A Study of the Impact of High School Physical Education Curriculum Choices on Health-Related Fitness Indicators and Motivation for Physical Activity

Beverly J. Ziegler
St. John Fisher College

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First Supervisor
Dianne Cooney Miner

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Timothy Franz

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A Study of the Impact of High School Physical Education Curriculum Choices on Health-Related Fitness Indicators and Motivation for Physical Activity

By

Beverly J. Ziegler

Submitted in partial fulfillment of the requirements for the degree Ed.D. in Executive Leadership

Supervised by
Dissertation Chair
Dr. Dianne Cooney Miner

Committee Member
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August 2009
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Entitled: A Study of the Impact of High School Curriculum Choices on Health-Related Fitness Indicators and Motivation for Physical Activity

Be accepted in partial fulfillment of the requirements for the Education Doctorate degree.

Dianne Cooney Miner, Ph.D., Chair

Tim Franz, Ph.D., Committee Member

September 18, 2009
Dedication

I would like to thank my family for being the one constant in my life. You may never know how powerful that feels to me to know you are all just a call away at any time. To my Mom and Dad and my sisters Margie, Sandy, Karen and Kathy and my brother Bob, thank you for who you are.

I would also like to thank Dr. Meg Keller-Cogan for teaching me the true meaning of integrity and leadership.

Finally, I would like to thank my friends who have supported my efforts though the unexpected challenges that life brings (Kim, Trish, Lisa and Amy). I would like to thank Erin for sharing the new beginnings.
Biographical Sketch

Beverly J. Ziegler is currently employed by Greece Central School district in the Department of Curriculum, Instruction and Assessment. She is the Director of Physical Education, Health and Wellness. She completed her Ed.D at St. John Fisher College in Rochester, New York. She also completed her Certificate of Advanced Study, Master of Science, and Bachelor of Science at Brockport State University in Brockport, New York.
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I would also like to recognize the support I had from the many teachers and athletic directors in the physical education department, who believed in the study and the future of physical education and were more than willing to use class time to gather students for the survey. In addition, I would like to thank the administration for their support of my research, including Ms. Laurie Kaulkman in the Office of Strategic Planning and Evaluation. I would like to thank my executive mentors (Dr. Joan Graham and Dr. Mark Balsamo) for their guidance and support through the course work.
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The research methodology used was a quasi-experimental research design. The study took place at a large suburban district in Upstate New York. The participants were male and female students in grades eleven and twelve from three schools. Some students receive their first choice and some do not receive their choice. This study has
implications for future physical education curriculum programs and enhancement of student performance research.
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Chapter 1: Introduction

Introduction

The obesity epidemic has increased the need for physical activity and improved nutrition in children and adolescents. The trend in physical education is to promote a physically active lifestyle, providing a variety of activities geared toward improvement of physical fitness and health (Centers Disease Control, 2007). The topic of this study is to examine the impact of a choice physical education program among secondary students in grades eleven and twelve in a large suburban district in Upstate New York, by examining the effects on health-related fitness indicators and motivation to be physically active.

More specifically, the impact of curriculum programs such as outdoor adventure education, personal fitness/lifetime activities, team games/alternative sports, and life guarding/fitness offered as an elective option in physical education will be analyzed.

Recent research that examined the relationship between physical activity and academic performance provides physical educators with multiple opportunities to engage others in recognizing the benefits of physical activity and quality physical education programs. This research shows that academic scores are not affected when time is allocated in the schedule for daily physical education instruction (Wilson-Graham, 2007). This research is important to assist local, state, and national decision makers to understand given the recent accountability measures in education and the educational reform influenced by No Child Left Behind (NCLB) legislation. Because of NCLB, principals are often in a position to assess and prioritize the needs of their schools. Sixty-
four percent of principal’s ranked physical education last out of all academic subjects, and thirty-one percent did not even view physical education as an academic area. The principals believed that physical education is not vital to the school’s functioning. Instead, the principals saw physical education as a place to go to be active, not as a subject that is essential to students overall well being (Siegel, 2007). Based on the research, it is clear that a gap exists between need for quality programs and actual action towards ensuring resources support the movement towards quality physical education programs in schools.

The Problem

Americans are choosing to spend more time in chairs, in cars, in front of computers, watching television, playing video games, and sleeping. In addition to the lack of movement is the availability of high fat, high calorie fast food. Thirty years ago the normal size for a soda was eight ounces. Today it is common to consume 32 ounces of soda with a meal. Individuals who are not able to move well for lack of skill, knowledge, or comfort lose more than optimal health (CDC, 2007). Our educational responsibility is to promote lifestyle balance. Based on the literature, the problem is that lack of physical activity and poor nutrition are major factors that contribute to the obesity epidemic. Promotion and support of meaningful, quality physical education experiences may be an appropriate focus to improve health and wellness of students. Creating meaningful choice physical experiences for students is thought to be linked to their self efficacy and in turn their motivation to engage in health enhancing activities and wellness behaviors and possibly increase their overall physical activity levels.
Theoretical Rationale

A major theory used to examine motivation in physical education settings is the Self-Determination Theory (SDT). This theory has evolved for over 30 years from psychological research initiated by Edward L. Deci and Richard M. Ryan and will be utilized as a foundation in the proposed study, analyzing the impact of choice in physical education programs at the secondary level. Self-Determination Theory is an approach to human motivation and personality. Deci and Ryan (2008) said, "To be self determined is to endorse one's actions at the highest level of reflection. When self-determined, people experience a sense of freedom to do what is interesting, personally important, and vitalizing." Quality physical education that focuses on lifetime fitness and health enhancing activities are thought to be one significant solution to the obesity epidemic. Understanding motivation for physical activity could inform future interventions (Wang, Chatzisarantis, Spray & Biddle, 2002). Physical education is a place where promotion of physically active lifestyles in children and adolescents can be accomplished. Physical education teachers can influence students' self-determination through the motivational strategies they use in class (Taylor & Ntoumanis, 2007). Understanding the significance of choice, effort, and persistence in physical activity is a focus for many researchers in the physical education field. The physical education environment may be a predictor of future involvement in physical activity (Ferrer-Caja & Weiss, 2000).

According to Deci and Ryan (2008), the Self-Determination Theory (SDT) is an empirical based theory of human motivation, development, and wellness. The theory focuses on types, rather than just the amount of motivation, paying particular attention to autonomous motivation, controlled motivation, and amotivation as predictors of
performance, relational, and wellness outcomes. The theory also addresses the social conditions that enhance instead of diminish motivation and that people engage in activity with a full sense of choice. SDT does not operate automatically, but rather requires supports from the social environment to function effectively. The relationship between the active organism and social context is the basis for Self-Determination Theory predictions about behavior, experiences and development (Deci & Ryan, 2008). Beyond students receiving choice, the social implications are a key factor in choosing this theory as a basis for the study due to the social nature of a physical education class and the importance of the environment created by the physical education teacher.

In the theory, the basic psychological needs for autonomy, competence, and relatedness are supported instead of minimized, which in turn affects the type and strength of motivation. SDT also examines life goals or aspirations and their relationship to intrinsic vs. extrinsic life goals to performance and psychological health. SDT makes an assumption that people are by nature active and self motivated, curious, interested and eager to succeed due to the fact that success is personally rewarding. The theory does recognize some people may be passive and SDT accounts for this difference in terms of types of motivation (Deci & Ryan, 2008). The theory proposes that all humans have basic psychological needs which are to feel competent, autonomous, and related to others and this is where the social contexts can support this basic need (Deci & Ryan, 2000).

