encompasses both extrinsic and intrinsic elements as reasons for why people continue, or perhaps end, an activity.

Another motivational theory utilized for research purposes is known as the competence motivation theory. The competence motivation theory is based on the work of psychologist Susan Harter in 1988 (Weinberg & Gould, 2007). This theory has been used to define and explain differences in achievement behavior. Competence motivation has emerged to explain critical factors, such as career success (Dewey, 2017). Dewey (2017), in a survey of successful entrepreneurs, found people that started their own business encompass two important factors, an appetite for hard work and enjoyment for mastering skills. These traits share a relationship with self-determined behavior. This theory seeks to explain how an individual may feel regarding their activity or performance (Weinberg & Gould, 2007). Self-esteem, competency, and perceptions of self have a direct relationship towards motivation levels for why an individual continues to participate in a sport or exercise routine as well as activities. The perceptions of competency, an element of self-determination, and control are related to motivation levels within the competence motivation theory and are critical components as a determinant for an individual to strive towards achievement or terminate an activity (Williams, 2006).

Self-Determination Domain

The self-determination theory is a motivation theory that seeks to determine, understand, and gauge motivational levels within individuals. DeLong (2006) stated the self-determination theory provides an important framework to illustrate motives for physical activity. The self-determination theory predicts individual engagement for activity is predicated on self-motives (Lauderdale et al., 2015). Deci and Ryan (1985) stated the self-determination theory is one of the most prominent theories to explain human behavior in different life domains, including exercise.

Individual motivation is regarded as an innate process, which defines the essence of self-determination (Lauderdale et al., 2015). Deci and Ryan (1985) developed the self-determination theory to examine varying types of motivation as it relates to extrinsic and intrinsic variables for motivation. Intrinsic and extrinsic behavior regulation are measured on the motivation continuum, which assesses individual self-determination levels. This measurement calculates individual motives as to the purpose or meaning to engage in physical activity (DeLong, 2006). Lauderdale et al. (2015) stated individual self-determination is affected by the extent to which a person's fundamental needs for competence, autonomy, and relatedness are fulfilled or satisfied.

Research utilizing the self-determination theory reveals intrinsic beliefs about exercise motivation are important as it promotes the notion for increased physical exercise frequency and adherence (Evans et al., 2014). DeLong (2006) stated intrinsic motivation is the highest level of self-determination. DeLong (2006) in her research discovered as individuals move along the motivation continuum towards higher levels of intrinsic motives, they internalize higher levels of self-determination. The self-

determination theory could be utilized to help understand why students engage in physical activity as individuals move across the motivation continuum; however, little research has been devoted to assess physical exercise impact on self-determination.

Deci & Ryan (2000) and DeLong (2006) discovered a person's motive for physical exercise is measured across the motivation continuum; however, higher levels of self-determination is linked with enduring and sustaining a long-lasting physical exercise routine. Markland (2007) stated one of the most important aspect for continuing a physical exercise regimen is increasing self-determination within an individual. Individuals who become more self-determined possess three psychological characteristics: autonomy, relatedness, and competence (Deci & Ryan, 1985, 2000; Pink, 2009; Richard et al., 2017). A question that continues to arise is how to encourage these traits, thus affecting motivation levels, as well as increasing self-determination. Standage et al. (2003), DeLong (2006), Lauderdale et al. (2015), and Ferkel et al. (2017) among other researchers have used the self-determination theory as a framework to investigate the role physical activity plays on motivation; however, very little research has been conducted assessing physical exercise impact on self-determination levels.

Education and Social Construct

The Self-Determination Theory Domain

The various reasons of why people participate in physical activity has been well documented. Past studies, journals, and articles have researched reason for physical exercise and have used many motivational theories as a foundation to understand the dynamics of motivational patterns. Deci and Ryan's (1985, 2001) self-determination theory has been a prominent theory in an approach to understand motivation. Ntoumanis

(2001) noted the self-determination approach to motivation can be particularly helpful and has been applied successfully to education and sport. Furthermore, self-determined behavior plays an important role with motivation as it relates to cognitive, behavioral, and affective outcomes. The self-determination theory argues that behavior is more associated with intrinsic motivation, more so than extrinsic motivation, or amotivation (Deci & Ryan, 1985, 2001).

Delving into the self-determination theory, and how it relates to physical exercise, is necessary to comprehending the three constant psychological components associated as important traits of the self-determination theory. The influence of social factors on the different types of motivation is exerted through the satisfaction of three psychological needs related to self-determined behavior: autonomy, competence, and relatedness (Deci & Ryan, 2001; DeLong, 2006; Ntoumanis, 2001; Pink 2009). According to Deci and Ryan (1985, 2001), the innate psychological need of autonomy (the belief that one is the origin and regulator of his or her actions), competence (the belief that one can efficaciously interact with the environment), and relatedness (the seeking and development of secure and connected relationships with others in one's social context) underpin self-determined motivation (Standage et al., 2003). The extent to which these mediating needs are fulfilled influences the extent to which the motivation adopted by the individual is considered self-determined. A question that arises is, can these psychological traits be enhanced through the practice of physical exercise, thus affecting self-determination levels of individuals.

Zelaya (2013) stated an endeavor student service leaders should embark upon, with expectations to increase motivation output within students, is to initiate programs to

encourage physical activity. Escarti and Gutierrez (2001) conducted a study regarding the relationship of physical activity and motivation. This study demonstrated a motivational climate promoting an orientation towards mastery in physical education classes favor greater intrinsic motivation development, which has a direct connection with self-determined behavior (Escarti & Gutierrez, 2001).

Studies conducted by Ntoumanis (2001), Standage et al. (2003), and DeLong (2006) have discussed the basis of how these components relate to motivation of why people exercise; however, to date, no studies have been conducted to illustrate the effects physical exercise has on altering self-determination levels as it relates to autonomy, competence, or relatedness. Social factors, which increase perceptions of competence, autonomy, and relatedness will satisfy these needs and foster self-determination, whereas social factors, which undermine such perceptions will promote controlling, extrinsic, or amotivated forms of behavior (Ntoumanis, 2001). According to the theories of Deci and Ryan (1985, 2001), autonomy-supportive environments, as opposed to controlling situation environments, are assumed to facilitate self-determined motivation (Standage et al., 2003). Pulling from the work of deCharms (1968), from Pink (2009), autonomy-supportive environments refer to situations in which individuals regard themselves to be the origin of their behavior. Standage et al., (2003) stated physical activity or exercise has been associated with encouraging autonomous-supportive environments. In contrast, controlling situation refer to events in which individuals perceive themselves to be pawns of external forces. Buckworth and Nigg (2016) and Van Wersch, Trew, and Turner (1992) suggested that a physically active lifestyle in adulthood may originate from an

active lifestyle in one's adolescent years; however, participation in physical exercise has been shown to decline with age.

This decline could impact the development of intrinsic motivation as it relates to physical exercise as they age, which, in turn, negatively affects self-determination. The lack of autonomous-supportive environments in middle and secondary physical education, which tend to be more controlling environments, could be linked to the continuing trend of sedentary lifestyles as people age (Buckworth & Nigg, 2016; Ntoumanis, 2001; Standage et al, 2003). Standage et al. (2003) found environments, which promote choice and self-mastery provide situations in which intrinsic motivation, as related with self-determination, becomes nurtured. Buckworth and Nigg (2016) recommended, in their study of physical exercise and sedentary behavior in college students, that college health promotion specialists should consider designing environments, which promote physical activity among college students as a means to combat sedentary lifestyles as well as alter motivation.

A study conducted by Ntoumanis (2001) sought a self-determination approach to understanding motivation in physical education. In this study, Ntoumanis (2001) hypothesized cooperative learning would predict perceptions of relatedness; emphasis on improvement would predict perceived competence; and perceived choice would predict levels of autonomy. Three important outcomes of motivated behavior in physical exercise were measured: effort, boredom, and intentions to be physically active after school years (Ntoumanis, 2001). This study theorized, or expected, the intentions to be physically active would be predicted by the most self-determined form of motivation, that is, intrinsic motivation.

The study surveyed 428 students (218 females, 206 males, 4 did not specify gender) ages between 14 and 16 years old. This study utilized several measuring instruments, which included: Cooperative learning and Improvement subscales of the Perceived Motivation Climate in Sport Questionnaire-2, Competence subscale of the Intrinsic Motivation Inventory, and the Physical Education Class Climate Scale (Ntoumanis, 2001). The four main measuring dynamics were social factors, psychological mediators, motivational types, and consequences.

The overall purpose of this study was to examine physical exercise and the motivational patterns as it relates to self-determination. The results indicated a connection of the three social factors of cooperation, improvement, and choice, with the three psychological mediators of relatedness, competence, and autonomy respectively. The element of self-determination, intrinsic motivation (integrated regulation on the motivation continuum) was positively related with choice of activity and perception of autonomous behavior (Ntoumanis, 2001). Lack of autonomy in physical education classes may explain the absence of self-determined forms of behavior. Ntoumanis (2001) revealed, the intent to be physically active after school years was positively predicted by intrinsic motivation, which indicates levels of self-determination.

A study of this nature suggests a link of psychological mediators with self-determination. Also, a link between individual choice in physical exercise could be another factor with understanding the motivational dynamics of individuals in regards to self-determination. Sibley et al. (2013) study, along with Ntoumanis's (2001) study, suggested a positive outcome in physical exercise is clearly linked to competence, autonomy, and relatedness. Furthermore, the studies by Sibley et al. (2013) and

Ntoumanis (2001) hypothesized that more autonomous-supportive environments and intrinsic motives would be associated with more self-determined regulations and better overall fitness trends. Ntoumanis (2001) and Sibley et al. (2013) stated it is important to promote and foster intrinsic motivation and a physical education setting could provide this opportunity, which has the potential to lead to more self-determined behavior as well as facilitate the general aim of continuing physical activity in adult life.

A study conducted by Standage et al. (2003), Sibley et al. (2013), Teixeira et al. (2012), and Ferkel et al. (2017), like the study by Ntoumanis (2001), researched motivation in physical education using the self-determination theory to predict physical activity intentions. These studies sought to understand the motivational processes, which accounts for varying levels of student motivation as it relates to physical exercise. Furthermore, these studies sought a deeper understanding of the variables autonomy, competence, and relatedness in relationship with self-determination regulation. Another focus was to determine whether an autonomy-supported environment would positively predict important motivation constructs (Standage et al., 2003).

These studies revealed similar findings with the study conducted by Ntoumanis (2001). The studies presented perceptions of autonomy, competence, and relatedness were found to be predictive of self-determination. However, perceived competence emerged as a more prominent construct in predicting self-determination motivation more so than autonomy and relatedness (Ferkel et al., 2017; Sibley et al., 2013; Standage et al., 2003; Teixeira et al., 2012). Furthermore, an autonomous-supportive environment was linked to facilitate a change in motivation. Research seeking an understanding of physical exercise motivational factors have been consistent with finding a relationship

does exist with self-determined behavior, identifying psychological variables of autonomy, competency, and relatedness as well as the potential to alter self-determination within an autonomous-supportive environment.

The self-determination theory perspective theorizes that self-determined behavior could lead to positive outcomes, such as high-quality learning, and the propensity to apply and extend the skills and capacities an organism possesses (Ryan et al., 2009). Teixeira et al. (2012) found a positive relationship between autonomous forms of motivation and exercise. Another interesting discovery from the study by Standage et al. (2003) and Teixeira et al. (2012) found self-determined motivation as an important characteristic toward physical education to predict intentions to be physically active in one's leisure time. Self-determined behavior yields adaptive motivational responses with individual behavior as it relates to physical exercise (Standage et al., 2003). Physical exercise was a key component within the physical activity context, which could create positive intentions for future participation patterns and sustained success. Standage et al. (2003) noted students, who encompass greater self-determined behavior within the context of physical exercise, have a higher probability to remain physically active as they age with their leisure time.

A goal of numerous studies has sought to understand the motivational dynamics of reasons behind why individuals participate in physical exercise. Sulz et al. (2016) acknowledged that school-based physical education programs present a tremendous opportunity to influence positively the attitudes and patterns of physical activity participation among adolescents and into adulthood. Furthermore, physical education programs could provide an environment to foster self-determination as well as help

individuals engage in physical exercise. However, sustaining physical activity has become a growing concern for people after secondary schooling (Sulz et al., 2016). Understanding intentions for future physical exercise and how it relates to self-determination levels is an area, which could provide insight into sustaining a physical exercise regimen outside of a school sponsored course or setting (Sulz et al., 2016). Ferkel et al. (2017) stated the physical education classroom is ideal to foster a challenging and engaging environment, which could help develop self-confidence, a characteristic of self-determination.

A fundamental premise of the self-determination theory is individuals need to feel self-determined. Sulz et al. (2016) found self-determined behavior leads to competence within a social environment, which could elevate levels of individual self-motivation to participate consistently in a physical exercise program. A study conducted by Sulz et al. (2016) sought to validate and compare motivation questionnaires within the realm of the self-determination theory. The purpose was to develop, validate, and establish test reliability of the Physical Education Autonomy, Relatedness, and Competence Scale (PE-ARCS) and the Physical Education Motivation Scale (PEMS) to assess domain-specific motivational states and psychological needs relevant to the self-determination theory.

The results indicate the PEMS and PE-ARCS are adequate to measure motivation and psychological needs within a physical education setting. Furthermore, the results of this study provided substance as to linking autonomy-supportive environment in physical education with positive self-determination levels. Autonomous-supportive environment have shown to be an important factor to positively enhance one's intrinsic motivation, self-determination, while participating in physical activity (Sulz et al., 2016). A

limitation of this study, however, supports the claim measuring motivation levels as well as self-determination levels within an organized school related physical exercise program could be skewed due to the influence of an instructor.

Overall, past research and literature provides evidence for the value of the self-determination theory in understanding exercise behavior and demonstrating the importance of autonomous (self-determined behavior) regulation in fostering physical activity (Teixeira et al., 2012). Autonomy, competence, and relatedness are three social and psychological factors associated with self-determined behavior. Deci and Ryan (2000, 2001) stated intrinsic motivation constitutes the most autonomous from of motivation, which aligns with self-determination. Lauderdale et al. (2015) found self-determined motivation is strongly linked to higher physical activity participation. Furthermore, self-determination of an individual is affected by a person's fundamental need for competence, autonomy, and relatedness factors and physical exercise may provide a platform or environment to enhance these characteristics.

Physical Education and Health

Individual motivation has been studied throughout history. Pink (2009) stated research and studies on what motivates people to engage in any activity, or the drive towards achievement, has been a phenomenon that professionals have sought an answer for in several disciplines. Furthermore, disciplines such as education, athletics, business, as well as a multitude of others domains illustrate the importance of innate motivation and the correlation with self-determination as a common theme for success. Daniel Pink's (2009) motivation 2.0, in his book *Drive,* discussed how we, as people, have moved away from extrinsic variables to motivate and have become more self-motivated

to pursue own goals. Thompson and Thornton (2002) noted in a journal regarding a transition from extrinsic to intrinsic motivation, self-determination has become an avenue, which has become more researched over the years with particular interest in the relationship with intrinsic motivation.

The means at which individuals engage and sustain a physical exercise regimen has been a specific area, which has grown in research over the past few decades. A question that continues to be studied are the motives behind why people exercise (DeLong, 2006). Many studies exist measuring individual motivation levels considering why one participates in a physical exercise routine as well as sustain physical exercise; however, a significant devotion of research regarding the impact physical exercise has on motivation levels, especially its effect on self-determination, has been scarce. Over the years, research has shown a decline in physical activity across our country, including college, and scholars have suggested a need to examine motivational processes to facilitate college students' physical activity habits (Lauderdale et al., 2015).

Humans are often described as active organisms; however, while it may be ideally true, it is often not an accurate description of the modern person (Ferkel et al., 2017; Ryan et al., 2009). A growing concern of obesity, overweight, and health related problems continue, and the need for educators and scholars to research and study how this trend could be reversed is warranted. These trends are reflected in the changing bodies of activity habits of modernized people (Bebeley, Liu & Wu, 2017; Ryan et al., 2009). Hales (2017) noted, according to recent statistics, close to one-third of children in the United States are considered obese, and over 60% are considered overweight. Evans et al. (2014) stated considering the alarming numbers illustrating the declining trend of

physical exercise combined with limited past research efforts understanding the role exercise has on motivation, professionals are beginning to devote more time and effort to researching this phenomenon.

Given these trends, from a health perspective alone, understanding how to better motivate individuals to engage with physical activity and make lifestyle changes is a critical issue. The American College Health Association sponsored a task force as part of a national health objective, which developed a campaign in conjunction with Healthy People 2010 (now Healthy People 2020), called Healthy Campus 2010: Making it Happen, to spread health and wellness awareness on college campuses (DeLong, 2006; Hales, 2017). The purpose was to encourage institutions of higher education to create health objectives. Two important objectives from this initiative were to increase physical activity among the college-aged population and contribute more research to investigate how physical education courses could increase students' physical activity levels as well as academic persistence. DeLong (2006) stated a purpose of these objectives were to examine the motivational practices of individuals and, more importantly, research self-determination levels of students in regards to physical activity, exercise motivation, and student success.

Nowak-Zaleska, Ryszard, Barbara, and Pasek (2014) noted a positive outcome for individuals due to exercise does exist as well as understanding motivational factors of why people exercise. However, a need to understand the effects of physical exercise on motivation may provide even greater insight into motivation as it relates to self-determination levels. Studies between gender differences, age, and ethnicity among college students have been conducted; however, as mentioned, the studies have focused

more on original engagement of exercise intentions, not if a change of motivation levels occurred. Research dedicated towards the impact of physical activity on motivation, more particularly, self-determination levels, are needed (Nowak-Zaleska et al., 2014). Self-determination places an emphasis on motivation for activity for its inherent benefit and could lead to sustained success (McDonough & Crocker, 2007). Ntoumanis (2001), Wilson et al. (2008), Ryan et al. (2009), Sibley et al. (2014), and Ferkel et al. (2017) acknowledged research guided by the self-determination theory seeks to understand whether intrinsic beliefs about exercise motivation are important to promote and how this relates to physical activity. However, what is not clear is whether physical activity could have an effect on individual self-determination due to a lack of research on this specific topic.

Several theories exist to explain what motivates individuals to participate in sport and physical exercise (Bebeley et al., 2017). After reviewing literature, Gill in 2000, concluded that motives for exercise participation included a demonstration of competence, excitement, fun, as well as an individual challenge all of which adhere to an element of self-determination (Weinberg & Gould, 2015). Other factors, which influence people to participate in exercise, were competing motives, improving skills, fitness, and social interaction. Weinberg and Gould (2015) observed, beyond individual motives, other dynamics, which affected motives for physical exercise, included cultural emphasis, unique motives, multiple reasons for participation, environment, skill development, as well as accomplishment. Fox (1999), Baker (2004), Trudeau and Shepard (2008), Pink (2009), and Ferkel et al. (2017) stated physical exercise provides a positive influence on

concentration, memory, and psychological well-being; all of which share a relationship with impacting motivation and self-determination.

Research/Studies

A study by Lauderdale et al. (2015) sought gender differences regarding motivation for physical activity among college students. The study focused on a self-determination approach. The purpose of this study was to investigate the relationship between college students' exercise motivation and weekly physical exercise participation. This study mentioned the multitude of health benefits linked to regular participation in physical exercise, yet a majority of Americans, even collegiate students, do not meet the recommended physical activity guidelines. Furthermore, motivating individuals to initiate and maintain a program of regular physical activity remains a critical and unmet challenge in the 21st century in the United States (Lauderdale et al., 2015).

The results from the study by Lauderdale et al. (2015) concerning motivation for physical exercise with college students support the premise that self-determination motivation is strongly linked to higher physical activity participation. Utilizing the motivation continuum, this study found intrinsic motivation and identified regulation have an association with self-determination. The first aim of this study was to compare gender differences of college students. Results revealed participants intrinsic motivation was significantly and positively correlated with identified regulation, moderate levels of introjected regulation, and low levels of extrinsic regulation and amotivation (Lauderdale et al., 2015). The study partially supports male students have significantly higher levels of intrinsic motivation, as well as internal factors such as stimulation and enjoyment as compared to females.

A second perspective of the research by Lauderdale et al. (2015) was to broaden what is known about how physically active college students differ in their exercise motivation. Statistical differences were found in intrinsic motivation and identified regulation as opposed to external regulation. These results support the hypothesis that physically active students encompass increased levels of self-determined behavior. Furthermore, the study suggested self-determined behavior leads to volitional and long-lasting behavior across different contexts outside of exercise domains. Also, this study revealed extrinsic motivation was associated with lower levels of self-determination. The study concluded that by understanding gender differences in motivation to be physically active and the relationship with motivation regulation and physical activity, exercise professionals can apply the finding to create programs that will lead individuals to be more intrinsically motivated.