Intrinsic and extrinsic motivation has been studied extensively over the years. Intrinsic motivation refers to the natural tendency that humans have to learn, to engage, or to do something. People have different amounts of motivation, regardless of the type of motivation they may have. There is a basic need for all humans to have autonomy.
competence, and relatedness, regardless of the type of motivation. The nature and focus of motivation will also vary from person to person (Deci & Ryan, 2000). The various reasons, focus, and levels of motivation are different in each individual, which makes it much more complex to examine why someone is motivated to perform. Extensive research and curiosity exists in the field of exercise adherence and its link to intrinsic motivation. Although links between physical activity and health are well documented, many people continue to be sedentary or inconsistently active. Facilitating adherence to exercise is an interest to health care professionals, physical educators, and the fitness industry. Intrinsically motivated people are satisfied by engaging in the activity. They experience competence, interest, and enjoyment. People who exercise for body-related issues are initially considered extrinsically motivated, since their goals concern outcomes extrinsic to the activity itself (Ryan, Frederick, Lepes, Rubio & Shelden, 1997). Regardless of the reason for choosing to exercise or be active, eventually intrinsic motivation is necessary to adhere to a physically active lifestyle.

Numerous studies have been based on the attributes identified in the Self-Determination Theory and the literature has become extensive. There is a significant list of basic issues that have been addressed in Self-Determination Theory. Basic issues such as personality development, self-regulation, universal psychological need, life goals and aspirations, energy, vitality, non-conscious processes, the relations of culture to motivation, and the impact of social environments on motivation, affect behavior and well-being. The theory has also been applied to a wide variety of issues in everyday life. Many other studies have been applied in the sport education field and health care field (Deci & Ryan, 2008).
In a recent study conducted by Standage, Dua, and Ntoumanis (2006) the Self-Determination Theory approach was used to determine students' motivational processes and their relationship to teacher rating in school physical education classes. The central piece of self-determination framework is the assumption that the social context influences and individuals' motivation, well being, and performance. This social framework is essential when studying a physical education environment and that psychological need satisfaction is fundamental to autonomous motivation. The study found that students who perceived an autonomy supportive environment experienced greater levels of autonomy, competence, and relatedness, and had higher scores on an index of self-determination. The findings in this study have helped to provide information in regard to enhancing student motivation in physical education.

A second study supported the findings that physical education teachers can influence students' self-determination through motivational strategies they use. In this study, Taylor and Ntoumanis (2007), examined student perceptions using three motivational strategies: autonomy, support, structure and involvement and predicting student self-determination. The findings supported previous physical education findings and studies and showed a correlation between perceptions of autonomy support, structure, and involvement can predict student self-determination. The study also extended the literature on motivation in physical education by examining student and teacher perceptions of motivation and teacher motivational strategies. The studies found that teachers who invest time and energy in understanding and showing students affection
are more likely to support the self-determination of their students (Taylor & Ntoumanis, 2007).

Another study highlighted the need for links in physical education variables and students' health-related quality of life. The study focused on motivation towards physical education and the impact on global well-being. The social factors identified in Self-Determination Theory such as nurturing students' need satisfaction, motivation and well-being were pertinent in this study. This study specifically sought to examine relationships in students' motivation toward physical education, self esteem, and self reported levels of health-related quality of life. This study did show a small aspect of a child's life and motivational processes within school physical education can play a role in enhancing students' self reported levels of global psychology (Standage & Gillison, 2007).

Significance

To engage intentionally and voluntary in an activity, a person needs to have a choice in determining their level of participation (Ferrer-Caja & Weiss, 2000). Students in New York State do not have the option to opt out of physical education. A possible limitation when looking at student motivation may be the lack of complete choice over the students' involvement in physical education. Physical education in New York is required by law in grades K-12 by all students.

The significance of the Self-Determination Theory through the proposed study is the social norms, which represent a motivation when studying adolescents and their intentions and behaviors. Recent studies have indicated a need for further research connected to aspects of physical and social environment and physical activity participation (Stahl, et al 2001). There is clearly a gap in knowledge about predictors of
motivated behavior in the school physical education setting (Ferrer-Caja & Weiss, 2000). This is a topic of continued interest for physical educators.

Due to the current educational system in physical education, the class size, and structure of class makes it difficult to avoid the social aspect of physical education. The social contexts are a necessary aspect to include when researching student behaviors in a class environment. The New York State Learning standards have not only focused on achieving fitness and wellness and knowing how to access resources in the community, they have focused on the importance of the social aspect in physical education. The learning standards have identified one of three learning standards with a social focus. Students must show competence or proficiency in a variety of performance indicators based on personal and social interactions. The performances indicators in the learning standards require students to meet the guidelines set forth by the New York State Education Department for physical education (NYSED, 2008).

The significance of this study is also supported in the research and in the numerous issues associated with the obesity epidemic. The prevalence of obesity among United States children and adolescents is increasing at an alarming rate (Trost & Kerr, 2001). Overweight and obesity has nearly tripled in children and adolescents in the past two decades. In women, overweight and obesity is higher among members of racial or ethnic minority populations than in non-Hispanic white women. The cause of overweight and obesity results from an imbalance involving excessive calorie consumption and/or inadequate physical activity. Behavioral and environmental factors are large contributors to overweight and obesity and provide greatest opportunity for actions and interventions for prevention and treatment (CDC, 2008).
Quality physical education that focuses on lifetime and health enhancing activities are thought to be a solution to the obesity epidemic. Understanding motivation for physical activity could inform future interventions (Wang, Chatzisarantis, Spray & Biddle, 2002). Research shows a decline in physical activity across teenage years. Adolescent girls have higher rates of inactivity than boys (Biddle & Wang, 2003). Choice in activity has been linked to increased participation in physical education by girls in a study completed with middle school girls (Prusak & Treasure, 2003). A study completed in 1988 focused on physical fitness assessments as predictors of adult physical activity levels. The study showed a link that better childhood scores indicated higher levels of physical activity in adulthood (Dennison & Straus, 1988). Self-Determination Theory is based on a feeling of autonomy within the environment and activities that a student is involved in. School based physical education should provide an environment that encourages physical activity strategies and behaviors that an adolescent can continue into adulthood. Simply requiring physical education in the curriculum does not guarantee increased physical activity. Promoting a motivational climate has been linked to increased self-determination situational motivation and physical activity (Parish, 2003).

By the late 1960's, the increasing number of Type II Diabetic cases in children and adolescents rapidly presented a significant public health issue recognized by the American Diabetes Association in 2000. In the United States, an increase from fewer than four percent to more than 50 percent of new cases of Type II diabetes in the pediatric population was reported between the years 1982 and 1988 (CDC, 2004). Physical inactivity results in substantial, negative health consequences in children and adults. Obesity, high blood pressure, high blood glucose, and high blood lipids all occur
among sedentary adults and the research is indicating that it is now occurring among children. Each year physical inactivity contributes to 260,000 deaths in the United States (CDC, 2007). Unhealthy behaviors take years to clinically present themselves and the increasing statistics involving the youth in the United States is alarming in terms of future implications (National Education Association, 2007). As a result, childhood obesity has increased 100% since 1980 in the United States due to physical inactivity (CDC, 2004).

Good health is said to be a necessity for all we want to do in our lives and should not be ignored if we intend to reduce the obesity epidemic (Kretchmar, 2006). For many years the quality of school physical education has been questioned and many times programs suffer from low status, lack of direction, resources, and failing to offer students meaningful experiences (Lee, 2002). Historically, physical education programs focused on the same curriculum regardless of research and growing student needs. There were few performance expectations for students and teachers and accountability was lacking at all levels K-12. Students could literally be exposed to soccer in the fall, basketball in the winter and softball in the spring every year they attended public school.

The Purpose

The purpose of this study is to determine the impact of choice physical education programs for secondary students in relationship to health-related fitness indicators and motivation to be physically active. There are numerous questions raised when determining what quality physical education is. Programs and curriculum must determine what constitutes a quality physical education program. They must determine what students need to know and be able to do to lead a healthy and active life. Students need to gain confidence and competence in movement to ensure they are more likely to enjoy
physical activity (National Education Association, 2007). The role of physical education teachers and leaders must be to determine what programs work for students and continue to evaluate programs for effectiveness.

The need. Despite the importance of establishing patterns of healthy living and physically active lifestyles during childhood, half of the U.S. children and youth are not active on a regular basis. Studies have shown that middle and secondary schools across the nation devote little curriculum and program time to physical education (National Education Association, 2007). The lack of physical activity among secondary students is a major health concern and may adversely affect their physical, emotional and academic well being. Although research and statistics appear to speak to the obvious need for increased physical activity of the type provided through quality physical education programs, the public response has been slow. In 2006 federal budget cuts of approximately $19 million specifically threatened physical education programs across the country (Lynn, 2007). There is a need to systematically address and improve the fitness and wellness of children and adolescents in our schools. Providing students with programs that may increase their interest, motivation and desire to be engaged in physical activity may provide a necessary link to improved obesity trends and increased daily physical activity levels.

The Research Question

A number of important questions are revealed based on the literature and the gaps that are identified in the research. How do educators successfully get children’s health and wellness recognized as a critical item on the education reform agenda? How will physical education programs be promoted as a viable and effective venue for addressing
the rising obesity rates? How will physical educators document effective programs and student achievement? What are best practices in physical education and how will physical education programs influence student wellness, student academic performance, enjoyment and self efficacy? The questions that follow narrow the study for the purpose of this research. The primary research question is: What is the impact of giving students in grades eleven and twelve choice vs. no choice in physical education curriculum on health-related fitness indicators and motives related to being physically active?

The secondary question is focused on the climate and social contexts in the physical education class. Based on the assumption that self-determined behavior and motivation is based on the balance of social contexts, an environmental research question seems critical. The second research question is what is the relationship of students having choice vs. no choice in physical education curriculum and their perception of class climate (social environment)? The overall goal is to determine how quality physical education programs (outdoor adventure education, team games, personal fitness/lifetime activities and life guarding/fitness) can be measured for effectiveness and gain future support as effective methods of improving student physical fitness and overall physical activity levels. Numerous questions are revealed in the literature and continue to provide researchers with future relevant studies.

Law: The federal government and leading professional organizations such as The National Association for Sport and Physical Education (NASPE) indicate that children should be physically active at least 60 minutes per day. In addition, elementary students should receive 150 minutes of physical education per week and middle and high school students should get 225 minutes of physical education per week, throughout the school
year. These guidelines stipulate that all states should set aside adequate time to accomplish these objectives. It is also recommended that only certified/licensed physical education teachers deliver the subject matter. Learning standards should reflect the national physical education standards and that students be expected to achieve the standards at a competent level.

In New York State, physical education is required by law for students in grades K-12. Students in high school must receive two credits of physical education for graduation. The physical education commissioner’s regulations require elementary students to receive daily physical education in grades K-3. In grades 4-8 students should receive physical education three days a week for a minimum of 120 minutes per week. Students in high school should receive physical education on a block schedule an average of 90 minutes per week or two days one week and three days the following week on a traditional schedule. It is important to note that New York State regulations are not strictly adhered to and districts have provided variations of the regulations for years. In addition to the existing state standards, congress passed legislation requiring every school in the United States that participates in the National School Lunch Act to implement a wellness policy. This legislation which was signed into law on June 30, 2004, by President George W. Bush, required school districts to submit their local wellness policies to the USDA in preparation for implementation at the start of the 2006 school year. The components of the plan include nutrition education, physical activity and other activities related to wellness (Strategies, 2007).

The interesting debate for schools, parents and communities is the response to the recommendations from the federal government and the professional associations. The
research shows an obvious need for increased physical activity, but physical education programs continue to be minimized, reduced and eliminated. What adds to the problem is that 60% of the adult population does not get physical activity on a daily basis and 25% of the adults do not exercise at all. The goal of providing daily physical education to all K-12 students in the nation’s schools presents several challenges that are not easily overcome (CDC, 2008).

If children’s health is a national priority, legislators, parents, teachers, school board members, and administrators must collectively work together to develop solutions that have potential for success at the community level. Budgetary issues are an obvious ramification of increasing physical education requirements. With No Child Left Behind (NCLB) legislation, the academic subjects have become stressed for time in the core content areas of math, ELA and science. The potential increase to time spent in physical education will raise concerns about reductions to other curricular areas (Lynn, 2007).

Our school system has the potential to have a positive impact on the health and wellness of all students. Research has suggested that sound physical education and health programs can assist students to acquire healthy behaviors. School interventions have potential to increase the health and fitness of students. All school members need to begin to see they are part of the solution and must contribute to the focus on health and fitness for all students. Since obesity has reached epidemic proportions, educators must make an effort to teach concepts of healthy living (Cavillini, Wendt, & Rice, 2007). Efforts are also being made to increase the classroom based physical activity programs. These programs are designed to increase the daily physical activity levels for all students in the classroom (Steward, Dennison & Kohl, 2004).
Physical Education and physical activity. A quality physical education program is at the heart of any plan to promote lifelong participation in enjoyable physical activity (Lee, 2007). For a decade reform movements have received attention and were addressed in national and state standards, with the intent of providing developmentally appropriate practices and increased accountability for quality instructional experiences. The standards are tools to use to begin to build program accountability and potential answers to the childhood obesity issue. A lack of accountability at the local, state, and national level has made the standards movement in physical education virtually optional in many places. Lack of physical activity compounds the problem and is a major concern. Physical activity can consist of any daily physical movement activity that will increase health benefits to the individual involved.

Physical activity is determined by the type of movement, how much movement and the level of intensity of the movement (Mitchell, 2007). Physical activity should consist of activities that focus on improving and maintaining appropriate levels of the five components of fitness, which consists of muscular strength, muscular endurance, cardiovascular endurance and flexibility. The fifth component of fitness is maintaining appropriate body fat to muscle ratios through proper nutrition and physical activity. The intent of quality physical education programs are to also increase students' involvement in lifetime activities, which are considered activities that one could be involved in at any stage in life after high school regardless of age.

Definition of Terms

A number of terms are defined below to assist in greater understanding of the many aspects of Self-Determination Theory.
Motivated. To be motivated means to be moved to do something goal directed (Deci & Ryan, 2008).

Autonomous motivation. This type of motivation comprises both intrinsic and the types of extrinsic motivation in which people have identified with an activity’s value and ideally will have integrated it into their sense of self (Deci & Ryan, 2008).

Intrinsic motivation. This type of motivation is defined as the doing of an activity for its inherent satisfactions rather than for some separable consequence (Deci & Ryan, 2000). The activity is interesting and spontaneously satisfying (Deci & Ryan, 2008).

Extrinsic motivation. This type of motivation is a construct that pertains whenever an activity is done in order to attain some separable outcome (Deci & Ryan, 2000). Extrinsic motivators often undermine intrinsic motivation (Deci & Ryan, 2008).

Internalization. Internalization is the degree to which the regulations (external motivators) become integrated with the person’s sense of self (introjections, identification and integration) are three types of internalization (Deci & Ryan, 2008).

Controlled motivation. Controlled motivation consists of both external regulation, in which one’s behavior is a function of external contingencies of reward or punishment (Deci & Ryan, 2008).

Amotivation. Amotivation refers to lack of intention and motivation (Deci & Ryan, 2000).