A study by Maltby and Day (2001) reported intrinsically motivated undergraduate students, who are more physically active, have better psychological well-being compared with extrinsically motivated undergraduate students. Teixeira et al. (2012) examined studies from 1960 – 2011 regarding exercise, motivation, and self-determination. The examination of these studies found a consistent positive association between self-determination, motivation, and exercise in the areas of adoption and maintenance. Furthermore, outcomes from this examination established support for a positive connection between self-determined behavior and exercise (Teixeira et al., 2012). The literature also showed consistent support with competence satisfaction, an element characterized with self-determination, was positively associated with exercise participation across a range of samples and settings for college students.

Research guided by the self-determination theory has revealed intrinsic beliefs regarding motivation are important to promote as they could lead to increased physical exercise frequency and adherence (Brunet & Sabiston, 2011; Edmunds et al., 2008; Evans et al., 2014; Lauderdale et al., 2015). Notably, intrinsically motivated individuals engage in an activity for its own sake, and, as a result, intrinsic motivation is an important element as it involves beliefs and enjoyment, skill use, and accomplishment during, and shortly after, exercise (Pink, 2009; Sibley et al., 2013). This concept directly implies an association with intrinsic variables and self-determined behavior. A study conducted by Murray and Wilson (2014) examined how temporal proximity to positive outcomes influences exercisers' intrinsic motivation. Although this study was not specific to college students, this study aimed to examine the relationship of physical exercise, intrinsic motivation, and self-determination.

A majority of college campuses have a physical exercise center in good proximity for students to participate in physical exercise. The study, conducted by Murray and Wilson (2014), revealed a connection with increased intrinsic motivation due to proximity of exercise facilities and equipment regarding people, which were considered less active. Consistent with previous research, participants who exercised more frequently reported higher intrinsic motivation. Furthermore, a significant interaction revealed the effect of outcome proximity condition was regulated by exercise frequency. Among participants with lower levels of past physical activity, intrinsic motivation was greater when exposed to proximal outcomes relative to distant outcomes (Murray & Wilson, 2014).

The results of this study conferred exposure to proximity to participate in physical exercise had an effect on increased intrinsic motivation, which falls on the identified regulation spectrum of the motivation continuum. This level on the motivation continuum aligns with elements of self-determined behavior. Thus, college environments with fitness centers, accessible exercise equipment, or physical exercise buildings provide the proximity for students to participate in physical exercise more effectively (Murray & Wilson, 2014). Although, this study did not address physical activities impact on self-determination, results suggested less active people may increase exercise activity if the proximity of exercise is present, as in a required physical exercise course, which could potentially lead to an increase of self-determined behaviors.

As been stated throughout this literature review, understanding the motivational factors, which engage a person to participate in physical exercise have been widely researched; however, a need continues for further research as it pertains to physical exercises influence on self-determination levels. A study conducted by DeLong (2006) at Louisiana State University in the Department of Kinesiology sought to examine motivation and physical exercise. The rationale of this study was to examine college students' motivation to be physically active by merging the perspective of the self-determination theory and the transtheoretical model (DeLong, 2006). The study also sought a secondary purpose, which was to examine the effects of a required physical activity course on college students' levels of physical activity.

The study utilized a survey to assess motivation, self-determination, stage of change, self-efficacy, and activity levels. This study employed the behavior modification process as individuals moved along the scale of behavioral change as well as the

motivational continuum, which measures extrinsic variables and intrinsic variables, which measures self-determination levels. DeLong's study used the Behavioral Regulation in Exercise Questionnaire (BREQ) to assess self-determination levels as it relates to physical exercise. The BREQ is measured along the motivation continuum, which includes questions that measure external regulation ("I exercise because other people say I should"), introjected regulation ("I feel guilty when I don't exercise), identified regulation ("I value the benefits of exercise), and intrinsic motivation ("I exercise because it's fun) (Ingledew & Markland, 2008; Mullan & Markland, 1997).

Results of this study suggested activity levels could vary across the stages of change and participants could demonstrate more self-determined behavior as they moved across the stages of change. Intrinsic motives were predictors of self-determination and motives found to differ across the stages of change (Ingledew & Markland, 2008; Mullan & Markland, 1997). This study connected the stages of behavior with the stages of the motivation continuum. A common theme of motives regarding levels of self-determination for individuals were interest, enjoyment, and competence; all of which identified as predictors of adherence to physical exercise (DeLong, 2006). Furthermore, participants enduring and sustaining longer periods of a physical exercise routine may have a tendency to move along the motivation continuum in a positive movement towards increased self-determination levels.

Sibley et al. (2013) examined the relationship between exercise motives, exercise behavioral regulation, and physical fitness in college students. Sibley et al. (2013) hypothesized that more intrinsic motives and more self-determined regulations would be associated with greater fitness participation. The participants, both men and women,

were undergraduate students enrolled in university fitness-based physical activity classes (Sibley et al., 2013). This study utilized the Motives for Physical Activity Measure-Revised (MPAM-R) instrument to measure the predictors fitness, appearance, competence, social, and enjoyment. This study also utilized The Behavioral Regulation in Exercise Questionnaire measuring instrument to assess levels across the motivation continuum as well as to determine levels of self-determined behavior.

The results of this study supported the hypothesis. Stronger intrinsic motivation and competence-related participation, an element consistent with self-determination, were associated with greater performance. Sibley et al. (2013) acknowledged the findings from this research were consistent with previous research regarding positive exercise outcomes associated with intrinsic motives and self-determined motivation. Furthermore, a relationship with autonomy, competence, and relatedness and higher levels of self-determination existed. Sibley et al. (2013) stated autonomous motivation leads to more exercise behavior, better exercise adherence, and greater self-reported physical activity, which should then lead to enhanced physical fitness levels.

As mentioned, emerging results continue to surface as well as illustrate the numerous benefits physical activity has on health problems (Hales, 2017). Other results continue to suggest the mental health benefits stemming from physical exercise are important to understand as well. Mental health benefits from regular physical activity include enhanced self-esteem, vitality, and satisfaction with life and reduces psychological maladies, such as depression, anxiety, and chronic stress (Hales, 2017). A trend has developed highlighting a need to go beyond just physiological aspects of regular exercise but to also include a more in-depth understanding of psychological

advantages. Deci and Ryan (2000) noted self-determination is an innate psychological element, not a physiological. The self-determination theory seeks to understand human motivation and the relationship regarding the innate psychological need for competence, autonomy, and relatedness (Deci & Ryan, 2001; Ingledew et al., 2014; Pink, 2009; Sibley et al., 2013). A prominent theme with studies regarding the psychological benefits of regular physical exercise has been to seek greater understanding of motivation or the drive of people to participate in physical exercise and the role of self-determination.

A research journal written by Wilson et al. (2008) from Brock University sought to understand motivation patterns for exercise from a self-determination perspective. This study used the theoretical perspective and self-determination theory to understand motivational issues associated with the continuation as well as the termination of physical exercise regimens. The self-determination theory accounts for the quality of motivation regulating behavior as well as the processes that facilitates motivational development, which holds considerable appeal to understand why people initiate, persist, and terminate their involvement in various physical activities (Hagger & Chatzisarantis, 2007). The purpose of this research journal was to provide a broader overview of the research examining the self-determination theory guiding framework for understanding exercise motivation and, in particular, how basic principles can be used to understand exercise participation (Wilson et al., 2008).

Several concepts regarding the relationship of physical exercise, motivation, and self-determination were extracted from this research journal. First, initial research centered on the development of instruments to assess exercise motivation consistent with the self-determination theory. Wilson et al. (2008) determined the BREQ measuring

instrument, developed by Markland and colleagues (1997), was a valid measuring instrument for understanding motivational practices as for why individual participate in physical exercise. A second item of interest was a discovery of self-determined behavior. Additional research has demonstrated support for links between more self-determined exercise motives (particularly intrinsic regulation) and markers of well-being, such as enhanced positive self-worth (Thogersen-Ntoumani & Ntoumanis, 2007).

Another concept discussed was the role of goal contents and their effects on sustaining physical exercise. Goal contents represent the aspirations people focus on during their pursuits (Vansteenkste, Soenens, & Lens, 2007). Initial research indicated developing intrinsic as opposed to extrinsic goals were associated with adaptive consequences including sustained exercise behavior. Subsequent studies have also identified basic psychological needs as mediators transmitting goal contents' influence on activity and well-being (Williams, 2006). Understanding the motivational dynamics as it relates to goal centered exercise and its impact on self-determination regarding persistent behavior is an area, which clearly needs to be expanded (Wilson et al., 2008).

Other areas of interest stemming from this research journal were to understand the importance of basic psychological needs with exercise contexts, adaptive environments for exercise as it relates to a shift in self-determination, and identifying autonomous behavior within physical exercise. Embracing these important characteristics of understanding motivational habits of people pertaining to physical exercise are needed to advocate examining the self-determination theory. Scholars interested in the promotion of exercise as an important component continue to embrace Deci and Ryan's (1985) self-determination theory. The self-determination theory represents a viable platform and

framework to better assess individual motivation dynamics within the initiation and adherence of physical exercise.

Reviews by Deci and Ryan (2000), Ryan et al. (2009), Teixeira et al. (2012), and Ferkel et al. (2017) sought to better understand the elements of motivation, self-determination, exercise, and physical activity and how all elements relate. Multiple concepts, elements, and theories were generated; however, a few theories were consistent within each review. One theory generated was, self-determined behavior encompasses the domains of autonomy, competence, and relatedness. A second consistent theme was intrinsic motivation is more predictive of long-term exercise adherence. Lastly, as stated best by Teixeira et al. (2012), the need to develop autonomous self-regulated behavior to enhance intrinsic motivation leading to higher levels of self-determination; and physical exercise, could provide this opportunity to develop this trait.

Summary

Higher education has begun a trend towards developing programs, which confront an issue with student retention. Scholars have acknowledged academic performance is paramount in order to begin the process of increasing student retention. Several methods have been established to tackle the issue of student retention in higher education; however, interest with understanding the impact physical exercise may have on student retention, and in particular self-determination levels, has been overlooked. Programs involving physical exercise as a means to enhance motivation may not exist due the declining trend of physical education in the school setting. A relationship with academic performance, physical exercise, and self-determination has been established.

Regular physical exercise improves cognition, anxiety, and mood in young adults. Physical exercise has the potential to offset stress and other mental health problems as well as benefit the physiological and psychological aspects of students, which could lead to greater academic success. Administrators of higher education have invested resources to focus on the relationship between academic performance and physical exercise. However, administrators of higher education need to consider the role motivation plays in the process of student retention as well as the variables, which direct motivation, in particular, self-determination.

Evidence exists demonstrating how physical exercise could improve the mental well-being of people, largely through mood and self-perception, which demonstrates an effect on self-determination. A theoretical approach, which may offer insight into the motivation of students engaged in physical exercise, is the self-determination theory. The self-determination theory provides acumen into the innate degree of motivation an individual has towards engagement within activities.

Three principal characteristics, autonomy, competence, and relatedness, as well as self-confidence are associated with self-determined behavior. Furthermore, research has suggested self-determination could be augmented within an autonomous-supportive environment enhancing these characteristics, such as found in a physical education setting. The dynamics of student retention within the higher education setting has beckoned for more research in order to discover solutions. As stated, a relationship with physical exercise and self-determined behavior has been found and how these variables relate to greater sustained academic success.

Physical exercise provides a platform to comprehend what motivates individuals and, in particular, the effects it may have on self-determination. Multiple studies have revealed the factors of motivation for why people engage in exercise; however, little research has been conducted on the impact physical exercise may have on self-determination levels. A study of this nature has the potential to provide valuable information for higher education leaders to help find solutions to student retention as well as demonstrate the importance of physical education. Therefore, the purpose of this study was to examine the effects of physical exercise may or may not have on augmenting self-determination levels of college students.

CHAPTER III

METHODOLOGY

Introduction

Student retention has become an important focus for higher education leaders over the last several years (Crosling et al., 2009). Programs have been developed to address this issue; however, exploring self-determination levels of students has been overlooked. Education over the last decade has deemphasized the need to for physical education; however, physical exercise has illustrated a positive influence on academic success (Ferkel et al., 2017). Research on exercise motivation from the perspective of the self-determination theory has been conducted with a focus to determine motivational factors as to why individuals participate in physical exercise. Research regarding the effects physical exercise has on self-determination levels has been limited; however, growing interest with the relationship of physical exercise and self-determination has increased (Teixeira et al., 2012). Therefore, the purpose of this research was to examine the impact physical exercise has on self-determination levels of college students.

This chapter outlined the methods of how the researcher conducted a study on this topic. The hypotheses and research questions are re-stated following the introduction. The research design section thoroughly explained, in detail, the methodology and procedure of how the researcher conducted this study. This section included operational definitions of the variables, discussed the chosen instrument of measurement, as well as the type of research for this study. The research design section also included a rationale of why the researcher decided to choose the specific type of research design and instrumentation for this study.

The population, participants, and sample sections discussed the precise population utilized for this study. These sections detailed the sampling methods, sample unit, as well as participants included for this study. The researcher will be specific in these sections to explain why certain participants were utilized and why other participants were not selected. These sections included the location of where the questionnaire was conducted and how permission was obtained from both the institution and participants for this study.

The instrument chosen to conduct this study was the Behavioral Regulation in Exercise Questionnaire (BREQ). The BREQ instrument was designed for the purpose of measuring self-determination levels of individuals as it relates to the how an individual moves along the motivational continuum (Markland, 2007). As noted by Ntoumanis (2001), DeLong (2006), and Lauderdale et al. (2015), the BREQ measuring instrument is particularly helpful with the measuring of self-determination levels of individuals with an emphasis on motivation in physical exercise. The BREQ instrument explores the relationship between self-determination in the regulation of exercise behavior and stages of motivational change within exercise (Mullan & Markland, 1997)

Research on past studies, which utilized this instrument, was further discussed in the instrumentation section. Reliability and validity of the instrument was discussed as well as the origins of the instrumentation design. This section examined the instrumentation in regards of what it measures, how it measures, and the relationship the instrumentation has with the topic of this research. Following the instrumentation section was how the researcher intended to collect data. This section included a report of how

the results were coded, the length of the instrumentation, the scoring measurement, and the method of how the results were collected.

The section of the response rate, data analysis, and reporting of the data expanded upon the data collected section and the instrumentation section. The researcher explained the accepted response of the study, how data collected was analyzed, and how the data collected was reported in Chapter IV. Following the data analysis section was the research confirmation section in a table form. Chapter III concluded with a brief summary of the methodology. The researcher conveyed the entire process and procedure of the methodology for this study.

Research Question

Motivation has been a subject researched with why people engage in physical exercise. Numerous studies have investigated many reasons behind why people participate in physical exercise assessing extrinsic and intrinsic variables as well as self-determination levels (Pope & Harvey, 2015; Ryan et al., 2009; Sibley et al., 2013). Majority of the studies associated with physical exercise have focused on the motivational motives as to why people participate in physical exercise with very little attention directed towards the impact physical exercise plays on augmenting motivation levels, in particular, self-determination levels of people. The researcher for this study focused on the effects physical exercise may or may not have on self-determination levels of individuals. The researcher developed three specific research questions to investigate the impact physical exercise may or may not have on augmenting self-determination levels of college students. Each research question included an alternative hypothesis as well as a null hypothesis.

RQ 1: To what extent is there a difference in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Strength Training I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course?

$H1_o$: There will not be a statistically significant difference in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Strength Training I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course.

$H1_A$: There will be a statistically significant difference in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Strength Training I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course.

RQ 2: To what extent is there a difference in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Fitness I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course?

$H2_O$: There will not be a statistically significant difference in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Fitness I course as compared to the level of

self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course.

$H2_A$: There will be a statistically significant difference in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Fitness I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course.

RQ 3: To what extent does a difference exist in the level of self-determination of college students as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) between the outcome of a Strength Training I course and a Fitness I course?

$H3_O$: There will not be a statistically significant difference between the level of self-determination of college students as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) between the outcome of a Strength Training I course and a Fitness I course.

$H3_A$: There will be a statistically significant difference between the level of self-determination of college students as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) between the outcome of a Strength Training I course and a Fitness I course.

Research Design

The researcher examined numerous past studies and decided to develop and conduct a comparative quantitative research design. DeLong (2006) conducted a study determining students' motives for physical activity. The study utilized a quantitative approach and used six instruments, the BREQ as one, to assess self-determination levels,

as well as the motivational reasons of why individuals participate in exercise. All instruments employed in the study by DeLong (2006) utilized a scale-based measurement producing specific numbers to illustrate student motives for exercise participation. This study provided exact data, relative for a quantitative study, for the purpose of deciphering any comparative explanation.

Sibley et al. (2013) conducted a quantitative study to assess university students exercise behaviors and motives for physical fitness. The study utilized four instruments, the BREQ as one, to measure data. The purpose was to examine the relationship of exercise participation motives and behavioral regulation and employed a quantitative research method. The measuring instrument was precise which aided in providing understandable and significant results for this study.

A study by Lauderdale et al. (2015) utilized a quantitative approach for their research design. The purpose of the study was to investigate the relationship between college students' exercise motivation and physical activity participation. This study was another study aimed to understand motivational practices of why people participate in physical exercise and collected data in a quantitative fashion to illustrate results. This study also utilized the Behavioral Regulation in Exercise Questionnaire as a measurement instrument for data collection.

As noted, the researcher conducted a quantitative study, which encompassed a comparative design. A comparative study design attempts to establish a cause and effect relationship among variables (Babbie, 1999). This particular research conducted a comparative quantitative design which is characterized by featuring a manipulation of an independent variable to measure and explain a potential influence on a dependent

variable (Babbie, 1999; Richardson, 2017). Participants completed the Behavioral Regulation in Exercise Questionnaire, which was administered in a pre and post segment phase. Results collected from the pre-questionnaire segment were analyzed and compared to the data collected from the post-questionnaire segment.

This study incorporated two principal variables and a comparative demographic. Physical exercise was the independent variable. Physical exercise is defined as any bodily movement produced by skeletal muscles, which require energy expenditure (Hales, 2017). The Medical Dictionary for Health Professions and Nursing (2012) defines physical exercise as physical activity, which is planned, structured, and repetitive for the purpose of conditioning the body and to improve health and maintain fitness. The dependent variable for this study was the measurement of self-determination levels. The Cambridge Dictionary defines self-determination as the ability or power to make decision for one's self. Furthermore, self-determination is defined as ownership of the individual decision-making process and conducting activity from innate motivation removed from outside influence (Ryan et al., 2009).

As mentioned, this study conducted a quantitative method with a comparative design. The researcher utilized the measuring instrument, Behavioral Regulation in Exercise Questionnaire (BREQ). This instrument is specific to measuring self-determination levels of individuals within an exercise environment. DeLong (2006), Teixeira et al. (2012), and Lauderdale et al. (2015) conducted a quantitative study utilizing the BREQ, and each of these studies produced usable data assessing self-determination levels of individuals as it related to participating in physical exercise. The Likert scale used to score the BREQ allows data to be collected and inputted into an

SPSS database, which allows for the results to be interpreted and analyzed. As noted, this study consisted of a pre and then post questionnaire phase to collect data, which assisted with the comparative aspect of the research design. Furthermore, participant's responses were extracted and inputted into a SPSS program and analyzed as a paired samples *t*-test for research question one and two and an independent *t*-test was conducted for research question three.

As noted, numerous studies have been consistent conducting quantitative research as it relates to collecting and assessing data regarding the relationship of physical exercise and self-determination levels. This particular research followed this premise and conducted a quantitative study. The rationale to use a quantitative research design is solidified by the plethora of past studies, which have used not only quantitative methods within this topic, but also used the specific measuring instrument, the BREQ, which the researcher utilized for this particular study. The data collected addressed each research question in a quantitative method as to measure and compare self-determination levels of college students.

Developing a research design to elicit true and genuine data must be executed in a consistent and detailed manner. Studies such as Lauderdale et al. (2015), Sibley et al. (2013), and Ferkel et al. (2017) executed research in a precise and detailed manner to gather genuine data, which provided reliable and valid results. The researcher selected WELL 1105 Strength Training I and WELL 1161 Fitness I courses to survey from the Albany State University Health and Human Performance Department. Both courses are considered traditional face-to-face courses and operate as full-term courses. Strength Training I and Fitness I courses are categorized as physical education competency

courses with an activity element, which require students to participate in a semester-long physical exercise program.