Social conditions. Social conditions influence what people do and how they feel while acting and as a consequence of acting (Deci & Ryan, 2008).
Chapter 2: Review of Literature

Introduction and Purpose

Childhood obesity is among the hottest health topics today. On average, school-aged students watch over 26 hours of television and spend 30 hours sitting in school each week (Rattigan & Biren, 2007). For approximately 20 years, sedentary living has been an official health hazard and a major risk factor for coronary heart disease (Cavallini, 2006). According to a survey conducted in 2004 by the National Association for Sport and Physical Education, over 76% of parents concerned with escalating rates of childhood obesity rates and the rise in Type II Diabetes, see physical activity as the key to optimal health and academic success (Strategies, 2004). Children's fitness is decreasing at an alarming rate. The Center for Disease Control has determined that approximately 33% of children do not regularly engage in vigorous physical activity. Obesity among children and adolescents is a major health concern affecting the physical and emotional health of youth while increasing their risk of reduced quality and duration of life (Pyle, Sharkey, Yetter, Felix, Furlong & Poston, 2006). Obesity is defined as an excessive amount of body fat that has potential negative health implications, as well as social and emotional implications on children, adolescents and adults.

Numerous reports and studies have identified substantial health concerns in the adolescent population. One of the primary contributors to childhood obesity is the sedentary lifestyle that many young people lead. Students spend countless hours seated in front of computers, watching television or playing video games. Despite the positive
long-term physiological and psychological effects of exercise, many young adults between the ages of 12 and 21 years do not participate in regular physical activity. In attempts to understand motivation for students to change their lifestyle one study implemented “The Stages of Change Model” as a method to understand how individuals change health behaviors (Ciccomascolo and Riebe, 2006). In a study completed at the University of Florida, extreme cases of early childhood obesity were researched using Body Mass Index (BMI). The obese children showed significantly lower cognitive function.

*The cost of obesity.* During the past three decades, the United States has tracked dramatic increases in overweight and obesity, which has become a public health crisis and further disparities are reported across different genders, ages, socioeconomic status, and racial/ethnic groups and geographic regions in the United States based on national data (Wang & Beydoun, 2007). Data from the National and Nutritional Health Examination Survey conducted four times in 16 years, beginning in 1988, found that abdominal obesity increased over the 16 years by 65.4 percent in boys and 69.4 percent in girls. Girls face the greatest danger of becoming overweight during their pre-teens, ages 9-12. Abdominal obesity is significant due to the direct correlation to heart related issues (Strategies, 2007).

Studies completed in 2004 determined there was no indication that the prevalence of obesity among adults and overweight among children is decreasing and remains a major public health concern (Hedley, et al, 2004). Data collected in 2007 in a systematic review and meta-regression analysis showed continued increases in overweight, obesity, and body mass index among adults and children (Wang & Beydoun, 2007).
It is estimated that roughly 300,000 deaths per year are directly linked to obesity. Some common health risks are insulin resistance, Type 2 (adult-onset) diabetes, high blood pressure, high cholesterol, stroke, heart attack, congestive heart failure, cancer, gallstones, gout, breathing problems, reproductive problems, osteoarthritis, and sleep apnea (U.S. Health and Human Services, 2007).

The state of Mississippi has set the record with more than 30% of the adults reaching the obesity status. Colorado is listed as the leanest state with 17.6% of the adults reaching the obesity status (Strategies, 2007). Much of the chronic disease associated with decreased quality of life listed above is preventable. Physical inactivity and unhealthy eating contribute to obesity and a number of chronic diseases. Research has shown that regular physical activity reduces peoples risk for many of the preventable diseases associated with obesity. Research also shows food nutrition can help lower the risk for many of the chronic diseases as well (CDC, 2007).

In addition to the numerous health risks associated with obesity as a result of poor nutrition and physical inactivity, there are a number of sociological factors that affect childhood obesity. Culture influences attitudes and beliefs toward exercise and diet, as well as body image and self esteem. There are inequalities in resources available for healthy foods, exercise opportunities, education, and attitudes regarding being thin and many of these are directly linked to race, class and gender. Future efforts to inform different cultures about health and wellness must take into account the viewpoints of different cultures (Forster-Scott, 2007).

The economic cost of obesity in the United States was determined to cost $117,000 billion in 2000. A recent press release from the CDC, on July 27, 2009 has
issued new information on the cost of obesity in the United States exceeding $147 billion annually. The proportion of all medical costs that are due to obesity increased from 6.5 percent in 1998 to 9.1 percent in 2006. Persons who are obese spent 42 percent more for medical care in 2006 than normal weight people. The study revealed the large health and economic burden of obesity in our country (CDC, 2009).

Another study published and released by the CDC has determined that black Americans are our most obese group in America. This study determined that almost 36 percent of black American’s are obese, more than any other racial or ethnic group. This study looked at blacks in all the states and determined that black Americans were significantly more obese in 21 of the states. Poverty is closely linked to obesity. Black women were more obese than black men. For blacks, Maine has the highest obesity rates. Blacks and Hispanics are more accepting of higher weight than other racial groups and this acceptance has an impact on attitude towards healthy eating and exercise (CDC, 2008).

Obesity is a disease and is defined as the condition of excess body fat to the extent that health is impaired. BMI is body mass index (weight/height) and widely accepted as a measure to assess obesity in children and adults (Wang & Beydoun, 2007). BMI does not account for muscular individuals and can be an inaccurate measure. Overweight is defined as a range of weight considered to be unhealthy (CDC, 2008).

Few people are surprised by the link between obesity and depression; however researchers have suggested that sociocultural factors may affect the association between obesity and mood disorders (Strategies, 2007). A recent study focused on the biomechanical implications of obesity in K-12 learners determined that the research is
limited but provided some evidence of potential issues. Obesity can create more loading and more persistent loading of the joints during locomotion when compared to the non-obese individual. The study also showed that decreased muscle strength relative to body weight may induce earlier knee fatigue. Plantar heel pain was reported as five times higher. Obese children have also been shown to have wrist and arm fractures twice as often as children of normal weight (Strohmeyer, 2007).

Numerous reports have identified substantial health benefits from regular participation in physical activity during childhood. Schools have been identified as the primary agencies responsible for promoting active lifestyles in children. A recent study focused on school programs as a method of increasing physical activity. The research identified quality school programs and the strategies designed to develop successful efforts for partnering with schools for whole school intervention programs as an area for consideration (Lee and Solomon, 2007). According to the 2006 Shape of the Nation Report, only 56 percent of high school students participate in physical education.

A case has been made to mandate and implement daily physical education for all students in every state (Lynn, 2007). It was also reported that only 42 states still require high school physical education, only seven states require two or more credits of high school physical education, and only four states require 135 to 225 minutes per week (Doolittle, 2007). In November, 2007, the Surgeon General announced a year long effort to develop a national action plan for reducing the prevalence of overweight and obesity in the United States. The number of overweight children, adolescents, and adults has risen over the past four decades. Total costs (medical cost and lost productivity) attributable to obesity alone amounted to an estimated $99 billion in 1995. The anticipate cost of the
obesity epidemic is astounding (United States Department of Health and Human Services, 2007).

The research supports that a physically active lifestyle has been identified as a method of preventing and treating Type II Diabetes. The recent decline in time spent in quality physical education has serious implications that can influence the health and well-being of children (Leung, Kamla, Lee, and Mak, 2007). Often physical education is the only physical activity a student will be engaged in during the week. This is significant when linked to the benefits of exercise and physical activity. Exercise guidelines have been studied as compared to the scientific understanding of the body and the beneficial reaction to exercise on Type II Diabetes.