The pre-questionnaire segment of this study was conducted at the start of the 2018 summer academic semester prior to students engaging in any physical exercise for the course. Participants were gathered into a classroom to complete the questionnaire. All participants were provided an opportunity to either accept or decline an invitation to be a part of this study, and all participants data remained confidential. The researcher, to avoid any manipulation of responses from the participants and to maintain each subject's anonymity, had a full-time faculty member administer both the pre and post questionnaire phase. The researcher communicated the purpose of the study, the instrument used for measurement, provided a written verbatim form of instructions, and articulated how to direct the entire process of administering both the pre and post questionnaire segments to the administrator.

The study was introduced to the participants as research for the Health and Human Performance Department of Albany State University. Participants were informed they would complete a pre-questionnaire at the start of the semester and then a post-questionnaire at the end of the semester. However, the researcher did not communicate to the participants they would complete the same questionnaire. The researcher believed by not disclosing to the participants they would complete the same questionnaire for both the pre and post segments would help alleviate the potential for any preconceived notions for participants' post-questionnaire responses.

The administrator provided participants specific and detailed directions of how to complete the pre-questionnaire. The directions for execution of both the pre and post

questionnaire segments were written and concise. The explicit directions provided uniformity, clarity, and consistency for the entire procedure for participants completing the pre and post questionnaire phases. Participants were provided a hard copy of the BREQ as well as a writing utensil. Participants were assigned a particular seat, and the seating chart had an empty seat between each participant to ensure privacy of responses. The administrator provided the questionnaire by hand to each participant.

Participants were instructed to provide true, individual, and genuine responses and were informed the study in no way had any impact towards their grade in the course they selected. Each participant was provided a personalized code as their identity to ensure the researcher compared the correct pre and post questionnaires for each participant and to maintain anonymity of each subject. Participants were provided a small piece of paper to write down their code and store to remember for when they completed their post questionnaire phase at the end of the semester. The researcher also created a study subject roster of each participants e-mail with their subject code. The participant roster was used to send out a reminding e-mail to inform participants of the upcoming post-questionnaire segment day, date, and time.

After the pre-questionnaire was completed, participants were instructed to hand deliver their hard copy of the BREQ to the administrator. The administrator placed each questionnaire in a separate file for each class and delivered the file to the researcher. At the end of the semester, participants were once again gathered into the same classroom in which they completed the post-questionnaire phase. The administrator organized and directed the post-questionnaire phase exactly in the same manner as the pre-questionnaire phase. The administrator provided explicit directions, organized a seating chart, provided

a hard copy of the post-questionnaire and writing utensil, and collected material from each participant. The administrator instructed each participant to please place the code they were provided on the top right corner of the post-questionnaire in order to match the pre and post questionnaires correctly. The administrator of the study provided the researcher the hard copy of the pre-questionnaire at the start of the study and then provide the researcher the hard copy of the post-questionnaire at the completion of the course and semester.

To ensure confidentiality and anonymity the researcher collected all the questionnaires and kept them in a locked file cabinet at his house. The researcher was the only individual to have access to the file cabinet. Once all the results were collected and extracted from each questionnaire, each were put back into the locked file cabinet. Questionnaires were kept in a lock file at the house of the researcher through the entire dissertation process as a reference if needed. After 3 years, the files, which housed the questionnaire responses for both the pre and post questionnaire segments, and for each class and each participant, will be burned and destroyed.

Population

The sample population for this particular study were undergraduate collegiate level students attending ASU. Furthermore, ASU requires students to complete two college credits from an array of health and wellness courses. These courses must be completed within the first 2 years of an ASU students' college endeavor. Therefore, ASU undergraduate level students utilized for this study were narrowed down to be either freshmen and sophomore level students. Prior to the pre-questionnaire initial instruction,

if by chance a junior or senior were included in the courses selected, they were omitted from participating in the study.

The courses selected for this particular study were from the health and wellness required courses at ASU, which included WELL 1161 Fitness I and WELL 1105 Strength Training I. These courses at ASU are considered competency courses, defined as courses that have a lecture component as well as an activity component. However, they differed from a basic activity course as the purpose was to understand, develop, and execute a specific exercise program. The Fitness I and Strength Training I courses were selected over basic activity courses as each course had a foundational learning outcome for students to be able to develop and design a personal exercise workout program. This element puts more of an emphasis on student participation in physical exercise.

The Strength Training I and Fitness I course were also selected over other basic physical education activity courses as basic activity courses were courses, which were sport specific and did not require students to participate in a designed physical exercise regimen. The courses selected for this study, besides assignments, required students to be physically active and participate in physical exercise for the length of the semester. Physical participation is a required aspect for both the Fitness I and Strength Training I courses. Another purpose for selecting these particular courses was the fact students have to complete a health and wellness course requirement and both, Fitness I and Strength Training I, complete this requirement, which could be a reason behind why a student register for each course. However, students also register for these courses for reasons of having a specific amount of course credits for the purpose to receive financial aid, learn

about the course content, understand benefits of physical exercise, as well as their own volition.

Participants

Participants selected for this study were students enrolled at Albany State University. Students who registered for the courses Fitness I and Strength Training I discussed in the population were the chosen participants. Any student, no matter their grade status, were eligible to register for either of these courses. However, majority of the students who enroll in Fitness I and Strength Training I are freshmen and sophomores.

The researcher reviewed the four sections of Fitness I and three sections of Strength Training I for the 2018 summer semester. Two sections, one Fitness I and one Strength Training I, were selected randomly at which point the researcher pulled the course attendance roster. As noted, majority of the students enrolled in both these courses tend to be freshmen and sophomore; however, occasionally upperclassmen register for the course as well. Upperclassmen, junior or senior level students, were not provided an opportunity to participate in this study.

The students in each of the selected courses were briefed by the instructor regarding an impending research for the Health and Human Performance Department at Albany State University. As a collective group, each student was provided an opportunity to voluntarily participate in the study. Students were provided an option to either participate or choose not to participate. The decision was an individual choice and did not impact their course or academic future.

The participants were also informed their willingness to participate in the study had no reflection on their grade nor any bearing on their educational endeavor. Students who agreed to participate in the study were selected at random and would remain anonymous. Lastly, the study did not provide an incentive or anything, which would entice the participants to respond in a certain manner to induce particular results. The entire process, and how the study was presented to the participants, was strictly in a manner of educational research purpose only and as study conducted by the Health and Human Performance Department of Albany State University.

Instrumentation

Professionals in both the Physical Education and Psychology fields have sought to discover the motivational factors, which lead people to engage in physical exercise (DeLong, 2006). This phenomenon has increased steadily over the years due to the rapid epidemic of health-related issues people suffer throughout the world (Bebeley et al., 2017). Seeking a more profound understanding of the motivational behaviors of individuals as it relates to physical exercise is a complex conundrum, which requires a precise measuring instrument (Sibley et al., 2013). Several instruments, which measure the motivational reasons that drive people to participate in physical activity have been developed: The Situational Intrinsic Motivation Scale (SIMS), the Motivation for Physical Activity and Exercise/Work-out Questionnaire (MPAQ), the Physical Activity and Leisure Motivation Scale (PALMS), the Exercise Motivation Inventory (EMI-2), and the Exercise Causality Orientation Scale (ECOS). Although these surveys, scales, and questionnaires were developed with the intentions of measuring motivational factors for

the reasons people engage in physical exercise, none are specific to measuring self-determination levels.

The self-determination theory is a macro-theory of human motivation, which has a connection with the development and functioning of the personality within social contexts (Murcia et al., 2006). The self-determination theory, developed by Deci and Ryan (1985), analyzes the extent to which human behavior is volitional or self-determined (Ryan et al., 2009). The self-determination theory details the degree to which people perform their actions at the highest level of reflection and are engaged in the action with a sense of choice and autonomy (Edmunds et al., 2008; Markland, 2007; Murcia et al., 2006). Comprehending this theory, Mullan et al. (1997) developed the Behavior Regulation in Exercise Questionnaire (BREQ) instrument, which seeks to measure self-determination levels based on the motivational continuum as it relates to why people participate in physical exercise (Mullan et al., 1997).

The original instrument, by David Markland (1997), was developed to measure external, introjected, identified, and intrinsic forms of regulation of exercise behavior based on Deci and Ryan's (1985) continuum conception of extrinsic and intrinsic motivation (Markland, 2007). However, in 2004, the Behavior Regulation in Exercise Questionnaire – two (BREQ-2) was modified to include amotivation. The BREQ-2 scale measures a person's physical exercise behavior constructed on a four-scale motivation continuum. The scales include external regulation, introjected regulation, identified regulation, and amotivation, which is neither an extrinsic nor intrinsic form of motivation. Wilson et al. (2006) later added an integrated regulation subscale, that is the closest form of intrinsic motivation or self-determination, which led to the creation of the

BREQ-3 (Markland & Tobin, 2004; Wilson et al., 2006). The BREQ-3 is the most recent version of this motivation measuring instrument, which includes integrated regulation along with external regulation, introjected regulation, identified regulation, and amotivation. This version of the BREQ also includes an additional five items on the questionnaire.

The BREQ scale is comprised of 24 questions, which measures peoples' motivation across the stages of the motivation continuum (Wilson et al., 2006). The main purpose of this measuring instrument is to discover reasons underlying peoples' decisions to engage or not engage in physical exercise. In simple terms, this scale was established to understand personal decisions as to the motivational intentions of an individual to exercise. Each question is designed to elicit an individual motive as to why one might engage in physical exercise. The rationale for each question is to determine whether an individual is participating in exercise due to extrinsic or external motivation or is it more of an innate experience to exercise. Furthermore, the BREQ measures and positions individuals on the motivation continuum as it relates to self-determination levels (DeLong, 2006; Mullan et al., 1997).

The BREQ-3, consistent with all versions of the BREQ, utilizes a Likert scoring scale of five points. The scale ranges are 0 = *not true of me*, 1,2,3 = *sometimes true for me,* and 4 = *very true for me*. This instrument includes two demographic type questions, age and gender; however, an ethnicity section and academic major section was added by the researcher of this study. The BREQ 24-item questionnaire can be divided into four classifications. Six questions pertain to individual identity as it relates to physical exercise. Four questions are designed as external reasons to exercise. Nine questions

pertain to personal feelings towards physical exercise, and the remaining five questions could be categorized as miscellaneous in nature (Markland, 2007). Each category identifies with each section of the motivation continuum, such as amotivation, extrinsic regulation, identified regulation, introjected regulation, and integrated regulation. The BREQ-3 instrument could be used for studies related to motivation and physical exercise and generally has no limitation on how it could be administered (Markland, 2007).

Several past studies have been conducted to demonstrate reliability and validity evidence in research, which has utilized the BREQ as a measuring instrument. Murcia et al. (2006), measured self-determination motivation in a physical fitness setting to validate the Behavioral Regulation in Exercise Questionnaire. The results confirmed the reliability of the BREQ to be utilized as a self-determination measurement. This study concluded the BREQ scale had the required conditions for reliability and validity criteria to be used in the context for understanding motivation. (Murcia et al., 2006).

As mentioned above, the BREQ measuring instrument seeks to measure self-determination levels of individuals as followed on the motivation continuum. The Cronbach's alpha reliability coefficient factor was .89 for the integrated regulation for this study. The Cronbach's alpha reliability coefficient for identified regulation was .81, .82 for introjected regulation, .86 for external regulation, and .85 for amotivation. These numbers indicate a strong reliability and internal consistency when utilizing the BREQ instrument to determine the exercise behavior regulation levels of individuals as they may move across the motivation continuum. Furthermore, this study supports and strengthens the theoretical framework and reinforces the idea of the self-determination theory as a

logical and coherent explanation on human motivation regulation (DeLong, 2006; Sibley et al., 2013; Wilson et al., 2012).

Wilson, Sabiston, Mack, and Blanchard (2012) conducted an empirical study of the Behavior Regulation in Exercise Questionnaire to examine different scoring protocols designed to assess motivation. The results suggested a strong correlation and predictor of understanding motivation of individuals to engage in physical activity and the BREQ instrument was a reliable measuring questionnaire. Wilson et al. (2012) stated the BREQ instrument has the potential to unveil the forces motivating physical activity behavior. Furthermore, the results of this study were clear as the scoring protocols utilizing the BREQ instrument represent an important and useful avenue for future research with comprehending the motivation dynamics as it relates to physical exercise behavior.

Both of these studies illustrate the reliability and validity of the BREQ measuring instrument. In general, the BREQ had an average Cronbach's alpha subscale of .75 (DeLong, 2006; Wilson & Rodgers, 2003; Wilson et al., 2012). This number provides a strong outcome-based measurement in studies, which seek to understand physical exercise behavior within a motivation context, and in particular measuring self-determination levels. The five subscale motivation continuum based on the self-determination theory provides researchers to use freely the BREQ measuring instrument when conducting a study to discover individual's engagement habits in regards to physical activity and effects on motivational dynamics.

Permission does not have to be granted when using the BREQ for research purposes. David Markland of Bangor University, the founder of the BREQ instrument, stated researchers are free to use the scales, adapt them, translate them, or do whatever is

needed, provided, of course, that any publication that ensue includes appropriate citations to their source (Markland, 2007). The researcher of this study intended to utilize the BREQ for research purposes. Therefore, due to the stipulation set by Markland, permission is assumed, and the researcher will not need to seek written or verbal approval or permission.

Assumptions

Assumptions are propositions for which no information can be made available within the scope of this study. Assumption for this study are as follows:

1. Students responded to the statements on the pre and post BREQ questionnaires in an honest and truthful manner. There is always the possibility of subjective distortion due to several causes. There may include the participants avoiding extreme response categories (central tendency bias) and agreeing with statements as presented (acquiescence response bias).
2. Students understood the questions put forth on the pre and post BREQ questionnaires.
3. All completed pre and post questionnaires were used in the data analysis for this study and no partial responses were included in the final results. No incomplete responses were included in the final results. No unmatched responses were included in the final results.
4. The results of the pre and post BREQ questionnaires produced a sufficient sample size large enough to generalize to the larger population of college students in question.

Data Collection

The researcher, as outlined in the instrument section, used the Behavioral Regulation in Exercise Questionnaire – Three. The BREQ has been used in numerous studies to assess self-determination levels as it pertains to physical exercise. The researcher of this study required students to complete a pre and then post questionnaire for comparative design. The participants completed the BREQ in May 2018 prior to participating in their respective physical exercise course. At the conclusion of the semester, July 2018, participants completed the same BREQ. The participants received a hard copy of the BREQ and were provided a writing utensil to use in order to complete the questionnaire. Each participant, when finished with the pre-questionnaire section, hand delivered their hard copy to the administrator at which time the administrator placed the completed BREQ into a folder. This process was the same for the post-questionnaire phase section as well. The folders were hand delivered to the researcher, at the time when the pre and post questionnaires were complete. The researcher placed the questionnaires in a locked file cabinet after the results were extracted from each individual questionnaire.

The BREQ instrument has been utilized for the purpose of assessing self-determination levels of individuals as it relates to the how an individual may move along the motivation continuum within participating in physical exercise. As noted by Ntoumanis (2001), DeLong (2006), and Lauderdale et al. (2015), the BREQ can be particularly helpful measuring self-determination levels as an approach to motivation in physical exercise. The BREQ instrument was designed with the intent to understand the reasons underlying peoples' decisions to engage or not engage in physical exercise and

could be used in multiple forums including educational purposes (Markland, 2007). The BREQ instrument explores the relationship between self-determination in the regulation of exercise behavior and the stages of change for exercise (Mullan & Markland, 1997). As mentioned in the instrumentation section, the BREQ is a two-page questionnaire with 24 questions. The BREQ is scored on a Likert scale of numbers one through four. The questionnaire also has a zero-response choice, which indicates amotivation.

The researcher periodically followed-up with the participants, in an e-mail, to reaffirm the date for the post-questionnaire phase. The participants were not provided a specific time table nor time limit to complete the pre and post questionnaire. As noted, the participants completed their own pre-questionnaire and turned in their questionnaire as soon as they were finished to the administrator. The post-questionnaire phase followed the same procedure. The data collection segment of this study was completed with diligence, precise instructions for participants, ensured anonymity, and with complete professionalism to ensure the integrity of the study was not compromised.

Response Rate

The researcher expected a 100% response rate for the pre-questionnaire as the questionnaire was conducted in a face-to-face process. The BREQ questionnaires were presented to the students by an associate who explained the questionnaire and the importance of completing it for the purpose of the study. Each participant who agreed to participate in the study understood the study included a pre-questionnaire and post-questionnaire phase. Therefore, all participants completing the pre-questionnaire portion of the study were expected to complete the post-questionnaire portion of the study as well. However, a few participants who completed the pre-questionnaire decided to

withdrawal from the course as the semester progressed. Also, a few participants decided not to attend the class per their own choice; therefore, the response percentage dropped for the post-questionnaire phase. The percentage for participants completing the post-questionnaire was 55%.

The study included the courses WELL 1161 Fitness I and WELL 1105 Strength Training I. The courses had 20 students enrolled in each course. The total number of students, potential participants, was up to 40 students. Freshmen and sophomore level students enrolled in the selected physical education courses were the intended population for this particular study. However, 4 students from both courses were at the junior level and were omitted from participating in this study. The omission of the 4 students reduced the total number of potential participants for the study to 36. Ten other students declined to participate in the study; therefore, 26 students agreed to participate. Thirteen participants out of the original 26 participants completed their obligation of both the pre and post questionnaire segments.

Data Analysis

This study utilized a comparative method to determine the impact physical exercise had on the levels of self-determination in college-age students enrolled in a collegiate physical education course. Subscales of the BREQ instrument were analyzed to determine the self-determination levels of participants. The post-questionnaire results were compared with the pre-questionnaire results for each of the participants and for each course as a whole. Research questions with associated hypotheses, data source, and method of analysis were as followed:

RQ 1: To what extent is there a difference in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Strength Training I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course?

$H1_o$: There will not be a statistically significant relationship in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Strength Training I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course.

$H1_A$: There will be a statistically significant relationship in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Strength Training I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course.

Data Source: The BREQ post-questionnaire results were compared with the student's responses on the pre-questionnaire to obtain the data for the section. The mean of each question for each class were compared as well.

Method of Analysis: The results of the questionnaires were analyzed using the IBM Statistical Package for the Social Sciences version 24 for Apple computers. A paired-samples *t*-test was conducted to determine if there was a significant level of difference between the two sets of scores. The Alpha level will be set at the ≥ .05 level

of significance for this study to determine whether to fail to reject or reject the null hypothesis.

RQ 2: To what extent is there a difference in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Fitness I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course?

$H2_O$: There will not be a statistically significant relationship in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Fitness I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course.

$H2_A$: There will be a statistically significant relationship in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Fitness I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course.

Data Source: The BREQ post-questionnaire results were compared with the student's responses on the pre-questionnaire to obtain the data for the section. The mean of each question for each class were compared as well.

Method of Analysis: The results of the questionnaires were analyzed using the IBM Statistical Package for the Social Sciences version 24 for Apple computers. A paired-samples *t*-test was conducted to determine if there was a significant level of

difference between the two sets of scores. The Alpha level will be set at the ≥ .05 level of significance for this study to determine whether to fail to reject or reject the null hypothesis.

RQ 3: To what extent does a difference exist in the level of self-determination of college students as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) between the outcome of a Strength Training I course and a Fitness I course?

$H3_O$: There will not be a statistically significant relationship between the level of self-determination of college students as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) between the outcome of a Strength Training I course and a Fitness I course.

$H3_A$: There will be a statistically significant relationship between the level of self-determination of college students as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) between the outcome of a Strength Training I course and a Fitness I course.

Data Source: The BREQ post-questionnaire results were compared with the student's responses on the pre-questionnaire for each course to obtain the data for the section. The mean of each question for each class were compared as well.

Method of Analysis: The results of the questionnaires were analyzed using the IBM Statistical Package for the Social Sciences version 24 for Apple computers. An independent samples *t*-test was conducted to determine if there was a significant level of difference between the two sets of post scores for each course. The Alpha level will be

set at the ≥ .05 level of significance for this study to determine whether to fail to reject or reject the null hypothesis.

Reporting the Data

The results were organized and reported in both a text and graphic form. The first set of scores collected was from the BREQ pre-questionnaire phase. Chapter IV will showcase the data in a table and graphic illustration with text. Charts and tables were used for each question to illustrate the data for the pre-questionnaire and post-questionnaire scores. Mean scores were tabulated as well as standard deviation was used and was shown in the table. The first set of statistical information for the pre-questionnaire consisted of a table, graphic chart, and written text.

A second data set organized and reported was from the participant's response from the post-questionnaire. The scores collected were illustrated for each question of the BREQ, and the mean and standard deviation were included. Similar to the graphics of the pre-questionnaire responses, the scores collected were showcased in a table forum, graphic illustration, and written text.

A third data set in Chapter IV presented a comparison of the post-questionnaire responses and results between each physical education course. Tables, graphic charts, and written text showcased each question from both questionnaires and illustrate a column of difference. Each question was analyzed, and a final section difference was added to each table, graphic chart, and discussed in text form. Chapter IV displayed all statistical analysis of both the pre and post questionnaire results from each participant. A mean average score from pre and post results for each participant illustrated whether a difference of self-determination levels existed. A mean average score from pre-

questionnaire and post-questionnaire results comparing each course illustrated whether a difference occurred between each course. Another graph showcased movement along the motivation continuum of post-questionnaire results as compared to pre-questionnaire results and whether a shift along the motivation continuum existed comparing the physical education courses. The Figure 3 research confirmation table illustrated the difference of mean scores comparing the post-questionnaire scores to pre-questionnaire scores.

Research Question	Instrumentation	Statistical Analysis	Difference from Post-questionnaire
Pre-Questionnaire responses	BREQ	Mean Scores Paired-samples *t*-test	+ / -
Post-Questionnaire responses	BREQ	Mean Scores Paired-samples *t*-test	+ / -

Figure 3. Research Confirmation.

Working with Human Participants

To ensure protection of the participants, students were instructed to complete the BREQ as a pre and post phase questionnaire but not to include any identifying marks or possible means of identification. Each participant read and completed an informed consent form per the Institutional Review Board (IRB) policies. The pre and post questionnaires were coded according to the students' course and group number and sorted by an associate. Finally, the participants were treated in accordance with the "Ethical

Principles of Psychologists and Code of Conduct" (American Psychological Association, 1992).

Summary

The researcher developed three research questions specific to investigating physical exercise impact on self-determination levels of college-aged students. This chapter detailed the research design of this study. The methodology of this particular study investigated the effects physical exercise may or may not have on self-determination levels. Motivation, as well as self-determined behavior, have been consistent variables researched; however, majority of studies have researched reasons as to why people participate in physical exercise. Examining physical exercise effects on augmenting self-determination levels continues to be in its infancy.

This chapter outlined the process of research for this study. The chapter included three research question, an alternate hypothesis, as well as the null hypothesis for each research question. The researcher decided to conduct a comparative quantitative study utilizing the Behavioral Regulation in Exercise Questionnaire (BREQ). The participants were selected from two physical exercise courses; WELL 1161 Fitness I and WELL 1105 Strength Training I. Participants completed a pre-questionnaire (BREQ) prior to the start of the course and then completed a post-questionnaire (BREQ) at the conclusion of the course during the Albany State University 2018 summer semester.

This study was presented to the participants as a questionnaire for the Health and Human Performance Department of Albany State University as research for the department. The results were collected from both the pre-questionnaire and post-questionnaire and analyzed. The researcher examined the statistical information and

compared results extracted from the BREQ for each question. The post-questionnaire scores were compared to the pre-questionnaire scores for each participant from each course. The Post-questionnaire scores from the Fitness I course were compared to post-questionnaire scores from the Strength Training I course. The Behavior Regulation in Exercise Questionnaire measures motivational levels, particularly self-determination, of individuals in relationship to physical exercise. The measurements assess behavior motives for individuals as they move along the motivation continuum as to why an individual may participate in physical exercise. As noted, the researcher detailed the methodology in this chapter for this particular study and the data collected was organized and presented in Chapter IV: Results.

CHAPTER IV

REPORT OF DATA AND ANALYSIS

Introduction

Education is an arduous endeavor, which facilitates the demand for students to develop a purposeful and successful life. Pursuing a higher education degree requires individuals to sustain motivation perseverance (Asijaviciute & Usinskiene, 2014). Over the past several years, higher education has focused on efforts to increase student retention (McClellan et al., 2009). Another trend has seen a decrease of required physical education courses (Sibley et al., 2013). A multitude of programs have been developed directed towards enhancing academic success; however, understanding self-determination levels of individuals are at a nascent stage. According to Karlin and Shillingford (2012) and Hennessey (2015), academic success has been and continues to be associated with student motivational levels, and in particular, its relationship with increased self-determined behavior.

Past research has indicated physical exercise has an impact on academic prowess (Lauderdale et al., 2015). Numerous studies demonstrate physical exercise has an ability to enhance students' focus, cognitive ability, memory, and overall academic success. Research on motivations relationship with physical exercise has focused on the motivational reasons why people engage in physical activity and exercise. This focus has led to understanding the elements of both extrinsic and intrinsic variables associated with motivation as well as how self-determined behavior factors into sustained success (Lei, 2010). However, very little research exists investigating the impact physical exercise may or may not have on augmenting the levels of self-determination of individuals.

Higher education's attempt to seek and develop improved programs to enhance student retention has not focused on understanding or developing ways to enhance self-determined behavior. The researcher, in an attempt to understand motivation and how self-determination factors into success, developed a study central to the idea of enhancing self-determined behavior. Therefore, the purpose of this study was to examine the effects physical exercise has on levels of self-determination of college students.

Research Question/Hypotheses

The researcher of this study aimed to focus on the effects physical exercise may or may not have on self-determination levels of individuals. The researcher developed three specific research questions to investigate the impact physical exercise may or may not have on augmenting self-determination levels of college students. Each research question included an alternate hypothesis as well as a null hypothesis.

RQ 1: To what extent is there a difference in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Strength Training I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course?

$H1_o$: There will not be a statistically significant difference in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Strength Training I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course.

$H1_A$: There will be a statistically significant difference in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Strength Training I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course.

RQ 2: To what extent is there a difference in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Fitness I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course?

$H2_O$: There will not be a statistically significant difference in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Fitness I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course.

$H2_A$: There will be a statistically significant difference in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Fitness I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course.

RQ 3: To what extent does a difference exist in the level of self-determination of college students as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) between the outcome of a Strength Training I course and a Fitness I course?

$H3_O$: There will not be a statistically significant difference between the level of self-determination of college students as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) between the outcome of a Strength Training I course and a Fitness I course.

$H3_A$: There will be a statistically significant difference between the level of self-determination of college students as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) between the outcome of a Strength Training I course and a Fitness I course.

Research Design

The Behavioral Regulation in Exercise Questionnaire (BREQ), developed by Mullan et al. (1997), has become one of the most widely utilized measures of the motivation continuum for behavioral regulation in exercise psychology. The BREQ was developed to measure the motivational reasons for participating in physical exercise, specific to measuring levels of self-determination. This measuring tool was developed based on Deci and Ryan (1985, 2001) self-determination theory as described by the organismic integration theory. It measures for external regulation, introjected regulation, identified regulation, and integrated regulation forms of behavior as measured across the motivation continuum.

The organismic integration theory describes to what extent behavior regulation has become internalized (Markland, 2007). Internalization is a process by which an individual regulates their behavior to emanate from the self rather than from external forces (Deci & Ryan, 2000; Pink, 2009). Varying levels of self-determination correspond to different forms of behavior regulation, each with their own particular functional

consequences and experiential concomitants (Markland & Tobin, 2004). The BREQ was developed to measure why an individual engages in physical exercise as well as how an individual may slide along the motivation continuum. The researcher examined if a change in behavior regulation, more specifically self-determination, occurred due to participating in a physical exercise program over an extended period of time.

Several studies exist, which utilized the BREQ to develop a better understanding as to why people engage in physical exercise; however, very little research focused on the impact physical exercise may have on altering self-determination levels of people. The researcher conducted a quantitative comparative study utilizing a paired samples *t*-test as participants completed a pre and then post questionnaire for research questions one and two. The researcher conducted an independent samples *t*-test for research question three comparing post score results between each of the selected physical education courses. Majority of research within this field measured the motivational reasons why individuals participate in physical exercise; therefore, the researcher was unable to discover nor mirror a pilot study for the purpose of this research.

Demographic Profile of Participants

Participants utilized for this study were college-aged students. Each participant completed a pre-questionnaire at the beginning of their physical exercise course then completed a post-questionnaire at the conclusion of the semester. The researcher selected enrolled students in Albany State University's WELL 1161 Fitness I course and WELL 1105 Strength Training I course in the 2018 summer semester. Both courses are described as physical education courses housed in the Health and Human Performance Department.

The Behavioral Regulation in Exercise Questionnaire (BREQ) was selected as the measuring instrument and was used for both the pre and post phase for this study. Participants were asked to complete a demographic section within the questionnaire. The demographics comprised of age, gender, ethnicity, and academic major. The original BREQ contained an age and gender demographics; however, the researcher included the demographic of ethnicity and academic major.

Originally, 26 participants voluntarily agreed to participate in the study; however, 13 participants completed all requirements by finishing both the pre and post questionnaire phase components. Eight participants were deleted as they only completed the pre-questionnaire phase, three withdrew from the courses, and two were removed as they misplaced their subject code, which prevented the researcher from comparing their results. The age range of participants was between 18 and 31. The mean age for participants was just under 21 years old at 20.83 years of age.

The gender breakdown was comprised of six male and seven female participants. The ethnicity of each participant included 2 Caucasians and 11 African-Americans. Beyond age, gender, and ethnicity, each participant was asked to include their academic major. Academic majors included the following; two nursing majors, four teaching education majors within the discipline of physical education, general teaching education, early childhood education, and music education, marketing, art, criminal justice, occupational therapy, computer information system, psychology, and one general studies major.

The study was conducted during the Albany State University 2018 summer semester, which started May 20th and ended on July 25th. The pre-questionnaire phase

was completed during the first week of classes on May 22nd. The post-questionnaire phase was completed during the last week of classes on July 23rd. The elapsed time between the pre phase and post-phase comprised of 61 days or 9 weeks long.

Findings

This study utilized two separate physical education courses, WELL 1161 Fitness I and WELL 1105 Strength Training I. Participants enrolled in each course completed the Behavioral Regulation in Exercise Questionnaire (BREQ). The findings for each participant and course were gathered and reported separately as well. The researcher developed three research questions, and the data collected addressed each research question separately. The BREQ is a 24-item questionnaire, which measures amotivation, external regulation, introjected regulation, identified regulation, and integrated regulation across the motivational continuum. The researcher collected and calculated each participant individual score extracted from each question for both the pre-questionnaire and post-questionnaire phase. A single score derived from the subscales provides an index to the degree to which respondents felt self-determined. The mean average was calculated for each participant based on each question and as an entire class together. Each participant was assigned a code in order to compare their pre and post data both individually and as an entire class as well. Findings were completed in a quantitative manner.

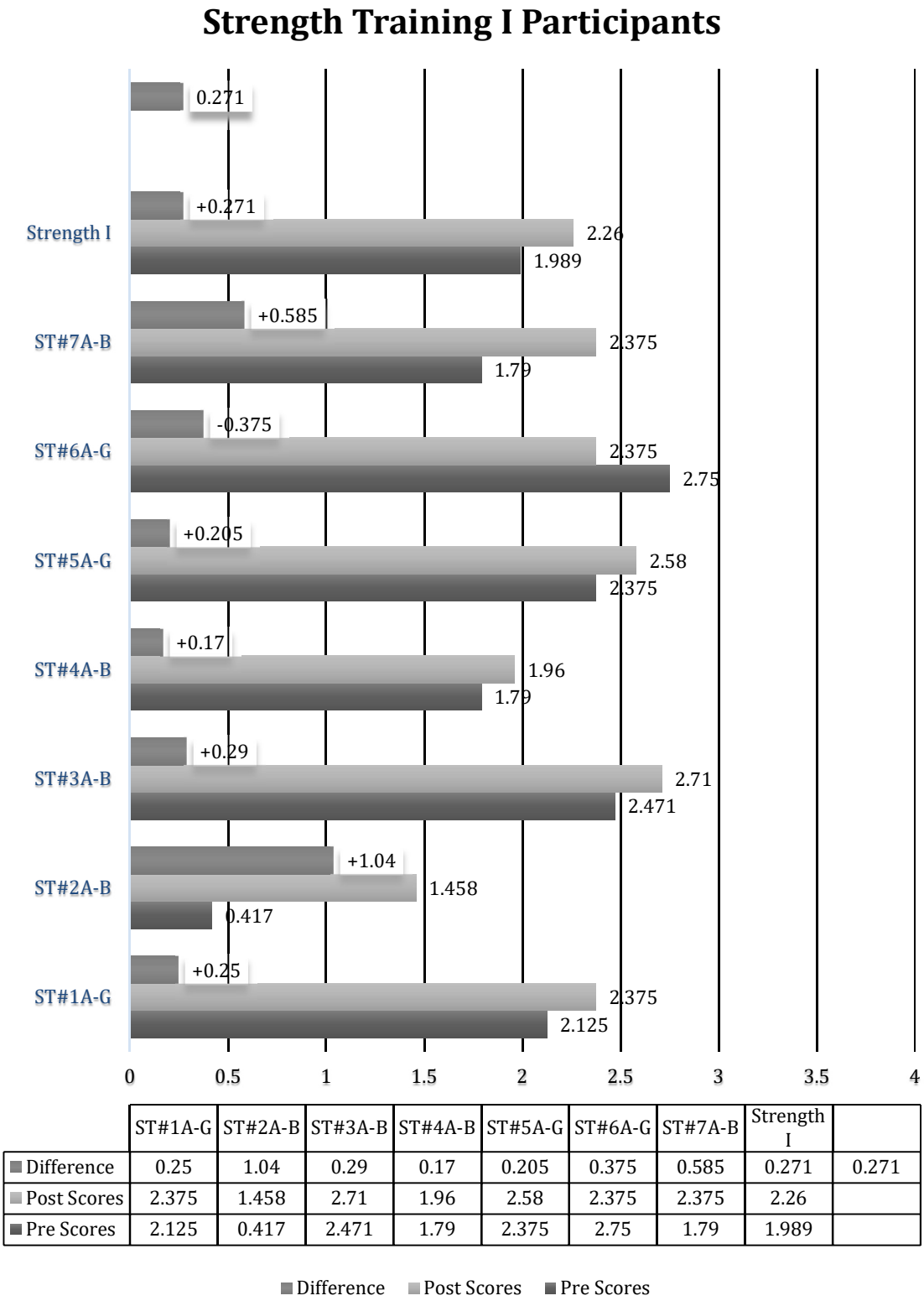
Research question one sought to compare participants post phase scores, as calculated by the BREQ, to pre phase scores, as calculated by the BREQ, within the Strength Training I course. Seven out of the original 13 participants completed their obligation as participants for this study. Participant ST#1A-G scored an overall mean of

2.125 on the pre phase and a 2.375 on the post phase denoting a positive difference score of +0.25. Participant ST#2A-B scored an overall mean of .417 on the pre phase and a 1.458 on the post phase denoting a positive difference score of +1.04. Participant ST#3A-B scored an overall mean of 2.417 on the pre phase and a 2.71 on the post phase denoting a positive difference score of +0.29. Participant ST #4A-B scored an overall mean of 1.79 on the pre phase and a 1.96 on the post phase denoting a positive difference score of +0.17. Participant ST#5A-G scored an overall mean of 2.375 on the pre phase and a 2.58 on the post phase denoting a positive difference score of +0.205. Participant ST#6A-G scored an overall mean of 2.75 on the pre phase and a 2.375 on the post phase denoting a negative difference score of -0.375. The final participant, FT#7A-B, scored an overall mean of 1.79 on the pre phase and a 2.375 on the post phase denoting a positive difference score of +0.585. The combined mean for the WELL 1105 Strength Training I course scored a 1.989 on the pre-phase and a mean of 2.26 on the post phase denoting a positive difference score of +0.271.

Research question two sought to compare participants post phase scores, as calculated by BREQ, to pre phase scores, as calculated by the BREQ, within the Fitness I course. Six out of the original 13 participants completed their obligation for this study. Participant FT#1B-B scored an overall mean of 2.5 on the pre phase and a 2.79 on the post phase denoting a positive difference score of +0.29. Participant FT#2B-B scored an overall mean of 2.25 on the pre phase and a 2.66 on the post phase denoting a positive difference score of +0.41. Participant FT#3B-G scored an overall mean of 1.5 on the pre phase and a 1.66 on the post phase denoting a positive difference score of +0.16. Participant FT#4B-G scored an overall mean of 1.75 on the pre phase and 2.0 on the post

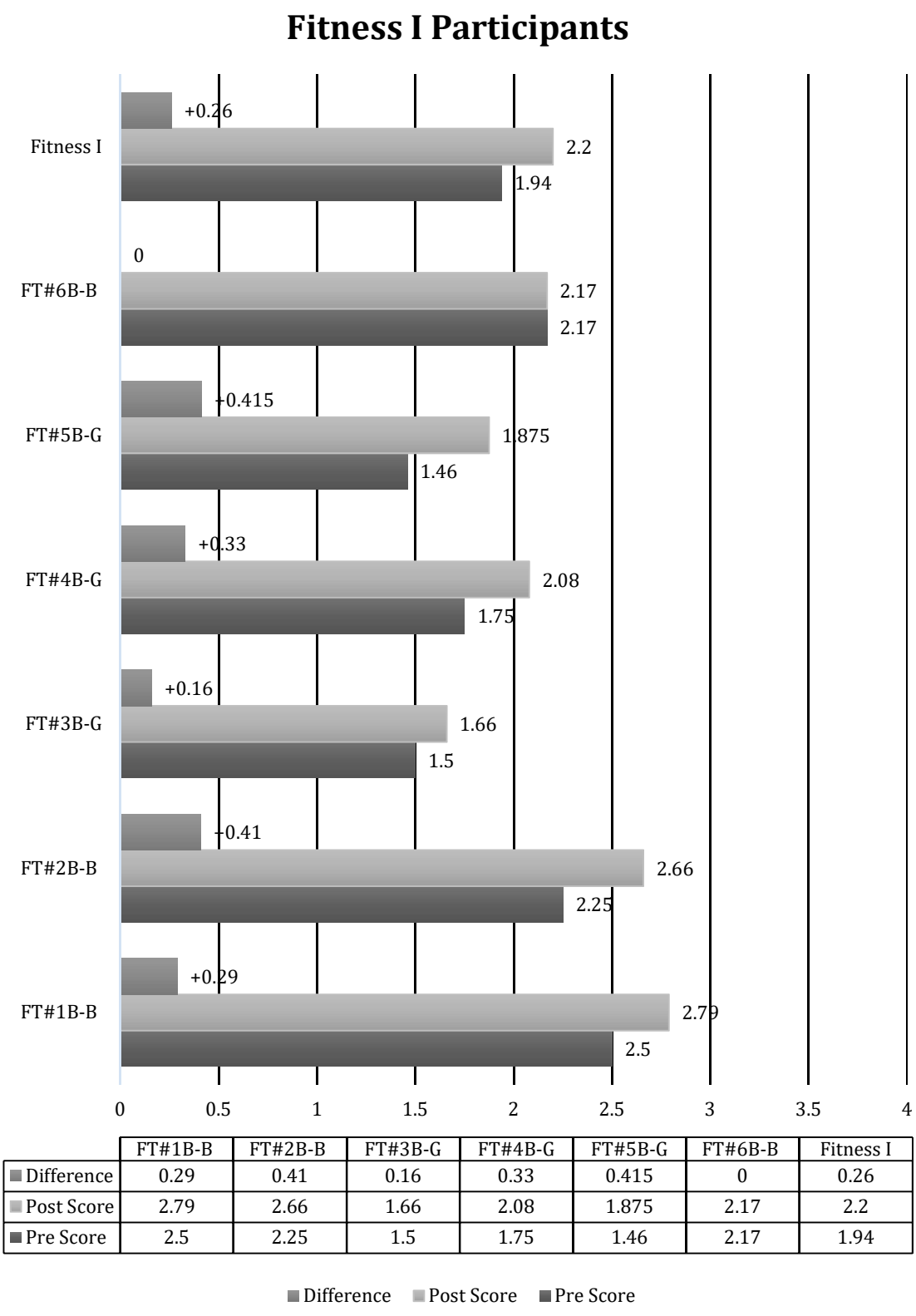
phase denoting a positive difference score of +0.33. Participant FT#5B-G scored an overall mean of 1.458 on the pre phase and a 1.875 on the post phase denoting a positive difference score of +0.415. The final participant, FT#6B-B, scored an overall mean of 2.17 on the pre phase and a 2.17 on the post phase denoting no difference in scores. The combined mean for the WELL 1161 Fitness I course scored a 1.94 on the pre phase and a mean average of 2.20 on the post phase denoting a positive difference score of +0.26.