It is important to recognize that maintaining a healthy weight and body fat to muscle ratio must take into consideration proper nutrition. Overweight and obesity results from an energy imbalance. This involves eating too many calories and not getting enough physical activity. Body weight is the result of genes, metabolism, behavior, environment, culture, and socioeconomic status. A changing environment has broadened food options and eating habits. Pre-packaged foods, fast food restaurants, and soft drinks are also more accessible to consumers. Choosing many foods from these areas may contribute to excessive caloric intake. Portion size has also increased over the past decade. Less than 25% of U.S. young people eat the recommended five or more servings of fruits and vegetables each day (CDC, 2005).

One of the most immediate consequences of overweight, as perceived by the children themselves, is the social discrimination. This is associated with poor self-esteem and depression (United States Department of Health and Human Services, 2007). A real
issue exists when students perceive themselves as unfit and overweight, they also tend to perceive their physical ability as less capable. Students who feel less capable in terms of physical ability are often less likely to be physically active. A spiral effect of inactivity seems to take place and leads to a lifetime of inactivity.

Physical self-efficacy appears to be a stronger predictor of motivational responses in physical activity. Students who have higher perceived physical ability, physical self-presentation, effort, and enjoyment were more likely to report higher perceptions of self-preservation and more enjoyment of physical activity, and harder work in physical activity. Physical self-efficacy appears to be a predictor of motivational responses in physical activity (Wright, Ding & Li, 2005). Students need to be taught to be physically skillful in order to engage fully and joyfully in physical activities for life. Lack of motor skills and ability often cause frustration among participants in physical activities, and repeated frustration attempts lead to avoidance of activities (Guedes, 2007). It becomes clear that lack of skill and embarrassment can lead to potential discomfort (physically and emotionally) which can lead to avoidance of movement.

The only activity many students are exposed to during the day is their physical education class. Most high school schedules are designed to offer one and possibly two days a week of physical education class. This means that most days students do not receive any physical activity during the day. Another component that has added to the lack of activity during physical education classes is the fact that many programs continue to offer only traditional programs focused on team games.

The trend for years has been that most people do not participate in traditional team sports throughout life, yet these sports tend to dominate almost all curriculum
models in physical education (Butler, Anderson, 2002). Students tend to lack motivation and the limited gains during physical education are lost when all physical activity stops on non-physical education days and students continue to lead sedentary lives. There is a need for self motivation and motivational interventions. Motivational interventions are common in sport settings, but not as common in educational settings. There are numerous theories that address motivation and self efficacy.

*Focus on lifetime activity.* Never before in our time has the public been more aware of benefits of physical activity and the vast number of benefits that they have for every child and adult. The literature suggests that in order to reverse the trend of inactivity in children and adults it is important to teach them how and encourage them to participate in lifetime activities. Student must be exposed to lifetime activities in school so they can build the skills and knowledge to pursue those activities after school. The curriculum in secondary education must have a clear transition in content that is based on lifetime activities.

*Focus on physical activity.* Physical fitness is defined as a set of attributes that people have or achieve relating to their ability to perform physical activity (U.S. Department of Human Services, 1996). Health-related fitness consists of those components of physical fitness that have a relationship with good health. The components are commonly defined as body composition (relative amounts of muscle, fat, bone and other body parts), cardiovascular fitness (ability of the circulatory and respiratory systems to supply oxygen during sustained physical activity) flexibility (range of motion available at the joint), muscular endurance (muscle's ability to continue to perform without fatigue) and muscular strength (ability of the muscle to exert force).
Health is a state of being associated with freedom from disease and illness that also includes a positive component of health (wellness) that is associated with a quality of life and positive well-being. Wellness is a state of being, describing a state of positive health in the individual, and comprising biological and psychological well-being as exemplified by quality of life and a sense of well-being. Quality of life is a term that identifies an overall sense of well being (CDC, 2007).

The CDC has released reasons why all Americans should be physically active. Physical activity can bring many health benefits when adhered to on a regular basis. Regular physical activity reduces the risk of coronary heart disease and risk of stroke. Regular physical activity also lowers blood pressure, total blood cholesterol, and lowers the risk of developing on-insulin dependent type 2 diabetes mellitus. In addition, regular physical activity helps people maintain a healthy body weight, reduces feelings of depression, reduces stress and builds and maintains healthy bones and muscles (CDC, 2007).

As obesity and diabetes epidemics have become as overwhelming challenge in the United States, professionals must make increased efforts to promote physical activity. One solution suggested by experts in the health and fitness field has been to motivate individuals to increase their daily physical activity. The National Association for Sport and Physical Education published guidelines in 1998 for children. In 2008 federal guidelines were released regarding physical activity for Americans (Constantinoa, 2009).

**District programs.** The district used in this study has developed four elective courses for students to choose. One elective offered is Outdoor Adventure Education as a physical education option for students in grades eleven and twelve in all four high
schools. Based on the demands of increased accountability it has become increasingly important to demonstrate evidence of effectiveness, quality and best practices. The goal of many outdoor experiential programs is to facilitate individual personal development in a broad range of skills (Richards, 1997). In addition to the goals of many outdoor adventure education programs the students in this district must show competency and proficiency in the state physical education learning standards.

The state learning standards focus on personal health and fitness, maintaining a safe and healthy environment, and resource management. The Outdoor Adventure Education Curriculum includes a variety of activities performed in the outdoors that improves students' skill and knowledge of fitness, outdoor activity and experiential learning. Activities may include mountain biking, camping, high and low ropes challenge activities, kayaking, wilderness survival, snowshoeing, cross country skiing, backpacking and many more.

Another option for secondary students is in Personal Fitness and Lifetime activities. This elective is focused on teaching students the skills and knowledge to improve and maintain personal fitness through variety of physical fitness activities. The curriculum also includes a number of units focused on lifetime activities such as golf and tennis. A third option is a more traditional team games option. This curriculum is focused on activities that involve team cohesion and team work while participating in games such as soccer, volleyball, football etc. A final option for some students is the life guarding/fitness elective. Students involved in this curriculum are required to achieve proficiency in aquatics skills and water safety knowledge. All secondary curriculum
tracks are based on achieving the knowledge and skills to improve and maintain personal fitness through increased physical activity.

An additional consideration identified in the research is the lack of program accountability in physical education. As referenced the regulations for time in physical education are often no adhered to in many districts. Actual performance expectations for teachers, students and administrators are limited. There is a resistance to achievement-based assessments and actual performance accountability in physical education. Assessment and grading in physical education has traditionally been considered by tracking attendance and changing clothes. An emphasis on student accountability and mastery of meaningful outcomes will likely increase program, teacher, and student accountability in physical education. Grading in physical education must be reformed as programs increase expectations and become more achievement-based. Physical educators must begin to hold students accountable for more that just showing up to class they must move towards performance based assessment (Johnson, 2008).

Analysis of Research Literature

The key themes in each research study are focused on increased obesity and health issues in children and adolescents as a result of sedentary, inactive lifestyles. The statistics released from the United States Department of Health and Human Services are alarming. Childhood obesity rates continue to climb in the United States. Approximately 13% of children aged 6 to 11 years and 14% of adolescents aged 12 to 19 in the United States are overweight. Adding to the problem is the fact that overweight or obese children are 70% more likely to become overweight or obese adults and are at risk for serious health problems (Strategies 2007).
In a study completed at the University of Florida, toddler chubbiness can no longer be ignored as baby fat. An analysis of data on 1,042 American children found that those who were overweight at least once when measured at ages 2, 3, and 4 were five times as likely to be overweight at age 12. The study suggests that early childhood obesity deserves attention. The American Diabetes Association (2000) reported the prevalence of pediatric Type II Diabetes appears to be on the rise not only in the United States but all around the world (Leung, Kamla, Lee, and Mak 2007). The common themes in each research article are the need to further discuss how regular physical activity can help treat and prevent the major health issues such as obesity and Type II Diabetes.