Research question three sought to compare the mean pre phase scores and post phase scores, as calculated by the BREQ, between each course; Strength Training I and Fitness I. However, the post scores for each course were the only scores utilized for the independent *t* test. The Fitness I course mean pre phase score was 1.94, and the pre phase mean score for the Strength Training I course was 1.989 denoting a difference of 0.049. The post phase mean score for Fitness I course was 2.20, and the post phase mean score for the strength training course was 2.26 denoting a difference of 0.06. The overall difference of score for participants in the Fitness I course was a positive increase of +0.26 and for the participants in the Strength Training I course scored a positive increase of +0.271. Thus, the difference between each course for pre phase scores was 0.049 and the difference for the post phase scores was 0.06 demonstrating an overall difference in scores between each course at a 0.011. Figures 4, 5, 6 illustrate in chart form the differences of pre and post scores for each course as well as comparing the scores between the courses.



	ST#1A-G	ST#2A-B	ST#3A-B	ST#4A-B	ST#5A-G	ST#6A-G	ST#7A-B	Strength I	
Difference	0.25	1.04	0.29	0.17	0.205	0.375	0.585	0.271	0.271
Post Scores	2.375	1.458	2.71	1.96	2.58	2.375	2.375	2.26	
Pre Scores	2.125	0.417	2.471	1.79	2.375	2.75	1.79	1.989	

Figure 4. Strength Training I Pre & Post Questionnaire Results



	FT#1B-B	FT#2B-B	FT#3B-G	FT#4B-G	FT#5B-G	FT#6B-B	Fitness I
Difference	0.29	0.41	0.16	0.33	0.415	0	0.26
Post Score	2.79	2.66	1.66	2.08	1.875	2.17	2.2
Pre Score	2.5	2.25	1.5	1.75	1.46	2.17	1.94

Figure 5. Fitness I Pre & Post Questionnaire Results

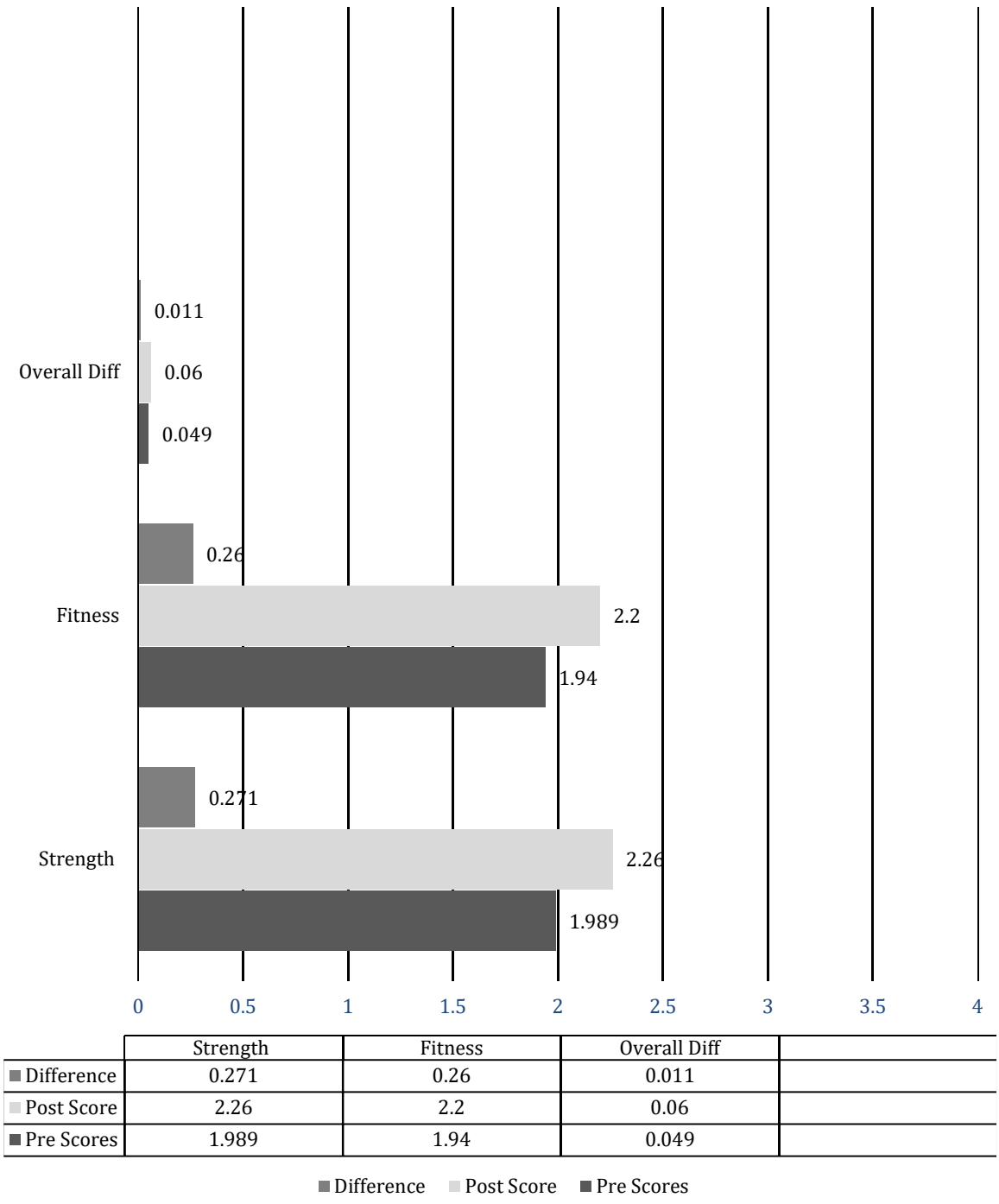


Figure 6. Strength Training I vs. Fitness I Post Questionnaire Results

Data Analysis

The purpose of this study was to examine the impact physical exercise may or may not have on augmenting self-determination levels of individuals. The Behavioral Regulation in Exercise Questionnaire (BREQ) served as the measuring instrument to assess levels of motivation, in particular, self-determination of participants who agreed to take part in this study. This instrument measures motivational levels based on the motivation continuum. The levels range from amotivation to integrated regulation, which is the closest form to intrinsically motivated or self-determination. Past studies have primarily utilized this instrument to assess people's thoughts or feelings as to what motivates one to engage in physical exercise as well as feeling towards physical exercise. Researchers have utilized the BREQ instrument not only to assess motivational reasons as why one exercises but to also illustrate whether an individual will move along the motivation continuum as one engages in a prolonged exercise routine.

The results collected for this particular study were analyzed in a quantitative method, and the purpose was to compare pre scores to post score outcomes. The research questions sought to examine whether the dependent variable, self-determination levels, was affected by the independent variable, physical exercise. A comparative method was utilized to analyze and determine whether a difference occurred based on pre-questionnaire scores versus post-questionnaire scores. Original scores from the pre-questionnaire arranged participants and each physical education course along the motivation continuum to measure behavioral regulation. Post-questionnaire scores were then compared to pre-questionnaire scores to determine whether a shift along the motivation continuum occurred regarding behavioral regulation.

As noted, scores obtain from the BREQ measure motivational reasons as why a person engages in physical exercise. The researcher analyzed the data collected from the pre-questionnaire scores to determine where each individual settled on the motivation continuum. The mean average for each course was calculated to illustrate how each physical education course settled on the motivation continuum as well. After post-questionnaire scores were calculated, the researcher compared if a change occurred for each individual as well as for each physical education course. The purpose was to analyze if physical exercise facilitated a change in motivational thoughts, in particular, a move towards becoming more self-determined.

A graph illustrated how scores of participants were situated along the motivation continuum to identify pre levels as well as post levels of behavioral regulation. Participants' behavior regulation pre-scores were calculated as a mean for each physical education course. This score measurement placed the mean average for the physical education course as identifying with either amotivation, external regulated, introjected regulated, identified regulated, or integrated regulated across the motivation continuum. The score measurement illustrated the behavior regulation level of participants, which established a location on the motivation continuum prior to completing the physical education course. The score measurements also demonstrated motivational behavior towards physical exercise prior to completing a physical exercise program.

After completing the pre-questionnaire phase, participants engaged, as normal, in their physical education course. Upon the conclusion of the semester, participants completed the post-questionnaire phase. Participants' behavior regulation post-scores were calculated as a mean for each physical education course. The post-scores for each

physical education course were analyzed to assess whether a change in behavior regulation occurred, due to physical exercise, and whether the change was a movement towards integrated regulation, more specifically, a higher degree of self-determination. As depicted in the graph, the motivation continuum is based on a Likert scale of 0 to 4. A 0 score indicates amotivation, denoting motivation was not a factor. A score of 1 indicates external regulation, implying motivation to engage in physical exercise comes from external sources. A score of 2 indicates introjected regulation, signifying a shift in motivation, however still reveals more external sources as the means of motivation. A score of 3 indicates identified regulation, revealing a shift more towards the activity becoming more internal. Lastly, a score of 4, integrated regulation, indicates the activity has become internalized, thus a more self-determined behavior. Figure 7 illustrates the behavior regulations and how each are measured along the motivation continuum.

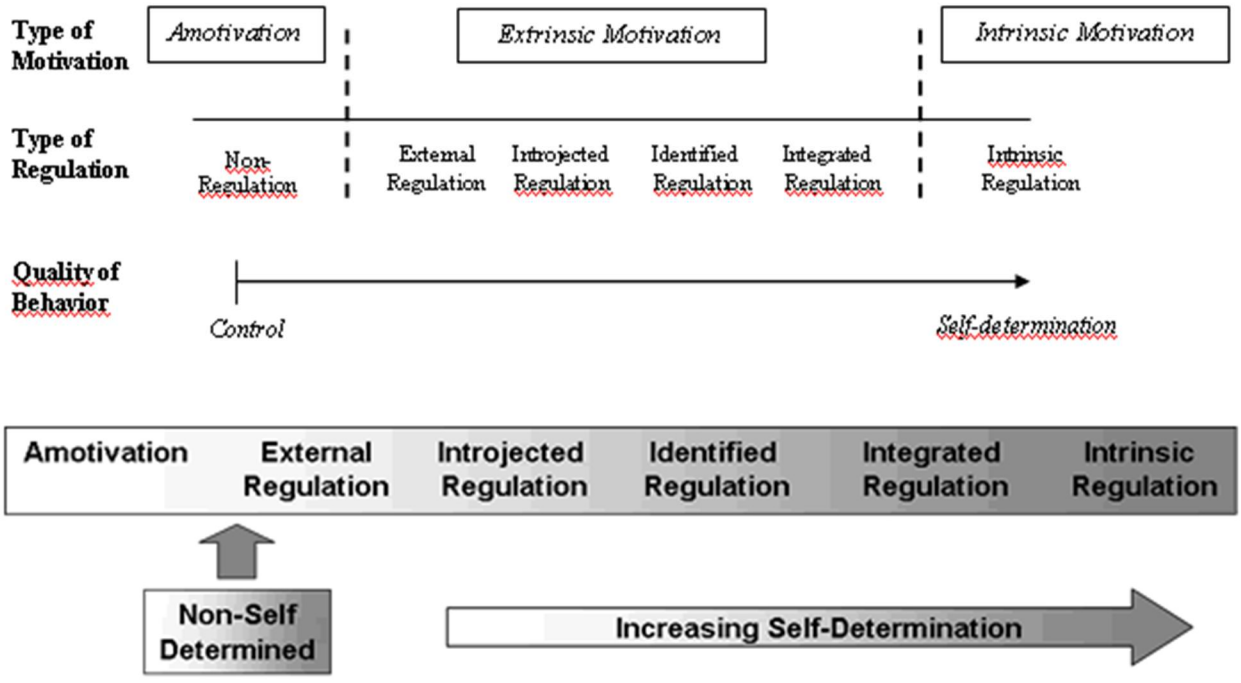


Figure 7. Motivation/Self-Determination Continuum (Deci & Ryan, 2001)

Three research questions were developed. Each research question included an alternate hypothesis and a null hypothesis. A data source and method of analysis were included with each research question as well. Based on the data collected, the results for each research question were as followed:

Research Question One: (WELL 1105 Strength Training I)

RQ 1: To what extent is there a difference in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Strength Training I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course?

$H1_o$: There will not be a statistically significant relationship in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Strength Training I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course.

$H1_A$: There will be a statistically significant relationship in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Strength Training I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course.

Data Source: The Behavioral Regulation and Exercise Questionnaire was utilized as the measuring instrument. The BREQ post-questionnaire results were compared with

the student's pre-questionnaire results to determine whether a significant statistical change occurred.

Method of Analysis: The results of the questionnaires were analyzed using the IBM Statistical Package for the Social Sciences version 24 for Apple computers. A paired-samples *t*-test was conducted to determine if there was a significant level of difference between the two sets of scores. The confidence interval of difference alpha level was set at the ≥ .05 level of significance for this study to determine whether to fail to reject or reject the null hypothesis.

A comparative quantitative study was conducted utilizing a paired samples *t*-test. Participants pre and post scores were compared in the Strength Training I physical education course. The purpose was to analyze if a significant statistical difference occurred amongst college student's self-determination levels after completing an exercise routine in a semester long physical education course.

Research question one stated to what extent did a difference exist in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Strength Training I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course. This research question examined if self-determination levels would be impacted due to physical exercise in a Strength Training course. A paired samples *t*-test was conducted to determine if a significant statistical difference occurred.

A mean score of 1.9520 with a standard deviation of 0.76055 was calculated for pre scores. The post score results had a mean score of 2.2619 and a standard deviation of

0.42382. The paired samples correlation scored a significance of .008. The paired difference scored a mean of -0.30986 and a standard deviation of 0.43084. The scores resulted in a standard error mean of 0.16284 and a .106 significance score.

Based on a 95% confidence interval of difference, the *t*-value was -1.903 with a *p*-value of .106, which is greater than .05. This score indicated there was not a statistically significant change from pre to post scores; therefore, the researcher failed to reject the null hypothesis for research question one.

Research Question Two: (WELL 1161 Fitness I)

RQ 2: To what extent is there a difference in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Fitness I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course?

$H2_O$: There will not be a statistically significant relationship in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Fitness I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course.

$H2_A$: There will be a statistically significant relationship in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Fitness I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course.

Data Source: The Behavioral Regulation and Exercise Questionnaire was utilized as the measuring instrument. The BREQ post-questionnaire results were compared with the student's pre-questionnaire results to determine whether a significant statistical change occurred.

Method of Analysis: The results of the questionnaires were analyzed using the IBM Statistical Package for the Social Sciences version 24 for Apple computers. A paired-samples *t*-test was conducted to determine if there was a significant level of difference between the two sets of scores. The confidence interval of difference alpha level was set at the ≥ .05 level of significance for this study to determine whether to fail to reject or reject the null hypothesis.

Research question two stated to what extent did a difference exist in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Fitness I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course. This question examined to what extent would a difference in self-determination levels of college students prior to participating in a Fitness I course compared to self-determination levels upon the completion of the course. A paired samples *t*-test was conducted to determine if a significant statistical difference occurred.

A mean score of 1.9367 with a standard deviation of 0.43182 was calculated for pre scores. The post score results had a mean score of 2.2058 and a standard deviation of 0.44091. The paired samples correlation scored a significance of .007. The paired

difference scored a mean of negative -0.26917 and a standard deviation of 0.16286. The score resulted in a standard error mean of 0.06649, and a .010 significance score.

Based on a 95% confidence interval of difference, the *t*-value was -4.048 with a *p*-value, of .010, which is less than .05. This score indicated there was a statistically significant statistical change from pre to post scores; therefore, the researcher rejected the null hypothesis and accept the alternate hypothesis for research question two.

Research Question Three: (WELL 1105 Strength Training I vs WELL 1161 Fitness I)

RQ 3: To what extent did a difference exist in the level of self-determination of college students as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) between the outcome of a Strength Training I course and a Fitness I course?

$H3_O$: There will not be a statistically significant relationship between the level of self-determination of college students as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) between the outcome of a Strength Training I course and a Fitness I course.

$H3_A$: There will be a statistically significant relationship between the level of self-determination of college students as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) between the outcome of a Strength Training I course and a Fitness I course.

Data Source: The Behavioral Regulation and Exercise Questionnaire was utilized as the measuring instrument. The BREQ post-questionnaire results were compared with the student's pre-questionnaire results to determine whether a significant statistical change occurred.

Method of Analysis: The results of the questionnaires were analyzed using the IBM Statistical Package for the Social Sciences version 24 for Apple computers. An independent samples *t*-test was conducted to determine if there was a significant level of difference between the two sets of scores. The confidence interval of difference in the alpha level was set at the ≥_.05 level of significance for this study to determine whether to fail to reject or reject the null hypothesis.

Research question three stated to what extent did a difference exist in the level of self-determination of college students as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) between the outcome of a Strength Training I course and a Fitness I course. This question examined to what extent would a difference in self-determination levels of college students exist between the outcome of the Strength Training I course versus the Fitness I course. An independent *t*-test was conducted to determine if a significant statistical difference occurred.

A mean post score for the Fitness I was 2.2058, and the mean post score for the Strength Training I course was 2.2607 with a standard deviation of 0.44091, and 0.42635. The Levene's Test for Equality of Variances was 0.045. The mean difference post score was -0.05488 and a standard error of difference score of 0.24092. The degrees of freedom was a score of 11. The *t* score was -2.28.

Based on a 95% confidence interval of difference, the significance score of .835 is greater than .05. This score indicated there was not a statistically significant difference; therefore, the researcher failed to reject the null hypothesis for research question three.

Results

Participants of this study completed a pre and then post phase questionnaire. The researcher collected the data and analyzed the results. Three research questions were developed to compare the pre and post scores and examined the impact of physical exercise had on self-determination levels of college-aged students. Two physical education courses were selected for this study, WELL 1105 Strength Training I and WELL 1161 Fitness I. Both courses are designed for students to engage in moderate to vigorous physical exercise.

Scores were tabulated, and a mean was developed, which placed participants along the motivation continuum as to the degree of motivation behavior related to physical exercise. The mean score was developed for each course from the data collected from the pre and post phase results. Participants were provided a subject code for the purpose to compare pre and post scores. Eleven out of the 13 participants demonstrated an increase and moved along the motivation continuum in a positive movement towards the side of integrated regulation, which is considered the highest form of self-determination. Both the Fitness I and Strength Training I course as a whole also demonstrated a positive move along the motivation continuum towards increased self-determined behavior when post scores were compared to pre scores.

The mean score for the Strength Training course pre-questionnaire phase scored a 1.989. This number would have placed the participants of this course between external regulated behavior and introjected behavior. This form of behavior regulation would be classified as more externally regulated as the reasons to engage in physical exercise and considered a lower score of self-determined behavior. The mean score for the Strength

Training course post-questionnaire phase scored a 2.26. This score indicated a move forward along the motivation continuum in a positive movement between introjected regulation and identified regulation. The score of 2.26 demonstrate reasons to engage in physical exercise had become more internalized as well as illustrated an increase in self-determined behavior. However, the change would not be classified as significant and motivation reasons to engage in physical exercise included an external source.

The mean score for the Fitness I course pre-questionnaire phase scored a 1.94. This number placed the participants of this course between external regulated behavior and introjected behavior. These forms of behavior regulation would be classified as more externally regulated as the reasons to engage in physical exercise and considered a lower score of self-determined behavior. The mean score for the Fitness I course post-questionnaire phase scored a 2.20. Similar to the Strength Training course, this score indicated a positive move forward along the motivation continuum between introjected regulation and identified regulation. The score of 2.20 demonstrate reasons to engage in physical exercise had become more internalized as well as illustrated an increase in self-determined behavior. However, similar to the Strength Training course, the change in scores would not be classified as significant and motivation reasons to engage in physical exercise included an external source.

As mentioned, research question three was developed to compare the Strength Training I course against the Fitness I course. The purpose was to interpret whether separate forms of exercise would impact individuals differently in regards to motivation. Although both courses demonstrated an increase, participants' scores in the Strength Training course revealed a slight increase more towards self-determined behavior than in

the Fitness I course. The Fitness I course mean score from pre to post phase scores calculated at a 0.26 as opposed to the Strength Training I course, which calculated at a 0.28. Analyzing the numbers may not reveal a significant difference between the courses; however, the BREQ is scored on a Likert scale, 0 through 4. A slight difference of 0.02 indicated a positive movement along the motivation continuum towards integrated regulation, more particularly a move closer to self-determined behavior. Figure 8 illustrates the differences in pre and post scores as measured on the motivation continuum for both physical education courses. Reasons for these differences and why changes occurred will be discussed further in Chapter V.