The overwhelming evidence and research available on the decline of physical activity and increase of health problems in children and adolescents has brought attention to the need for strategies as they relate to programs for schools. The Surgeon General’s report on physical activity and health stressed the need to encourage a lifelong, physically active lifestyle as a top priority for physical educators, health educators, and medical professionals. The success of school wide physical activity programs depends on the teachers and principals who recognize the potential health benefits of integrating physical activity into the total school experience (Lee & Solmon, 2007). Activity recommendations from the federal government and leading professional organizations are not met with action. Even though research and statistics appear to outline the obvious need to address this critical issue of sedentary lifestyles and increased health issues, the reaction and response has been slow, minimal and ineffective in addressing the scope of the problem.
The research has identified common problems with meeting the recommended activity levels for students. Increased time in quality physical education programs is likely to raise concerns about reductions in time spent in academic areas. Budgetary ramifications emerge when new policies are implemented. The cost of increasing the daily requirement is more than most districts can afford. Physical education practitioners must learn to become advocates for change and target the benefits associated with daily physical activity. Since physical activity and physical education are on the decline, despite the research provided to support increased time in physical activity, some researchers have looked at curriculum models as a method of improving physical activity. The research has also linked the use of curriculum models and methods that can promote lifelong activity as a goal at the secondary level (Ciccomascolo & Riebe 2006).

The research suggests there is a direct correlation between physical activity and improved health and well being. One gap identified in the research is the relationship between academic achievement and physical activity. The State of Vermont released guidelines that provide schools with the most recent information on best practices for school nutrition and physical fitness that may influence the rates of child and adolescent obesity and enhance academic achievement (Vermont Department of Education 2005). Based on this research there appears to be an effort in some states to connect improved health and fitness with increased academic achievement.

Further research suggests the need to focus on rising childhood obesity trends and increasing health care costs and the connection with quality physical education programs. The programs must review curriculum to ensure that they reflect best practices. The authors suggest quality physical education programs can provide students with
knowledge and skills for a lifetime, as well as contribute to their academic achievement (Copeland & Stenzel, 2004). The research further suggests that studies must be conducted to determine possible links among physical health and student achievement, school attendance and discipline problems.

*Quality physical education.* The case for daily physical education involves a comprehensive education reform. Physical educators must prepare themselves to be effective advocates for their programs by acquiring the necessary skills to influence others in a planned and organized fashion. Curriculum and lesson plans must be based on best practice and aligned with state and national standards. Physical education practitioners must be able to clearly articulate to policymakers the measurable difference between the current practices of weekly or biweekly physical education and the enhanced benefits of daily physical education (Lynn, 2007). Physical education programs must look internally and examine their current structure, curriculum and ongoing practices. Despite the changes in standards, society and student needs, most physical education programs across the country look surprisingly similar to the programs that existed 20 years ago (Doolittle, 2007).

Student self motivation is an essential ingredient to becoming a physically educated individual and leading a physically active lifestyle. Motivated students seek resources for creating and achieving their own goals (Kamla, Davis-Brezette, and Larson, 2006). Teachers have the responsibility to help students develop motivation. Research in the Self-Determination Theory indicated that students must have support from the teacher to develop autonomy in the physical education environment. There are numerous factors that enhance motivation and the development of intrinsic motivation, self-regulation and
cognitive and physical benefits identified and measured, but the affective and interpersonal/social outcomes had substantial research to support their effectiveness (Richardson, Dillon, Teamey, Morris, Sanders, Benefield & Choi, 2004).

A third study indicated that research in the field needs more investigation into adventure programs such as the type of activities, group size, instruction, and components of programs to make them more efficient and effective (Eagle, Gordon & Lewis, 2000). The studies conducted in this research were measured by The Life Effectiveness Questionnaire (LEQ) designed to measure personal changes likely to occur as a result of adventure education programs. Adventure education programs often identify Experiential Theory as a major instructional component and process that students experience as a result of their involvement in the program. Experiential learning is a process through which the learner constructs knowledge, skill, and values as a direct experience (Bunting, 2006).

Curriculum models have a variety of goals, but current trends in physical education have focused on maximum participation. It is strongly recommended that physical educators and leaders select activities and units that lead to maximum participation for all students in the program. The selection of activities and units that lead to maximum participation for students may be enhanced by determining what student's value and activities they may like and dislike. This type of curriculum development creates the potential for student feedback and student voice. Students reasons for moving and the activities that they identify as enjoyable should be considered when planning and designing curriculum (Kovan et al, 2001).
Physical education is not a core area identified in the No Child Left Behind Act (NCLB). Under NCLB a highly qualified teacher holds a bachelor degree, full state certification, and demonstrated competence in their content area. There is a great deal of discussion regarding the necessary connection between highly qualified physical education teachers and quality physical education programs. Quality physical education teachers will focus their time, knowledge, and attention to creating quality programs (Napper-Owen et al, 2008).

The mission of physical education programs is to enable all students to sustain regular, lifelong physical activity as a foundation for a healthy and productive and fulfilling life (New York State Learning Standards, 1996). Quality physical education should be aligned with the state and national standards. Content should be research-based and students should have the time to practice skills. Students should also have cognitive engagement, clear tasks that are specific and structured. The students should also engage in tasks that they are likely to find success in. Exemplary programs are structured and implemented to engage students in developmentally appropriate tasks that students are interested in. Teachers monitor the performance and provide accurate performance feedback. Physical education should be rewarding, positive, and engaging and interesting (Ennis, 2003).

In addition to the well-documented benefits of a healthy lifestyle are the need to focus efforts on the benefits of regular physical activity and fitness for all students. The benefits of regular physical activity and improved fitness are numerous and well documented. As a nation, it is critical that health care providers and educators continue to communicate the dangers of obesity and the benefits of a healthy lifestyle. A continued
focus regarding communication needs to be on health and not appearance. Health care providers need to be educated in prevention and treatment of overweight and obese individuals. Schools must provide education about healthy eating that is culturally sensitive. The nation must take action to help Americans balance healthy eating and physical activity (United States Department of Health and Human Services, 2007).

A study completed by Texas Education Agency found that students who are more physically fit are also more likely to do well on tests, have better attendance, and fewer disciplinary problems at school (Website: tea.state.tx, 2009). Another study showed that exercise improved decision making and possibly math skills. This study provided students with daily exercise for three months and showed improved brain function (ASCD Smartbrief, 2009).

Physical education, motivation and choice. When studying the impact choice may have on students, an important connection is made with self-determined motivation research. To be self-determined is defined as the perception of choice and having choices as determinants of ones actions. A study that focused on predictors of intrinsic motivation among adolescent students in physical education found predictors of intrinsic motivation and effort were task goal orientation, perceived competence, and the learning climate. There are variations in motivated behaviors such as choice, effort, and persistence while involved in physical activity. The study extended previous research to include high school students, which are considered an age group categorized as vulnerable due to the well documented decline in physical activity. Intrinsic motivation was assessed in its relationship to self reported behaviors. Male and females were also assessed separately in this study (Ferrer-Caja & Weiss, 2000)
In 2002, Weiss and Ferrer-Caja further studied intrinsic motivation with students enrolled in high school elective courses. The study was focused on cross-validating a model of relationship among social-contextual factors, individual differences, and intrinsic motivation in required courses and some students in elective courses. The study involved teachers assessing motivated behavior of students and rated their effort and persistence in class activities. There have been challenges associated with self-determined and intrinsic motivation in relationship to individual choice not always being a predictor of intrinsic motivation.