0 .5	1 1.5	2 2.5	3 3.5	4
Amotivation	External Reg	Introjected Reg	Identified Reg	Integrated Reg

Strength Training (Pre) 1.98 Strength Training (Post) 2.26

0 .5	1 1.5	2 2.5	3 3.5	4
Amotivation	External Reg	Introjected Reg	Identified Reg	Integrated Reg

Fitness (Pre) 1.94 Fitness (Post) 2.20

0 .5	1 1.5	2 2.5	3 3.5	4
Amotivation	External Reg	Introjected Reg	Identified Reg	Integrated Reg

Fitness (Post) 2.20 Strength Training (Post) 2.26

Figure 8. Pre & Post Questionnaire Results on Motivation Continuum

Although the difference of scores comparing post results to pre results may be interpreted as less significant, a pattern was established for each individual as well as each physical education course. Eleven of the 13 participants scored higher and moved along the motivation continuum in a positive movement towards integrated regulation, the highest behavior regulation of self-determination. One particular participant's post score results as compared to pre score results moved in a negative movement on the motivation continuum towards external regulation. One participant remained neutral, as no movement occurred as both the pre and post scores were the same.

The average increase of the 11 participants, which scored in positive increase towards levels of self-determination, was 0.37. The Fitness I course demonstrated a 0.32 positive movement and the Strength Training I course revealed a 0.42 positive movement. A further analyzation of these numbers may not indicate a significant shift; however, a closer review indicates an impact on motivation levels did emerge. Furthermore, a deeper review of individual participants pre and post scores revealed five participants shifted one full behavior regulation along the motivation continuum.

Participant ST#2-B, in the Strength Training I course, scored a mean of 0.417 on the pre phase questionnaire. This score placed this participant's pre-scores between amotivation and external regulation on the motivation continuum. However, this participant registered a 1.458 on the post phase questionnaire. The difference was 1.04, which illustrated one full positive shift along the motivation continuum. This score placed this participant between external regulation and introjected regulation. Although both reveal external sources as the greater motivational reasons behind physical exercise, these numbers indicate the largest increase within this study.

Majority of the participants shifted in a positive movement on the motivation continuum when comparing post phase results with pre phase results. The average shift was between 0.25 to 0.41. However, participant ST#6A-G was the lone participant to move in a negative movement. The negative shift for this participant was 0.375, which would be considered non-significant; however, the researcher noted this participant moved in a negative shift along the motivation continuum away from integrated regulation behavior towards external regulation. This participant's pre score of 2.75 would place between identified regulation and introjected regulation along the motivation continuum. The post score was 2.37, which was a negative movement on the motivation continuum closer to introjected regulation, that indicated a higher external source of motivation to engage in physical exercise.

Another pattern the researcher discovered found seven out of the 13 participants scored within the two-point score range on both the pre and post phase questionnaire. This score would fall within the introjected regulation and identified regulation form of behavior on the motivation continuum. A position of this nature along the motivation continuum is defined as behavior, which is somewhat internalized with elements of external sources to motivate. The other six participants pre phase scores were registered as a one-point score, which would fall within the external regulation and introjected regulation of behavior along the motivation continuum. However, post scores of these six participants moved into the two-point score range. This score would fall within the introjected regulation and identified regulation behavior on the motivation continuum, which is a movement shifted towards internalization of behavior to engage in physical exercise.

Summary

Motivation has been a main topic researched within the realm of physical exercise. Majority of these studies have focused on the underlying reasons as to why people engage in physical exercise. Insufficient research exists assessing the impact physical exercise may have on augmenting motivation, and more specifically, self-determination levels. The researcher of this study examined physical exercise and its potential impact on the levels of self-determination of college students. Participants of this study completed the Behavior Regulation in Exercise Questionnaire in pre and post questionnaire method. Participants scores were inputted into the IBM SPSS system and were calculated and analyzed. The scores collected were to examine and to determine whether a change occurred in scores when comparing post results to pre results for each individual and each course as well.

Participants were selected from two physical exercise courses offered in the 2018 summer semester at Albany State University. The physical education courses, WELL 1105 Strength Training I and WELL 1161 Fitness I, were selected and taught in a traditional face-to-face method. The semester lasted 10 weeks. Participants completed the pre-questionnaire phase at the start of classes in May and then conducted their respective course as normal. At the end of the semester, participants fulfilled their obligation and completed the post-questionnaire phase at the end of July.

As noted, the BREQ was utilized as the measuring instrument. The BREQ was created based on Deci and Ryan's (1985) self-determination theory. The BREQ was developed to assess individual's motivational levels across the motivation continuum. The continuum has five components and individuals fall along this continuum based on

scores calculated from a series of 24 questions. The components on the motivation continuum encompass the elements of amotivation, external regulation, introjected regulation, identified regulation, and integrated regulation, which symbolizes the highest form of self-determined behavior.

This study was conducted in a quantitative comparative method. Three research questions were developed. Two research question sought to compare participants post score results from pre score results in a specific physical education course to analyze whether a change in self-determination levels occurred. The third research question compared both physical education courses post scores to analyze whether a difference existed amongst the classes. The overall arching purpose was to evaluate if a change towards becoming more self-determined occurred due to physical exercise.

The mean of pre and post scores within each class were compared. The results collected were entered into the IBM SPSS statistical system to determine if a significant statistical difference occurred. A paired samples *t*-test was conducted for each of the first two research questions specific to each physical education course. An independent *t*-test was conducted for the third research question comparing both physical education courses.

Results in the Strength Training I course demonstrated a moderate difference comparing post results to pre result scores; however, the researcher fail to reject the null hypothesis as there was not a statistically significant change from pre to post scores Results in the Fitness I course demonstrated an even greater difference comparing post results to pre results scores, in which the researcher rejected the null hypothesis as there was a statistically significant change from pre to post scores and accepted the alternate hypothesis. Results comparing the post scores of the Strength Training I course versus

the Fitness I courses did not demonstrate much of a difference. Therefore, the researcher failed to reject the null hypothesis as a statistically significant difference amongst post scores did not exist between the physical education courses.

Analyzation of the results provided evidence a shift on the motivation continuum for each class as well as many individual participants did occur. The majority of shifts may illustrate a slight movement; however, the shifts of movements were towards the integrated regulation spectrum on the motivation continuum. A difference of post scores as compared to pre scores in a positive shift towards integrated regulation revealed a change in behavior regulation as it relates to motivation, and in particular self-determined behavior. Motivation has been well documented as a factor to engage in physical exercise. The results of this study warrant future research into physical exercise and its effect on augmenting not only motivation, but altering self-determination levels of individuals as well.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

Teixeria et al. (2012) found self-determined behavior as an important characteristic for individuals to sustain physical activity. Ferkel et al. (2017) stated the physical education classroom is ideal to foster a challenging and engaging environment, which could help develop skills, knowledge, and self-confidence. Self-confidence is a characteristic identifying self-determined behavior. Lauderdale et al. (2015) found self-determined motivation is strongly linked to higher physical activity participation and also may impact other areas within a person's endeavor, including academic success. A focus of research in the field of motivation and physical activity has persisted with identifying the motivational reasons as to why people engage in physical exercise, with very little attention focusing on the impact physical exercise may have on motivation, particularly self-determination of people.

The researcher investigated the impact physical exercise has on augmenting self-determination levels of college students. Higher education over the past several years has placed a greater emphasis on student retention (Cohen et al., 2014). Student service leaders have developed numerous programs to enhance student retention; however, physical education has continued to be marginalized as an opportunity to provide a solution to aid this endeavor. Physical exercise proves beneficial in the academic realm, and the topic of motivation has been the central element studied within this area (Bebeley et al., 2017). Therefore, the researcher conducted a study involving physical exercise and

the potential impact it may have on augmenting self-determination levels as a means to determine whether increased physical exercise could help enhance student retention.

The relationship of motivation and student academic proficiency has been a topic of research for several years. In particular, intrinsic motivation, the highest form of self-determined behavior, has been linked to student success (Deci & Ryan, 2001; Hennessey, 2015). Majority of studies conducted in the field of physical exercise and motivation sought to discover the motivational reasons as to why individuals engage in physical exercise. People identify as extrinsically or intrinsically motivated to engage in physical activity. Another aspect that has been found is the motivation of individuals could be altered as one consistently endures a physical exercise routine (DeLong, 2006). DeLong (2006) further stated as people engage in a sustained exercise routine a transformation of motivation may occur.

The motivation continuum assesses individual motivation from a range of amotivation, that illustrates nether extrinsically nor intrinsically motivated, external regulation, motivation is extrinsically dominated, to integrated regulation, which demonstrates intrinsically motivated or better stated, the behavior has become self-determined (Markland, 2007). Majority of studies within this field has sought to exhibit why people engage in physical activity, with little focus on physical exercise's impact on motivation, in particular self-determination levels. Self-determination is the highest form of intrinsic motivation, whereas an individual conducts an activity for the inherent self (Pink, 2009). As noted, student academic success has been linked to individuals who demonstrate greater self-determined behavior.

As higher education continues to develop programs to enhance student success, perhaps focusing on how to increase self-determined behavior is needed (Bebeley et al., 2017). This particular study was conducted primarily to explore self-determination levels of college students and whether this type of behavior regulation could be augmented. Participating in physical exercise has been associated with motivation as well as self-determination (Brunet & Sabiston, 2011). Therefore, this research, in an attempt to address higher education's bid to increase student retention, as well as reinforce the importance of physical education, investigated whether self-determination of college students could be increased through the practice of participating in a consistent physical exercise regimen. This study was conducted in a quantitative manner utilizing a comparative method. The researcher compared and analyzed participants pre phase questionnaire scores to post phase questionnaire scores to assess self-determination levels and determine if a change occurred.

Analysis of Research Findings

Three research questions were developed to address this study. Two of the three questions accepted the null hypotheses. However, one question rejected the null hypothesis and accepted the alternate hypothesis as a significant statistical difference was obtained. Two physical education courses were selected for this study WELL 1161 Fitness I and WELL 1105 Strength Training I. Two of the three research questions examined whether a significant statistical change in participants post score results compared to pre score results occurred within each physical education course. The third research question compared whether a significant statistical difference occurred between the two physical education courses.

Research question one developed for the Strength Training I course failed to reject the null hypothesis; however, a difference was determined in post scores results as compared to pre score results. Research question two developed for the Fitness I course rejected the null hypothesis and accepted the alternate hypothesis as a significant difference occurred of participants post score results as compared to pre score results. Research question three compared whether a significant difference occurred between the physical education courses; however, the researcher failed to reject the null hypothesis. The significant difference in the Fitness I course was not the only major findings from this study. A further review of the data revealed 84% of participants reported higher scores on their post phase questionnaire results as compared to their pre phase questionnaire results, indicating a positive shift on the motivation continuum towards integrated regulation.

The motivation continuum measures motivational levels ranging from 0 to 4 beginning with amotivation and ending on the right side of integrated regulation or more self-determined behavior. Eleven participants shifted along the motivation continuum moving towards the side of integrated regulation, signifying an increase in self-determined behavior, based on post-questionnaire results as compared to pre-questionnaire results. Majority of the shifts could be constituted as slight movements; however, one participant shifted a full behavior regulation positively across the motivation continuum. Participant ST#2A-B had an increase of over a full point along the motivation continuum scale. Although this participant remained in the external regulation to introjected regulation realm on the motivation continuum, the participant's score was the most significant difference amongst all participants.

Discussion of Research Findings

Physical exercise and motivation have been researched extensively; however, the focus has been to discover reasons why individuals engage in physical exercise (DeLong, 2006). Majority of studies conducted have sought the motivation of why people participate in physical exercise (Bebeley et al., 2017). This particular study examined the impact physical exercise may or may not have on altering motivation, more specifically, the impact on augmenting self-determination levels. Although research may not exist on this specific topic, past studies have utilized similar techniques and the measuring instrument used for this study. The purpose of past studies may have focused on a different perspective; however, findings were comparable to the data collected and analyzed for this particular study.

The research findings of this study were reported in three phases, and the results were inputted into the IBM SPSS system and compared results. Charts were provided in Chapter IV to illustrate the quantitative research item analysis as it related to pre and post results. The data compared whether a change occurred in participants post phase questionnaire from their pre phase questionnaire results. This research compared the pre and post results of participants in a Fitness I course, a Strength Training I course, and compared the post results of the Fitness I course against the Strength Training I course.

This researcher reported many similarities as past research on the concept of motivation. Much has been learned about the nature of student motivation and how it can be affected. Individual engagement into activity can differ as to the reasons why people partake in any physical activity (Pink, 2009). An emphasis for more research on understanding motivation and the association with self-determination and how it affects

student engagement is needed. Bebeley et al. (2017) stated exploring the motives of individuals to better understand motivational reasons to engage in physical exercise may provide valuable information and how this relates to self-determination levels of students. Furthermore, it could provide insight for higher education leaders for improving student retention rates and the importance of physical education.

The ultimate endeavor was to discover what is more beneficial when it comes to student overall success. The argument of whether extrinsic or intrinsic approaches to motivate have fueled past research as well as will continue to spark future research (Hennessey, 2015; Lent, 2015; Pink, 2009). Which motivational variable, intrinsic or extrinsic, is better equipped to sustain student success in any activity, academic or physical, continues to be investigated. As noted in the research of literature, students who demonstrate higher levels of self-determined behavior endure greater levels of perseverance and overall success (Deci & Ryan, 1985, 2001). This research sought to understand if motivation, self-determination in particular, could be affected due to an independent variable, physical exercise, and how results could be used to aid student retention efforts.

Studies, such as Lauderdale et al. (2015), Maltby and Day (2001), Teixeira et al. (2012), DeLong (2006), and Murray and Wilson (2014), sought to understand the motivational reasons as to why individuals engage in physical exercise. However, in these studies, similar to this research study, results reported also touched on how motivation of individuals changed after participating in a sustained exercise regimen. Results from a study by Murray and Wilson (2014) and a study review by Teixeira et al. (2012) supported a positive connection with self-determination and sustained physical

exercise. A study conducted by Lauderdale et al. (2015), similar to this study, utilized college student participants, and the results supported the premise that self-determination levels could be altered and sustained physical exercise could initiate this transformation.

Physical exercise is a variable, which has been researched due to a natural association with motivation. The self-determination theory was developed to provide in-depth insight and to measure motivational levels within individuals (Deci & Ryan, 1985, 2001). The self-determination theory is a framework to evaluate as well as predict motives for physical activity (DeLong, 2006). Research utilizing the self-determination theory has focused on its relationship with physical exercise. Research, such as Brunet and Sabiston (2011), Edmunds et al. (2008), Ferkel et al. (2017), DeLong (2006), similar to this study, used the self-determination theory as a framework to investigate the role physical activity plays on motivation.

Several studies have noted using of the motivation continuum as a method to determine motivational factors of individuals (DeLong, 2006; Murray & Wilson, 2014; Teixeira et al., 2012). This method was utilized to not only understand reasons of motivation but to research whether an individual could move along the motivation continuum due to sustained physical exercise. Past research conducted may have focused on motivational reasons as why an individual participates in an activity. However, elements of past research provided a platform to analyze whether a change in motivation occurred, specifically a move towards greater self-determined behavior due to sustained physical exercise. A study conducted by DeLong (2006) utilized a pre and post phase questionnaire method. This study also used the BREQ as the measuring instrument. DeLong (2006) was a past study, which proved to be most similar to this particular study.

Although the principal purpose of DeLong (2006) may have had a different focus, a closer look at results found individuals could slide along the motivation continuum without identifying a dependent variable. Similar to this study, results from DeLong (2006) reported participants did shift positively along the motivation continuum after analyzing and comparing post phase results to pre phase results. A common theme found a change in motives of participants moving along the motivation continuum towards integrated regulation, signifying a change in motivation after enduring a semester long physical exercise program. A connection was discovered in which several participants noted different responses on the post phase questionnaire, at the conclusion of a physical exercise routine, which identified with self-enjoyment and self-competence, two characteristics of self-determined behavior.

Another identifiable past outcome of research was the effects of sustained activity. Enduring a long-lasting physical exercise routine had an impact on motivation (Bebeley et al., 2017; Sibley et al., 2013). Specifically, an effect on autonomy, relatedness, and competence, three characteristics related to self-determination. Duration factors into the process of whether a change in motivation could occur. Sibley et al. (2013) conducted a study similar to this study, and the results suggested if motivation was altered it could only happen over an extended period of time, not immediate. The results of Sibley et al. (2013) examined a relationship between exercise motives, exercise behavior regulation, and physical fitness in college students and utilized the BREQ measuring instrument. Findings from this research were consistent with previous research, as well as this current research, as results analyzed from post questionnaire responses indicated participants shifted across the motivation continuum towards

integrated regulation, a greater degree of self-determination at the conclusion of a sustained physical exercise routine.

Physical exercise has also been associated with encouraging autonomous supportive environments. Past literature, such as Ferkel et al. (2017) and Ryan et al. (2009), emphasized the need for autonomous supportive environments to facilitate greater self-determination. Physical education courses were featured for this current study in which exercise was the primary aspect for the courses. Pink (2009) noted environments, which promote choice and self-mastery provide an opportunity to develop intrinsic motivation, as related with self-determined behavior, and physical exercise could provide this opportunity. The emphasis in a physical exercise environment is individual choice, which promotes growth for individuals. However, a contradicting aspect of physical education courses has shown elementary through secondary education as too structured, thus reducing individual choice environments (Ferkel et al., 2017; Sulz et al., 2016). Although majority of past studies note how autonomous environments could affect self-determination levels in a positive way, an existing issue is not fostering nor promoting autonomous environments or activities in a physical education setting within earlier years of education.

Comparable data exist in past research, which provided the relevance of this study. Motivation is a topic, which has been scrutinized exhaustively over time. Physical exercise and the relationship with motivation has been a focus of past research. Several studies exist, which utilized the self-determination theory as a framework, and reported individuals who encompass greater levels of self-determined behavior illustrated sustained success. A focus of past research was to understand the motivation behind why

an individual engages in physical exercise. However, a secondary focus, similar to this current study, examined how individual motivation could change with sustained exercise. Although, little to no studies conducted have focused on how physical exercise could impact self-determination levels does not exclude the importance of this current study. Ultimately, the elements of physical exercise, self-determination, and student success is an overall broad spectrum and a plethora of research exist, which detailed all or some of these variables. Therefore, this particular study provided more profound understanding into how self-determination levels could potentially be augmented by physical exercise and how it could lead to greater student retention as well as reinforce the importance of physical education.

Relationship to the Research

The researcher proposed to examine if physical exercise could have an impact on altering self-determination levels of college students. In Chapter II, the researcher identified several previous research studies related to this current study. However, a study as specific to this current study does not exist. Research studies regarding physical exercise, motivation, more particularly self-determination levels exist; however, the focus has primarily focused on understanding the motives as to why people engage in physical exercise. Several past studies have utilized the self-determination theory as the conceptual framework, similar to this current study, as well as used the same measuring instrument, the BREQ, and conducted a pre and post quantitative method of study. The researcher had to syphon through past studies on the topic of motivation and physical exercise to find related material, which could be used to help facilitate this current study.

Conclusions

The researcher proposed to answer the following research questions.

1. To what extent is there a difference in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Strength Training I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course?
2. To what extent is there a difference in the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) of college students prior to participating in a Fitness I course as compared to the level of self-determination as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) upon the completion of the course?
3. To what extent will a difference exist in the level of self-determination of college students as measured by the Behavioral Regulation Exercise Questionnaire (BREQ) between the outcome of a Strength Training I course and a Fitness I course?

This current research study failed to reject the null hypothesis for research questions number one and three; however, the data obtained for research question two rejected the null hypothesis and accepted the alternate hypothesis. A closer examination into this study revealed 11 out of 13 participants scored higher on post phase results as compared to pre phase results as registered on the motivation continuum. The differences may not be considered significant; however, an increase and shift along the motivation continuum towards the side of integrated regulation, identifying with self-determined

behavior, is worth noting. This analyzation demonstrated a change did occur after comparing post questionnaire scores to pre questionnaire scores for majority of each participant as well as for each class as a whole.

Although the researcher failed to reject the null hypothesis for research question number one as a statistically significant change from pre to post scores in the Strength Training I course, six of the seven participants did score higher on post phase results in a positive movement as recorded on the motivation continuum. The overall mean, of post score results as compared to pre score results, for the Strength Training I course also increased signifying a shift positively along the motivation continuum towards greater self-determination levels. One participant, ST#2A-B, shifted over a full behavior regulation movement as scored on the motivation continuum on post scores results as compared to pre score results. Although this participant's post score results would place between introjected and identified regulation behavior on the motivation continuum, identifying with more external regulation behavior with less self-determination levels, this participant had the greatest movement forward on the motivation continuum and highest change in motivational levels.

One participant, ST#6A-G, scored in a negative movement on the motivation continuum moving more towards external regulation behavior. The researcher suggested an impact did occur from the variable, physical exercise, as majority of participants in the Strength Training I course demonstrated a positive shift on the motivation continuum moving towards self-determined behavior. Five of the seven participants scored higher than two on their post phase questionnaire, settling between introjected and identified

regulation behavior. Even though this movement still identified with more external regulation behavior, a shift in motivation and the process of internalization occurred.

The second research question compared pre and post results in the Fitness I course. The researcher rejected the null hypothesis and accepted the alternate hypothesis; therefore, a statistically significant change from pre to post scores occurred. The overall mean for the Fitness I course demonstrated a positive increase of post questionnaire scores from pre questionnaire scores as measured on the motivation continuum. Data inputted into the IBM SPSS system indicated a significant statistical change, and five of the six participants moved in a positive direction on the motivation continuum when comparing post results from pre results. One participant, FT#6B-B, scored the exact same on both their pre and post phase questionnaires. Therefore, based on the results, the researcher suggested an impact did occur due to the variable, physical exercise.

Four of the six participants, enrolled in the Fitness I course, scored higher than 2 on their post score results settling between identified regulation and introjected regulation behavior. This location on the motivation continuum identified with more internalized reasons towards physical exercise, thus closer to more self-determined behavior. The researcher noted, two participants, although scoring positively on the post questionnaire, scored under 2. This score would place participant FT#3B-G and FT#5B-G between introjected regulation and external regulation behavior, as motivation identified with more external reasons. However, both of these participants did score in a positive movement when post scores were compared to pre scores.

The third research question compared the Strength Training I course results and the Fitness I course results. The researcher failed to reject the null hypothesis as a

significant statistical difference did not exist between the physical education courses. Although the research question specific to the Fitness I course rejected the null hypothesis and the research question specific to the Strength Training I courses failed to reject the null hypothesis, the researcher found both physical education course post results of participants scored in a positive movement along the motivation continuum.

The researcher reported the mean for both the Strength Training I course to the Fitness I course scored higher than 2 on post results. The mean post score for both courses was 2.23, settling between introjected regulation and identified regulation behavior. This location on the motivation continuum identified with more internalized reasons towards physical exercise; however, external regulation of behavior still existed. Both physical education courses mean pre scores were less than 2; therefore, a full positive shift along the motivation continuum occurred.

Several past studies utilized the same measuring instrument as this current study, the BREQ, had college aged participants, as well as conducted a study in a pre and post questionnaire method, which provided useful results, similar to this current study. DeLong (2006) found participants of their study did move in a positive movement along the motivation continuum based on post scores from pre scores at the conclusion of an extended physical exercise routine. This conclusion provided evidence that something caused a change in motivation after completing a sustained physical exercise regimen. A study by Sibley et al. (2013) utilized college aged participants, and similar to the results found in this current study, found longer periods of physical exercise lead to a change in motivation thoughts towards physical exercise. Participants who sustained longer periods

of physical exercise demonstrated higher intrinsic motivation, a more autonomous reason to exercise, which identified with self-determined behavior.

This current study was conducted utilizing the self-determination theory as the conceptual framework. The data collected for this study reported majority of participants did incur a change in post score results as compared to pre score results as measured on the motivation continuum scale. Furthermore, the mean post score of all participants from both physical education courses changed and moved in a positive direction on the motivation continuum towards integrated regulation behavior, indicating a shift towards self-determined behavior. The researcher concluded an impact of change did occur comparing post score results to pre score results, which altered participants motives regarding physical exercise.

Research Framework

DeLong (2006) conducted a study with the self-determination theory used as a conceptual framework. DeLong (2006) stated self-determination is important to illustrate motives for physical activity. Furthermore, individuals who tap into self-determined behavior do so in an innate process, which leads to greater success and sustainability. Lauderdale et al. (2015) in a similar capacity developed a study, which utilized the self-determination theory as the framework. This study found individual motivation is regarded as an innate process, which defines the essence of self-determination. Furthermore, self-determined behavior enables sustained engagement in activity. Evans et al. (2014) cited increased physical exercise frequency and adherence reveals intrinsic elements, a form of self-determination.

This current study, in a similar method, found internalizing an activity could lead to greater sustained success. Understanding the self-determination theory helped with understanding student engagement not only in physical activity, but also in other venues. Along with DeLong (2006), Ryan et al. (2009) discovered higher levels of self-determination is linked with enduring and sustaining a long-lasting physical exercise routine. Based on past studies as well as this current study, more research is needed in understanding self-determination and how it could be enhanced through the practice of extended physical exercise.

A study conducted by Lauderdale et al. (2015) investigated gender differences regarding motivation for physical activity. A second aim was to examine whether individuals move along the motivation continuum after participating in an exercise program. The results of this study reported students who demonstrated identified regulation, more intrinsic motivation, lead to increased physical exercise adherence. This study also suggested self-determination behavior leads to long-lasting behavior across contexts outside of exercise domains as well. Furthermore, this study concluded external motives was associated with lower levels of physical exercise adherence.

Maltby and Day (2001) conducted a study comparing extrinsic and intrinsic motives to engage in physical exercise. In this study, students who identified with an element of intrinsic motivation to exercise, as opposed to using extrinsic motives, reported greater psychological well-being, a characteristic of greater self-determined behavior. Teixeira et al. (2012) examined studies from 1960-2011 regarding exercise, motivation, and self-determination. The results of this research found a consistent positive association with self-determination and exercise in areas of adoption and

maintaining. The literature of this research also found a positive element of competence satisfaction, an element of self-determination, and concluded individuals who demonstrated more self-determined behavior showed greater aptitude towards sustainability.

A study conducted by Murray and Wilson (2014) reported participants who exercised more frequently showcased higher levels of intrinsic motivation. A study, which was conducted more similar to this current study by DeLong (2006), examined motivation and physical exercise. The rationale of DeLong's (2006) study was to investigate college student's motivation to be physically active as well as a focus on whether students' motivation would change after completing an exercise program as compared to the start of the program. Results from this study reported participants motivation varied across the stages of change. A common theme of motives regarding levels of motivation for participants post exercise program changed more towards greater levels of enjoyment, self-interest, and competence. All three characteristics are linked to self-determined behavior. Also, several participants shifted in a positive movement across the motivation continuum towards identified regulation and integrated regulation behavior, a shift towards self-determination.

Similar to this current study, results from past studies, although not specific to the purpose, reported an association of higher self-determination levels led to sustained ability. Data from past studies, similar to this current study, also reported a shift in motivational reasons of people as to why they engage in physical exercise after completing a physical exercise program as compared to the start of a program. As noted, the researcher had to review past studies based on similar elements as no studies exist

specific to physical exercise's impact on augmenting self-determination levels. However, the researcher surmised a relationship does exist between physical exercise and the effects it has on altering self-determination.

Implications

Understanding how to increase self-determination could prove to be an important element in the desire of higher education administrators to discover ways to enhance student retention. The data collected from this study could also provide evidence for the importance of physical education. Motivation, and how it factors into students' engagement, has been documented for years. Motivation has been a main concept researched as to what encourages individuals towards completion of an accomplishment. Exploring the means of how an individual becomes engaged within a happening is an event determined by motivation. Recently, higher education has invested in resources dedicated to maintain enrollment through efforts of increasing student retention. The potential for success is calculated on a plethora of variables; however, understanding the importance of self-determination within an individual may provide more insight to aid this process.

Physical exercise has been a part of society since the dawn of times. Physical exercise contributes to increased energy, focus, and cognition. The benefits of physical exercise include not only physiological, but also aids psychological health as well. Past studies have validated positive academic outcomes for people that engage in consistent physical activity. Physical exercise builds mental strength and individuals who demonstrate mental strength are more apt to succeed in high-pressure environments. However, demographics have changed over the years and statistics illustrate a continual

trend towards lack of physical exercise. Sedentary lifestyles have become a more common theme in our own country as well as across the globe. The lack of physical activity has also wreaked havoc across college campuses as only 25% of college students report as engaging in moderate to vigorous physical activity.

Combine this situation with education's overall decision to deemphasize physical education programs promotes the need for more attention researching physical exercise and the potential impact on motivation. The relationship of physical exercise and motivation has been studied for years; however, the focus has aimed to study the underlying reasons as to why people engage in physical exercise. Understanding what drives an individual towards engagement is an important aspect to assess individual success. Self-determined behavior has found to contribute positively to the quality of learning, better academic performance, and also linked to continuing and sustaining a physical exercise regimen.

As noted, research on motivation and physical exercise has focused on the reasons behind engagement. However, the effects of physical exercise have been documented to illustrate a change in motivation, within an individual, may occur as one continues to participate in physical exercise for extended periods of time. Little research exists featuring the impact physical exercise has on motivation. Furthermore, the research focused on physical exercise and its impact on self-determination levels is scarce. Self-determination is a behavior, which could be augmented in an autonomous social context environment. Physical exercise is an environment considered to be autonomous-supportive.

Developing methods to enhance self-determination of students could prove to be extremely beneficial to higher education administrators. Statistics report physical exercise has a positive impact on academic success. Self-determined behavior factors into exercise adherence whereas people's motivation to exercise could change towards more innate elements as one endures an exercise program. Evidence exists linking physical exercise to greater academics as well as a relationship exists between physical exercise and motivation, specifically self-determination; therefore, further research is needed within this domain.

Leaders of higher education should devote more efforts to understanding the importance of self-determination and how it could be enhanced within students. Physical exercise, as an autonomous-supportive environment, could provide this platform to aid this endeavor. Physical exercise has an ability to alter motivation as exercise duration increases, which could lead to greater self-determination levels of students. This current study exhibited movement of participants motivation along the motivation continuum in a positive direction towards integrated regulation, which identifies with greater self-determined behavior. A positive change in motivation occurred within 84% of participants of this study. The scores collected from this study were significant, and administrators of higher education should begin a process to alter student retention programs to focus more on physical exercise and how it could impact greater self-determination of students.

An ultimate goal of higher education is to enhance student retention. The researcher suggests, higher education administrators could utilize the results of this research to aid in the development of more programs, which emphasize physical exercise

as a variable to increase self-determination of students. Drive is an innate powerful characteristic, synonymous with self-determined behavior. An individual who pursues an activity for the inherent innate pleasure encompasses drive and forecasts into greater all-around success in any endeavor. The ability to enhance this type of behavior, with physical exercise, within an individual provides a multitude of benefits both physiological and psychological, as well as provides higher education leaders a framework to address student retention as well as demonstrate the need for continued physical education.

Data collected from this research could prove beneficial for faculty members of higher education as well as college students. The ability to enhance self-determined behavior within an autonomous-supportive environment, such as physical exercise, could lead to greater success in multiple domains. The significance of this research reaches across the higher education spectrum and could be used in several settings. The researcher conducted this study and found a relationship does exist between physical exercise and self-determination levels. Furthermore, the results obtained from this study could be used to aid student retention and the need to expand physical education in all levels of education, including higher education.

Limitations

This current study was conducted as a comparative study in a quantitative method. Participants were selected from two specific physical education courses, WELL 1161 Fitness I and WELL 1105 Strength Training I. Participants enrolled in other identified physical education courses outside of WELL 1161 Fitness I and WELL 1105 Strength Training I were excluded. The summer semester at Albany State University was

the time period for this study and is limited as compared to both fall and spring semesters. This study was also limited to one single small public university's physical education courses. The sample size for this study was small in nature due to the limited number of courses offered, lower enrollment for the summer semester, as well as participants who were unable to remember or maintain their code of identification for comparative analysis.

The physical education courses were also limited to one instructor for both courses. The teaching style of the instructor could have impacted the validity of participants responses for the post questionnaire phase. The overall results of this study reported that participants, comparing post score results to pre score results, shifted a positive movement on the motivation continuum towards an increase of self-determination levels. However, the validity of these results hinge on the participants understanding the concept of each question on the questionnaire. Validity of post questionnaire responses was contingent upon whether participant's thought process was truly genuine or falsified to elicit a specific outcome.

Other limitations include the effectiveness and clarity of instruction by the administrator of both the pre and post questionnaire phases. The physical exercise experience of each participants could have impacted results as well. The motivation of why participants enrolled in a physical education course for the summer semester may have factored into the responses for both pre and post questionnaire phase. The motivation and teaching effectiveness of the instructor for each physical education course may have impacted the validity of participants responses. Lastly, participants mood on

the dates of the pre and post questionnaire could have affected how each participant responded to each question item on the Behavioral Regulation in Exercise Questionnaire.

The researcher would make a few suggested changes for this study. A study conducted over more of an extended period of time could prove more beneficial. An increase of research participants would aid as well. Including more diverse participants perhaps would provide greater insight. Expanding the selected physical education courses to study could provide more of a breadth of results. A study, which included reviewing academic levels with motivation levels would be another positive aspect for research within this specific topic. Conducting this study utilizing a qualitative method may provide more in-depth feelings and thoughts of participants regarding the impact physical exercise may have had from an individual perspective. A study measuring self-determination and academic success conducted in a pre and post method utilizing a controlled group; one, which participates in a semester long exercise program and non-controlled group, which does not engage in physical activity, could reveal the impact of physical exercise on altering self-determination levels as well as academic success.

Recommendations

The researcher recommends future researcher within physical exercise and the potential impact it may have with enhancing self-determination levels of students. The following are suggestions for future research:

1. Replicate the study to include other physical education courses.
2. Replicate the study to include a larger sample size and for a longer duration and demographics.
3. Replicate this study at a larger higher education institution.

4. Replicate the study to include comparing demographic variables and a more diverse population.
5. Replicate this study with older college students.
6. Conduct a study, which utilizes a group or participants exposed to external motivation and as the study progresses take-away external motivation ploys to showcase, which participants remain in the workout program and which participants cease. Determining whether participants that remain was due to a shift towards more self-determined behavior to want to continue to exercise.
7. Conduct a study with comparing a group of participants who has an exercise routine and a controlled group that does not. Determine levels of motivation as well as academic levels at the start of the study and at the end of the study examine academic success as well as determining motivational levels.
8. Conduct a study utilizing a qualitative method to produce more in-depth understanding of how college-ages students feel regarding this topic.

Dissemination

Dissemination of this research will include sharing the collected data with the current administration and the President from Albany State University. Faculty of the Albany State University as well as faculty members of other institutions could also benefit from reviewing this current study and how it could relate to pedagogy and student success. Leaders of higher education developing programs to enhance student retention could be another audience to use the data collected from this research. Dissemination of this research could be useful for physical education as a whole at all levels of education demonstrating the importance and impact of physical exercise. Education counselors,

sport psychologist, the fitness industry, as well as everyday individuals could find review of the results and data collected from this research useful.

This information could be presented in a report or a formal research presentation. This research could be disseminated through a peer reviewed article in any physical education journal. This research could be disseminated through health, fitness, and education journals. Lastly, this research could also be disseminated through motivational articles or research journals.

Concluding Thoughts

This research was very personal to me as my innate nature is how I was able to accomplish this endeavor. I am the first in my entire to family to enter and complete a college education and to now have earned a Doctorate degree is well beyond something I would have ever dreamed of accomplishing. Self-determination factored heavily into this endeavor, and I attribute my commitment to physical exercise as a reason why I remain self-determined.

I truly believe people who exercise on a consistent level tap into self-determined behavior and this transfers to other areas of life. Becoming successful is a journey, and along the way obstacles are always present as well as extreme stress. Two variables that help overcome obstacles and stress are an innate drive, self-determined behavior, as well as participating in consistent physical exercise.

Self-determined behavior has been phenomenon in which I can pull from to get past difficult times also when perhaps on a day I do not feel up to exercising. Participating in consistent exercise, particularly strength training, helps alleviate my stress, enhances my moods, and I do believe has aided with maintaining my innate self-

drive. Conducting this research, in my opinion, was important and meant a great deal to me as it provided significant results, which demonstrates the importance of physical exercise and increasing self-determination as well as how both variables relate together.

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APPENDIX A

RECRUITMENT PROTOCOL – INITIAL REQUEST TO PARTICIPATE IN STUDY

Opportunity to be Participate in a Research Study

Investigation into physical exercise impact on self-determination levels of college students

Potential Participants,

The Health & Human Performance Department is conducting a study examining physical exercise's impact on self-determination levels. This would be a great opportunity for you as a student to get involved with research at Albany State University. Fitness I and Strength Training I courses will be utilized for this study and each of you are currently enrolled in one of these courses; therefore, we are asking if you will voluntarily participate in this study. We understand your time is valuable and if you decide to become a participant it will not affect your own personal time. Each participant will complete a pre and then post questionnaire and will complete this questionnaire during your regularly scheduled class time. Your only obligation, if you decide to participate, is that each of you commit to the entire process which includes the pre and post questionnaire phases as well as remaining in your registered course. Below is information for each of you regarding the day, date, time, and location for the pre and post-questionnaire phase.

Your instructor has agreed, if you decide to participate, to provide each of you an excused absence on both days of the questionnaire. After you complete the pre-questionnaire phase you will take part in your registered course as normal. We will send out an e-mail periodically as a reminder for the post-questionnaire as the date nears. We

appreciate your consideration to take part in this study. If you would like to take part in the study, please place your name, course, and e-mail on the study roster.

Respectfully,

Health & Human Performance Department

Information for conducting Pre & Post Phases of Study

Pre-Questionnaire Phase

Day & Date: Tuesday – May 29th

Time: Normal scheduled class time (9:30am) or (11am)

Location: ASU West campus- (E) Physical Education & Athletics Building- Classroom #112

Post-Questionnaire Phase

Day & Date: Thursday – July 19th

Time: Normal scheduled class time (9:30am) of (11am)

Location: ASU West campus- (E) Physical Education & Athletics Building- Classroom #112

APPENDIX B

INFORMED CONSENT FORM

You are being asked to participate in a research project conducted by Kenneth W. Kirsch, a student in the Higher Education department at Columbus State University. Dr. Robert Waller, a faculty member of Columbus State University, is the supervisor and chair for this dissertation.

I. Purpose:

The purpose of this project is to examine physical exercise impact on self-determination levels of college students.

II. Procedures:

Each participant will complete a pre-questionnaire (BREQ) and then conduct their physical education course (Fitness or Strength Training) as normal. At the end of the semester each participant will complete the post-questionnaire (BREQ). Data will be extracted from both questionnaires and compared to see if any response or self-determination level changed or moved through the motivation continuum based upon responses from the pre and post questionnaire. The data collected could potentially be used for future research or future studies that pertain to this specific topic.

III. Possible Risks or Discomforts:

Participants identity will not be included within both questionnaires and participants are not being asked to complete anything that would put them at risk or in harms way. There is minimal risk for the participants for this study. The questionnaire each subject will complete will not require any identifiable information besides age, race, and academic major. The questionnaire is not a strenuous process, nor psychologically or emotionally constraining and will not jeopardize their academic endeavor. Participants will not experience any physical nor psychological stress completing the questionnaire.

IV. Potential Benefits:

Participants will not receive any benefits to partake in the study. However, the only potential benefit participants may experience is a change with their own self-determination levels. Participants could become more intrinsically motivated, a product of increased self-determined behavior. People with higher levels of self-determination could provide a positive benefit within society as a whole and experience greater success academically.

V. Costs and Compensation:

No costs are involved nor will compensation be offered.

VI. Confidentiality:

This study would be considered minimal risk for the participants. The administrator of the pre and post questionnaire will immediately put forms into a folder which will be given directly to the researcher. The researcher will keep all questionnaires in a locked file cabinet and the researcher will be the only one with a key for access. No other person(s) will have access nor review both the pre and post questionnaires. After three years the researcher will shred and then burn all pre and post questionnaires. Lastly, besides demographics that include: gender, age, and academic major, the participants will not reveal nor be asked to provide any identifiable information of themselves.

VII. Withdrawal:

Your participation in this research study is voluntary. You may withdraw from the study at any time, and your withdrawal will not involve penalty or loss of benefits.

For additional information about this research project, you may contact the Principal Investigator, Kenneth W. Kirsch at [redacted] or kirsch_kenneth@columbusstate.edu. If you have questions about your rights as a research participant, you may contact Columbus State University Institutional Review Board at irb@columbusstate.edu.

I have read this informed consent form. If I had any questions, they have been answered. By signing this form, I agree to participate in this research project. I attest I am 18 years of age or older which enables me to participate in this study under my own volition.

_____ _____

Signature of Participant Date

APPENDIX C

BEHAVIORAL REGULATIONS IN EXERCISE QUESTIONNAIRE (BREQ-3)

Age: _____ years **Sex: (please circle)** male female

Race/Ethnicity: (please circle)

African American Caucasian Hispanic Oriental Other(specify): _____

Academic Major: _____

WHY DO YOU ENGAGE IN EXERCISE?

We are interested in the reasons underlying peoples' decisions to engage or not engage in physical exercise. Using the scale below, please indicate to what extent each of the following items is true for you. Please note that there are no right or wrong answers and no trick questions. We simply want to know how you personally feel about exercise. Your responses will be held in confidence and only used for our research purposes.