In this study students from elective courses reported higher scores in all constraints examined except performance climate (perceived competence, task, ego, self-determination, intrinsic motivation and motivated behaviors). The findings in this study indicated that it is important to structure the class in a way that stresses the importance of the learning process, encourages participation, and uses effort and persistence as part of the process used to evaluate performance in class. The results also indicate that having choice in the class activities is not related to intrinsic motivation, but choice should never be eliminated. It suggests the need for identifying conditions that exist under which choice could lead to intrinsic motivation such as cultural backgrounds, student's needs and interests. The study also determined a future need for understanding what attracts students to physical activity.

Summary and Conclusion

The literature review revealed studies that focused on obesity rates and concerns with health and fitness of students. The literature also revealed consistent data on the importance of physical activity on health and fitness. The literature suggests a need to
advocate for quality physical education programs and identifying strategies in schools to address sedentary lifestyles among children and adolescents. The correlation between academic success and physical activity levels seems to be addressed in research as it pertains to health, wellness, and rising obesity among youth.

Based on the literature, rising obesity rates continue to be problematic for schools and communities with little if any significant action being taken by schools, communities and health care organizations. Encouraging a lifelong physically active lifestyle should be a top priority in the joint effort of health educators, physical educators, and medical professionals. Literature also suggests that despite the clear health benefits of physical activity, more than half the adult population does not engage in regular physical activity consistent with the public health recommendations (Centers for Disease Control, 2007).
Chapter 3: Research Design Methodology

Introduction

The study focused on the impact of giving students choice vs. no choice on health-related fitness indicators in pre and post fitness assessments following a ten month physical education curriculum. The study also focused on motives for students to be physically active and their perceptions of the autonomy supportive climate in their physical education program.

Overall Research Design

The general perspective. In this study quantitative methods were used. The research questions focus on health-related fitness indicators which consist of assessments that measure the five components necessary for healthy fitness levels. The first research question focused on what the impact was of giving students in grades eleven and twelve choice vs. no choice in physical education curriculum on health-related fitness indicators and motives for physical activity. The five components of fitness are cardiovascular fitness, muscular endurance, muscular strength, flexibility and body mass to body fat ratios. The health-related indicators are scores students obtain in fall and spring fitness assessments. The fitness assessment used was the fitnessgram, which is a health-related fitness assessment that used criterion-referenced standards called healthy fitness zones (HFZ) to determine student's fitness levels based on what is optimal for good health.

The five components of fitness were measured to determine if students show improvement in scores from fall 2008 to spring 2009. The quantitative data collected was
the Body Mass Index (BMI) to determine appropriate healthy weight. The Pacer assessment is the cardiovascular assessment that tests a student’s ability to run to a cadence that increases in speed throughout the assessment. The student’s performance was determined by counting the number of laps they perform. Muscle strength was assessed by counting push ups performed following a cadence for each push up. Muscle endurance was assessed by counting abdominal curl ups, which is performed to a cadence to control speed. Flexibility was assessed in a sit and reach (lower body). The student was given a measurement score during the sit and reach. This research question was also measured by the using the Motives for Physical Activity (MPAM-R) survey to determine current physical activity interests and motives for involvement in physical activity. This student survey also provided quantitative data as it relates to motivation to be physically active.

The second research question focused on the students’ perception of the class climate and autonomy support. This research question is focused on the relationship between students having choice vs. no choice in physical education curriculum and their perception of the class climate as it relates to self-determined motivation and performance. This research question also utilized quantitative data through the use of a student survey called Perceived Autonomy Support: The Climate Survey. This survey asked students to respond to the curriculum track they were enrolled in and indicate if they received their choice in this curriculum track.

This research design was appropriate for the study because it connects health-related fitness scores, motives for involvement in physical activity and perceptions regarding the social context of physical education class as it relates to self-determined
motivation and performance. Factors in the Self-Determination Theory of human motivation closely link the need for competence (performance), autonomy (active participant in determining behavior, choice) and need for relatedness (need to be related to others and experience satisfaction in participation).

The Research Context

The research took place in a large suburban School District in Upstate New York and involved three out of the four high schools in the district. Two of the high schools are comparable in population size, structure and available resources and consist of grades 9-12. The third school is a middle/high school consisting of grades 6-12. All physical education teachers are certified and have special training as it relates to the unique activities designed for specific curriculum tracks beyond the K-12 physical education certification. The outdoor adventure education teachers have received adventure training, kayak and canoe certification, and various other specialty trainings. The personal fitness/lifetime activity teachers hold additional fitness certifications such as spinning, yoga, Pilates, exercise science, personal fitness trainer, biomechanics, and others.

All three schools offer the choice curriculum track program for the juniors and seniors in their school. A curriculum track is an area of study with a common theme and the student remains in that track for the entire 40 weeks with the same teacher. One high school offers an extra curriculum track in life guarding/fitness. All curriculum tracks contain health-related fitness concepts and skills as part of the curriculum and all students participate in pre and post fitnessgram assessments and complete personal wellness plans.

The study took place during the 2008-09 academic school year which covered activities over a ten month period, specifically from September 2008 – June 2009. The
average size of each class ranges from 20-35 students. Each school has comparable facilities which include outdoor education equipment, extensive fitness equipment and traditional team game equipment. The curriculum at each school has board approved standards based district curriculum. Every program imbeds a personal fitness/wellness focus, as well as building a community of learners (cooperative activities) focus to the curriculum tracks. Students in the three larger schools must rotate into the pool for a unit that aligns with their designated curriculum track. This aquatics rotation is due to facility needs and limitations. The smaller high school does not have a pool and is unable to utilize the aquatics part of the curriculum. One high school has a high and low ropes challenge course on their campus but each high school in the outdoor education track uses this facility at some point during the year as part of their required curriculum.

All students perform a fall and spring fitnessgram assessment focused on the major components of fitness. All students create a wellness plan intended to utilize their fitness assessment data and designate necessary actions (goals) that will help them to improve or maintain the healthy fitness zone rating. The Healthy Fitness Zone (HFZ) is a range designated for each age group and for males and females. The fitnessgram assessment was created by the Cooper Institute of Aerobics Research over 20 years ago. The fitnessgram assessment is the only health-related fitness assessment to use criterion-referenced standards called Healthy Fitness Zones to determine students' fitness levels based on what is optimal for good health.

Fitnessgram. The fitnessgram assessment measures aerobic capacity, body composition, muscular strength and endurance and flexibility. The standards for achievement are research based and indicate levels of fitness necessary for good health.
Many other fitness assessments measure skill related fitness which consists of assessments more appropriate for an athlete and is focused on reaction time, agility and power as opposed to achieving and measuring good health (components of fitness). The fitnessgram also embeds choice into the assessment so the participant may choose an assessment they prefer to perform. For example, aerobic capacity (cardiovascular endurance) assessments allows for a choice of the Pacer or the mile run/walk. Traditional assessments for this component of fitness were often the mile run. The mile run often placed the slowest and physically unconditioned participant in the spotlight by drawing attention to the last participants to struggle to complete the assessment. The fitnessgram uses the Pacer assessment which utilizes a verbal cadence to set a pace for students and students stop the assessment when they break form by failing to make it to the necessary line. This assessment leaves the most conditioned participant as a final finisher instead of the most unconditioned participant.

The fitnessgram program provides each individual student with a written personalized report that is based on their personal data that they input electronically. The report provides the student with recommendations for improvement and hints to help them maintain or improve their fitness and health. Many of the teachers use the data input as an opportunity for students to use the program and have a better understanding of the student options it provides for them. The data was also collected at the district level to help teachers make more informed program decisions and curriculum adjustments. The district requires specific assessments at each grade level and then allows teachers to add other assessments they choose. The district also requires a fall and spring assessment, but teachers may allow for students to check their progress during the year. Students are
encouraged to use the assessment data as a benchmark for fitness goal improvement and improved achievement towards achieving wellness and a living a healthy lifestyle.