		Not true for me		**Sometimes true for me**		**Very true for me**
1	It's important to me to exercise regularly	0	1	2	3	4
2	I don't see why I should have to exercise	0	1	2	3	4
3	I exercise because it's fun	0	1	2	3	4
4	I feel guilty when I don't exercise	0	1	2	3	4
5	I exercise because it is consistent with my life goals	0	1	2	3	4
6	I exercise because other people say I should	0	1	2	3	4
7	I value the benefits of exercise	0	1	2	3	4
8	I can't see why I should bother exercising	0	1	2	3	4
9	I enjoy my exercise sessions	0	1	2	3	4
10	I feel ashamed when I miss an exercise session	0	1	2	3	4
11	I consider exercise part of my identity	0	1	2	3	4
12	I take part in exercise because my friends/family/partner say I should	0	1	2	3	4
13	I think it is important to make the effort to exercise regularly	0	1	2	3	4

14	I don't see the point in exercising	0	1	2	3	4
15	I find exercise a pleasurable activity	0	1	2	3	4
16	I feel like a failure when I haven't exercised in a while	0	1	2	3	4
17	I consider exercise a fundamental part of who I am	0	1	2	3	4

		Not true for me		**Sometimes true for me**		**Very true for me**
18	I exercise because others will not be pleased with me if I don't	0	1	2	3	4
19	I get restless if I don't exercise regularly	0	1	2	3	4
20	I think exercising is a waste of time	0	1	2	3	4
21	I get pleasure and satisfaction from participating in exercise	0	1	2	3	4
22	I would feel bad about myself if I was not making time to exercise	0	1	2	3	4
23	I consider exercise consistent with my values	0	1	2	3	4
24	I feel under pressure from my friends/family to exercise	0	1	2	3	4

Thank you for taking part in our research

David Markland PhD, C.Psychol
School of Sport, Health & Exercise Sciences
University of Wales, Bangor
d.a.markland@bangor.ac.uk
October 2014

APPENDIX D

E-MAIL REMINDER FOR THE POST- QUESTIONNAIRE PHASE

FOR PARTICIPANTS

Investigation into physical exercise impact on self-determination levels of college students
(subject heading)

Participants,

Once again I appreciate your willingness to partaking in this particular study conducted by the Health & Human Performance Department. This is a reminder as the post-questionnaire phase date is approaching. The post-questionnaire phase will complete your obligation as a participant for this study. Below is information for each of you regarding the day, date, time, and location for the post-questionnaire phase.

Post-Questionnaire Phase

Day & Date: Thursday – July 19th

Time: Normal scheduled class time (11am)

Location: ASU West campus- (E) Physical Education & Athletics Building- Classroom #112

Respectfully,

Health & Human Performance Department

APPENDIX E

INSTRUCTIONS FOR ADMINISTRATOR

OF THE PRE & POST QUESTIONNAIRE PHASE

Investigation into physical exercise impact on self-determination levels of college students

Greeting

Good day participants. I would like to thank you for volunteering your time to be a part of this study. I am (name of administrator) and will be administering both the pre and post questionnaire phases for this study conducted by the Health & Human Performance Department. The study is an examination into physical exercises impact on self-determination levels. This study requires each of you to complete a pre-questionnaire and then at the end of the semester, and the end of your Fitness I (Strength Training I) course, a post-questionnaire. Each of you will be completing the Behavioral Regulation in Exercise Questionnaire. Again, we thank you for participating in this study.

Informed Consent Form

Before we start the questionnaire I will need each of you to complete an Informed Consent Form. This study is confidential and your identity will not be revealed. The survey does require you to answer a couple of descriptive items; gender, race, and academic major, however there are no questions which will require any information regarding your identity. The informed consent form is required by the IRB (institutional review board) and details the purpose of this study as well as other information which details your rights. Your participation is voluntarily and you have the right to withdrawal at any time during this endeavor. I now will come around the room and provide each of you the form. Please read carefully and if you still wish to participate please sign and date. Once completed please bring form to me in the front of the room. I will place the forms in a file and this file will be stored and locked.

Details

The BREQ has 24-item question to illicit your feelings towards physical exercise. Each question requires you to respond, on a Likert scale, 1 – 4. Each question also has a zero response that you can choose as well, which distinguishes amotivation. We ask you to please provide true and authentic responses for each question on the survey. If you do not understand a question, please do your best to select a response. We ask that you please select a response for every question item. Please circle the number that best demonstrates your feeling for each question at this present moment. Please take your time as this is not a timed survey, therefore please read each question thoroughly and re-read each question if necessary and select the appropriate number that best illustrates your current feelings regarding physical exercise at this present moment.

Questionnaire Execution

Before we get started I would like to detail the process for completing the pre-questionnaire. First, each of you need to have an empty seat in between each of you. Secondly, as all of you probably have noticed there is a small sheet of paper at your desk. Each of you will be provided a code, which will be located on the pre-questionnaire you receive. This code will be used to ensure the data which will be compared is comparing the same participant, each of you. It is important for each of you to remember this code. To help each of you remember, please write down this code on the small sheet of paper and store it in safe location to ensure you will remember where it is located. You will need this code when you return to complete the post-questionnaire in order to compare your pre and post results. Again, we ask for you to please store this in a safe location or ensure you will remember your code for when you return at the end of this course to complete the post-questionnaire phase.

I will call each of you to come up individually to receive your questionnaire as well as provide you a writing utensil. When you collect your questionnaire please return to your seat. The first item is for each of you to write down your code located on the top right hand side of your particular questionnaire. Secondly, please complete the top section of the questionnaire. This information will be used to compare data for this study, however

as mentioned earlier, this study is confidential and this information will not disclose your identity. Once both of these tasks are complete you then can begin to respond to each question on the questionnaire. Again, you do not have a time limit so please take your time and carefully read and select your response for each question. All you need to do is circle your selection found next to each question.

Once you have completed every question and the questionnaire is complete please bring up your questionnaire, writing utensil, and the sheet of paper with your code. You will hand deliver the questionnaire to me and I will also verify you have written the correct code down on our sheet of paper. I will place each questionnaire in a file. When you turn-in your questionnaire, writing utensil, and verify your code you are finished for the pre-questionnaire phase of this study and are free to leave. As you leave please pick-up the form located on the back desk. This form has the date, day, time, and location for the post-questionnaire phase to help all of you remember. Also, you will receive periodical e-mails to serve as a reminder for the post-questionnaire phase.

We greatly appreciate your time to be a part of this study. There is nothing further you will need to do at this time besides conduct your course as normal. We will see you in July when you complete your obligation for this study during the post-questionnaire phase.

APPENDIX F

PARTICIPANT CODE ROSTER

Indirect Coding Tool

Course	(Code)
Fitness I	FT#4B-G
Fitness I	FT#5B-G
Fitness I	FT#1B-B
Fitness I	FT#2B-B
Fitness I	FT#3B-G
Fitness I	FT#6B-B

Indirect Coding Tool

Course	(Code)
Strength Training	ST#1A-G
Strength Training	ST#7A-B
Strength Training	ST#3A-B
Strength Training	ST#5A-G
Strength Training	ST#6A-G
Strength Training	ST#2A-B
Strength Training	ST#4A-B

APPENDIX G

STRENGTH TRAINING I PARTICIPANTS: PRE & POST RESULTS

ST#1A-G **Mean Overall Score-** (Pre) 2.125 (Post) 2.375

Mean (Amot) - 0 / 0 **Mean (External)-** .5 / .5

Mean (Introject)- 2.25 / 2.25 **Mean (Identified)-** 3.5 / 3.5

Mean (Inegrated)- 3.5 / 4.0 **Mean (Intrinsic)-** 3.5 / 4.0

ST#2A-B **Mean Overall Score-** (Pre) .417 (Post) 1.458

Mean (Amot) - 0 / 0 **Mean (External)-** 0 / 1.0

Mean (Introject)- 0 / .5 **Mean (Identified)-** 1.0 / 2.5

Mean (Inegrated)- 0 / 2.5 **Mean (Intrinsic)-** 1.5 / 2.5

ST#3A-B **Mean Overall Score-** (Pre) 2.417 (Post) 2.71

Mean (Amot) - 0 / 0 **Mean (External)-** .75 / .5

Mean (Introject)- 2.75 / 4.0 **Mean (Identified)-** 3.5 / 3.75

Mean (Inegrated)- 4.0 / 4.0 **Mean (Intrinsic)-** 3.75 / 4.0

ST#4A-B **Mean Overall Score-** (Pre) 1.79 (Post) 1.96

Mean (Amot) - 0 / .25 **Mean (External)-** .25 / 0

Mean (Introject)- 1.75 / 1.75 **Mean (Identified)-** 3.0 / 3.5

Mean (Inegrated)- 1.75 / 2.75 **Mean (Intrinsic)-** 4.0 / 3.5

ST#5A-G **Mean Overall Score-** (Pre) 2.375 (Post) 2.58

Mean (Amot) - 0 / 0 **Mean (External)-** .75 / .75

Mean (Introject)- 3.5 / 4.0 **Mean (Identified)-** 3.5 / 3.5

Mean (Inegrated)- 4.0 / 3.5 **Mean (Intrinsic)-** 3.5 / 3.75

ST#6A-G **Mean Overall Score-** (Pre) 2.75 (Post) 2.375

Mean (Amot) - 1.25 / 0 **Mean (External)-** 3.0 / .25

Mean (Introject)- 2.5 / 3.25 **Mean (Identified)-** 4.0 / 3.75

Mean (Inegrated)- 2.75 / 3.66 **Mean (Intrinsic)-** 3.0 / 4.0

ST#7A-B **Mean Overall Score-** (Pre) 1.79 (Post) 2.375

Mean (Amot) - 0 / 0 **Mean (External)-** .50 / .75

Mean (Introject)- 2.0 / 3.25 **Mean (Identified)-** 3.0 / 3.5

Mean (Inegrated)- 1.5 / 3.0 **Mean (Intrinsic)-** 3.75 / 3.75

ST#1A-G **Mean Overall Score-** (Pre) 2.125 (Post) 2.375

ST#2A-B **Mean Overall Score-** (Pre) .417 (Post) 1.458

ST#3A-B **Mean Overall Score-** (Pre) 2.417 (Post) 2.71

ST#4A-B **Mean Overall Score-** (Pre) 1.79 (Post) 1.96

ST#5A-G **Mean Overall Score-** (Pre) 2.375 (Post) 2.58

ST#6A-G **Mean Overall Score-** (Pre) 2.75 (Post) 2.375

ST#7A-B **Mean Overall Score-** (Pre) 1.79 (Post) 2.375

Mean Average of Participants (Overall) Score

(Pre) 1.989 (Post) 2.26)

APPENDIX H

FITNESS I PARTICIPANTS: PRE & POST RESULTS

FT#1B-B **Mean Overall Score-** (Pre) 2.5 (Post) 2.79

Mean (Amot) - 0 / 0 **Mean (External)-** .25 / 1.75

Mean (Introject)- 3.75 / 3.75 **Mean (Identified)-** 4.0 / 4.0

Mean (Inegrated)- 3.5 / 3.5 **Mean (Intrinsic)-** 3.5 / 3.75

FT#2B-B **Mean Overall Score-** (Pre) 2.25 (Post) 2.66

Mean (Amot) - 0 / 0 **Mean (External)-** 1.25 / 1.25

Mean (Introject)- 2.25 / 3.5 **Mean (Identified)-** 3.25 / 3.75

Mean (Inegrated)- 3.25 / 3.75 **Mean (Intrinsic)-** 3.5 / 3.75

FT#3B-G **Mean Overall Score-** (Pre) 1.5 (Post) 1.66

Mean (Amot) - .25 / 0 **Mean (External)-** 0 / .25

Mean (Introject)- 1.0 / 1.75 **Mean (Identified)-** 3.0 / 2.75

Mean (Inegrated)- 2.0 / 2.25 **Mean (Intrinsic)-** 2.75 / 3.0

FT#4B-G **Mean Overall Score-** (Pre) 1.75 (Post) 2.08

Mean (Amot) - 0 / 0 **Mean (External)-** .50 / .25

Mean (Introject)- 3.0 / 2.75 **Mean (Identified)-** 3.5 / 3.5

Mean (Inegrated)- 1.0 / 3.75 **Mean (Intrinsic)-** 2.0 / 3.25

FT#5B-G **Mean Overall Score-** (Pre) 1.458 (Post) 1.875

Mean (Amot) - 0 / 0 **Mean (External)-** 0 / 0

Mean (Introject)- .25 / 1.5 **Mean (Identified)-** 3.25 / 3.0

Mean (Inegrated)- 2.5 / 3.25 **Mean (Intrinsic)-** 2.75 / 3.5

FT#6B-B **Mean Overall Score-** (Pre) 2.17 (Post) 2.17

Mean (Amot) - 0 / 0 **Mean (External)-** 0 / 0

Mean (Introject)- 2.0 / 3.0 **Mean (Identified)-** 3.0 / 3.0

Mean (Inegrated)- 4.0 / 4.0 **Mean (Intrinsic)-** 4.0 / 3.0

FT#1B-B **Mean Overall Score-** (Pre) 2.5 (Post) 2.79

FT#2B-B **Mean Overall Score-** (Pre) 2.25 (Post) 2.66

FT#3B-G **Mean Overall Score-** (Pre) 1.5 (Post) 1.66

FT#4B-G **Mean Overall Score-** (Pre) 1.75 (Post) 2.08

FT#5B-G **Mean Overall Score-** (Pre) 1.46 (Post) 1.875

FT#6B-B **Mean Overall Score-** (Pre) 2.17 (Post) 2.17

Mean Average of Participants (Overall) Score

(Pre) 1.94 (Post) 2.20

APPENDIX I

REQUEST FOR A LETTER OF COOPERATION

Date: January 31, 2018

Albany State University
Billy C. Black Building, Room 389
504 College Drive
Albany, Georgia 31705
Phone: 229-430-3690
Email orsp@asurams.edu

RE: Permission to Conduct Research Study

To: The Institutional Review Board Committee Members,

My name is Kenneth W. Kirsch. I am a student at Columbus State University in the Doctorate of Higher Education Leadership & Curriculum Department under the supervision of Dr. Robert Waller. I am requesting to conduct research at Albany State University. The name of my project is entitled: Physical Exercise effects on Self-Determination Levels of College Students). The purpose of this survey is to (examine to what extent the impact physical exercise may or may not have on augmenting self-determination levels of college ages students. This study has been approved by (Columbus State University) Institutional Review Board.

The following study (list the research questions as what the researcher proposes to answer). It is our hope that this information can aid leaders of higher education in regards to increase retention of students as well as increase graduation rates. Self-determined behavior has been linked to academic success and research in physical exercise has illustrated an academic benefit in regards to focus, concentration, cognitive ability, and motivation of students, in particular increasing intrinsic motivation, which is the highest from of self-determined behavior. Therefore, finding ways to enhance self-determination within students could have the potential to increase student retention and graduation rates and physical exercise could be an arena that potentially could have this affect. There are no identified risks from participating in this research.

The questionnaire is anonymous. Participation in this research is completely voluntary and you may refuse to participate without consequence. The questionnaire will take approximately 15-20 minutes to complete. You will receive no compensation for participating in the research study. Responses to the survey will only be reported in aggregated form to protect the identity of respondents and reported in the research section, chapter four and five, of this dissertation. Neither the researcher nor the University has a conflict of interest with the results. The data collected from this study will be locked in a file at the researcher's house and burned within two years after the completion of the dissertation.

Further information regarding the research can be obtained from the principal researcher Kenneth W. Kirsch, Kenneth.kirsch@asurams.edu. Thank you for your consideration. Your help is greatly appreciated.

APPENDIX J

ASU - IRB APPROVAL LETTER

Albany State University

INSTITUTIONAL REVIEW BOARD, IRB

March 22, 2018

Columbus State University
Institutional Review Board
4225 University Ave
Columbus, GA 31907

Re: Letter of Cooperation

To Whom It May Concern:

Please note that Ms. Kenneth W. Kirsch, a doctoral candidate in Higher Education with a concentrations in Curriculum and Leadership at Columbus State University, has the permission of Albany State University's Institutional Review Board to conduct his study entitled, Physical Exercise effects on Self-Determination Levels of College Students. It is understood that the study will examine to what extent the impact physical exercise may or may not have on augmenting self-determination levels of college ages students.

Since ASU is a university within the state of Georgia, our institution would be ideal for his research. Specifically, it is understood that his research can aid leaders of higher education in regards to increasing retention of students, as well as, increasing graduation rates. There are no identified risks from participating in this research. The questionnaire is anonymous, and will take approximately 20 to 30 minutes to complete. There will be no compensation for participating in the research study. Since the USG system is the fourth largest university system in the United States and is undergoing profound changes in developmental courses affecting an estimated 80,000 remedial students, the data from this study can be used to help improve their success rate.

Albany State University is requesting a copy of his IRB approval along with any associated documents. For additional questions or concerns, please feel free to contact Dorene.medlin@asurams.edu or at 229-420-7020 or the Office of Research and Sponsored Programs at 229-430-3690.

Sincerely,

Louise Wrensford

Louise Wrensford, Ph.D.
Ex-Officio, Institutional Review Board

cc:
ORSP

APPENDIX K

KENNETH W. KIRSCH NIH CERTIFICATE

Certificate of Completion

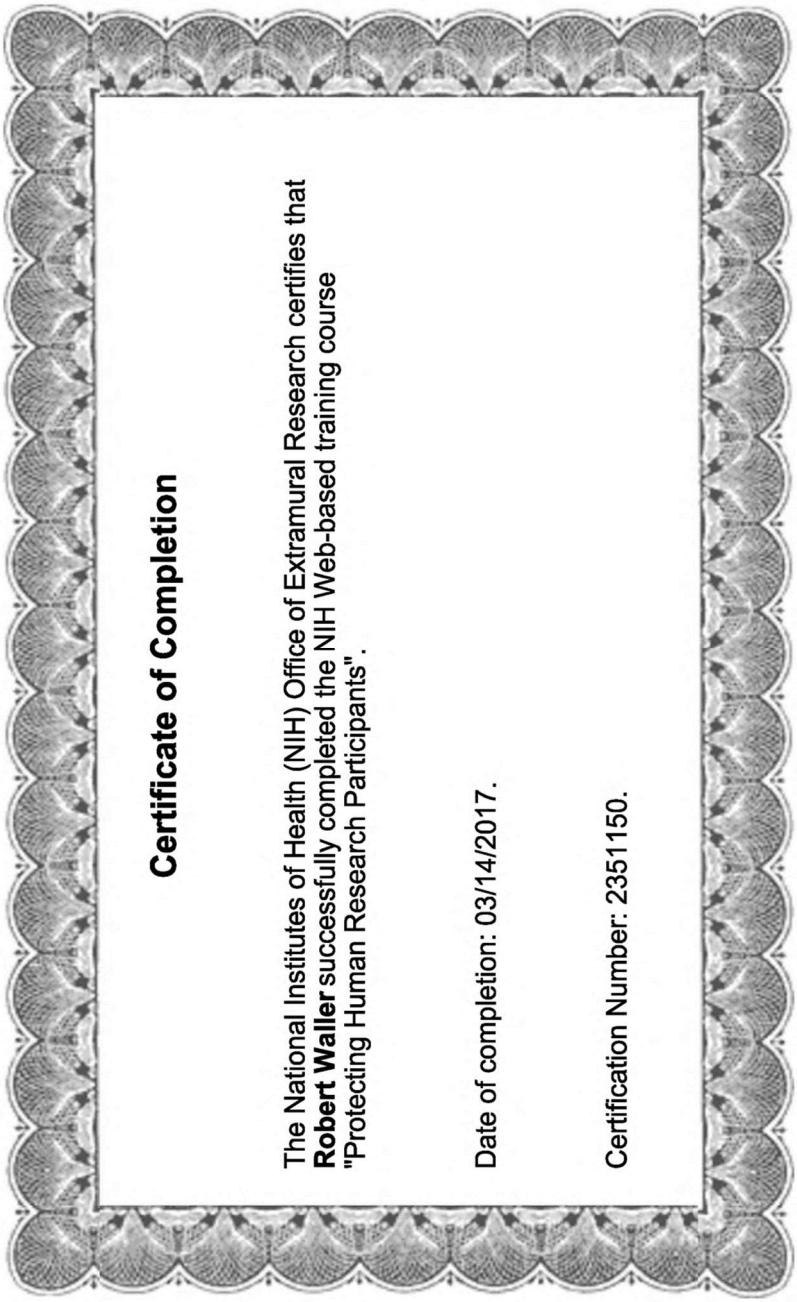
The National Institutes of Health (NIH) Office of Extramural Research certifies that **Kenneth Kirsch** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 01/12/2018.

Certification Number: 2595505.

APPENDIX L

DR. ROBERT WALLER NIH CERTIFICATE



Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Robert Waller** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 03/14/2017.

Certification Number: 2351150.