*Procedures and Data Collection*

*The research participants.* The student population studied consisted of eleventh and twelfth grade students, ranging from 15-19 years old. The study included at least two classes from each curriculum track in each high school (if two classes are offered in a particular track). The sample size for this study was 792 students. All students in grades eleven and twelve were given the option (assent) to participate in the study and receive consent from their parents. The student sample was determined by who returned the consent and assent forms and who is present on the day of the scheduled student survey. Each large school used a random sample of about 250 students (750 students) and 100 students from the small high school (850 students). There were fewer students who completed all components of the fitnessgram (450 students on most components).

The students who did not receive choice occur because of a variety of reasons, but often because other courses required for graduation are only offered during certain blocks in the schedule or scheduling constraints of preferred tracks. This group of students was designated as the control group in the study. This data relating to receiving curriculum choice was collected in the student survey and reported by students. The first survey question asked students to respond to which curriculum track they are enrolled in and if they received their choice. Each high school completes class registration in a different manner, so it will be important to designate how the selection process occurred for the students. It will also be important to determine how the students received the information
regarding the selections they were allowed to make in their eleventh and twelfth grade physical education class.

The survey was given as close to the end of the school year as possible to ensure students experienced the entire curriculum. The physical education teachers and administration were given detailed instructions to provide students with the background information for the study. The process approved for consent and assent was followed. Physical education teachers administered the survey in the last two rotations of physical education class (which is every four days). This short timeline was important and helped to increase the consistency of administration of the survey in all three schools.

*Instruments Used in Data Collection*

Research on Self-Determination Theory has included laboratory experiments and field studies in various settings. This research has been supported by using a variety of developed questionnaires by Deci and Ryan (2008) to assess different constructs contained in the theory. Each questionnaire contains a scale and description of the scale including the key to the scale. The research utilizing the questionnaires is supported by articles describing studies that used the scale or instrument. The instruments provided by Deci and Ryan are copyrighted but available to use for research projects. Minor adjustments are approved and encouraged to meet the needs of the particular study group. In this study the language referring to sport and athletes was adjusted to refer to physical education and students. The adjustment also included physical education teachers to replace coaches in the questionnaire.

The first instrument used in this study was the pre and post fitnessgram assessment scores intended to measure health-related fitness levels including BMI.
(Quantitative). These data are placed in a fitnessgram program and available electronically in a statistical report. The statistical report was obtained on individual teacher's classes and was disaggregated by age and gender, program choice and the curriculum track they are in. Student identification numbers are available from fitnessgram to allow for correct student connections to be made with fitnessgram data and student survey responses.

The reliability of the fitnessgram data are increased due to the process used to administer the assessment and the procedures in place in the district. Teachers are trained to administer the assessment in the exact manner described in the fitnessgram manual. The district determines exact assessments to be tested at particular grade levels. Each teacher is required to pre assess students using fitnessgram in the fall of each school year and post assess students in the spring of each school year. The student data are placed in the on-line fitnessgram program using specific criteria for input. Teachers are also trained and given supporting documents to ensure appropriate procedures are followed. The data are analyzed annually by the Office of Strategic Planning and Evaluation.

Physical education is a state requirement, successful completion of the course is essential for graduation. The district also includes physical education in the grade point average (GPA) for all students at the secondary level. Students in New York State are required to obtain 2.0 credits at the high school level to meet the graduation requirement. Students are also required to be enrolled in physical education in New York State every year they are in public school grades K-12.

The general information needed was included in the electronic survey on Survey Monkey. Students were asked the class they are in, the teacher, the grade they are in and
(alphas/coefficients above .87 for each subscale) and differential relations with both choices of sport and exercise activities (Ryan, et al. 1997).

The second tool is the Perceived Autonomy Support: The Climate (SCQ); this tool measures self-determination within the social context of the class (Deci & Ryan, 2007). Autonomy support is thought to link to motivation and performance of individuals. Due to the fact that physical education classes are always in a social setting, the social implications or contexts influence motivation, performance, and well-being of individuals who operate within them. The theory hypothesizes that autonomy-supportive social contexts tend to facilitate self-determined motivation, healthy development, and optimal functioning. The (SCQ) scale is concerned with the degree to which the target students perceive the physical education teacher to be autonomy supportive. The questionnaire consists of a seven-point scale. Higher scores indicate greater perceived autonomy support. The short version questionnaire was used. Across domains, the alpha coefficient of internal consistency is virtually always above 0.90. The short form is reported to be slightly less, but has always proven to be effective and a good measure (Deci & Ryan, 2008).

Much of the research in physical education has shown that autonomy support leads to a variety of forms of self-determined motivation. A study conducted on students’ motivational responses toward school physical education and their relationship to self-esteem and health-related quality of life utilized the autonomy five-item scale which coefficients ranged from .73 to .89 (Standage & Gillison, 2007). Other studies that validate the use of autonomy supportive measures include Reeve et al., 2003 in addition
to a variety of additional studies conducted by Standage et al, 2006 in a physical education environment.

The fitnessgram data was collected in the fall and spring semester and was electronically submitted by teachers or students in a lab situation overseen by the teacher for validity. The student survey was administered during a physical education class by either using a portable computer lab or bringing participating students to a computer lab in the school. Teachers provided students with the consent and assent forms following a training and informational session provided by the researcher. Consent and assent forms were utilized to determine which students were able to participate. The student surveys in this study were built electronically using Survey Monkey. The students knew their identification numbers and were able to input the ID number into the Survey Monkey. The survey was conducted by following the scheduled rotation for each school. This survey process took two weeks to complete by rotating through the four day school cycle at each school.

The information obtained involved students and therefore required necessary procedures to ensure the protection of the students. The protection of human subjects was essential due to the need for students to provide information to the researcher. The use of students required a full internal review to ensure the protection of human subjects. The identifiable risk to students in the study was anticipated as minimal to none. The minimal risk could have been the use of student identification numbers, but measures were taken to ensure the data was confidential. The benefits to participation in the research study provided information to assist in the future promotion and support of quality physical education classes that may improve the future health and wellness of students.
Data Analysis

Data analysis consisted of quantitative analysis procedures. The data was reported by first identifying the members in the sample who responded and those who did not. It was necessary to determine any response bias. It was also necessary to provide descriptive analysis of data for all independent and dependent variables and included means, standard deviation, and range of scores. The fitnessgram data was collected from fall 2008 and spring 2009 by the Office of Strategic Planning and Evaluation. The fitnessgram contained Healthy Fitness Zones that were presented on a scale, and this data was collected and analyzed first for statistical procedures and reliability. It was also necessary to determine a statistical test and assumptions associated with the test (Creswell, 2003).

The quantitative procedures consisted of fitnessgram assessment data (BMI, cardiovascular, muscle strength/endurance and flexibility). Pre and post fitness assessment data was compared to determine if students improved their fitness levels during the ten month physical education class. Fitnessgram data was reported in a table showing comparisons of healthy fitness zone achievement and not achieving healthy fitness zone. The fitnessgram data was reported change or no change in health-related fitness indicators as a result of the ten month school year. This data was disseminated by students who received their choice in physical education curriculum track and those students who did not receive their choice in physical education curriculum track, which is considered the control group in this study.

Quantitative data was analyzed from student responses to questions in both the motive for physical activity survey and perceived autonomy survey. The three data
sources were used to determine findings and relationships to the impact of choice vs. no choice. All data sources were initially connected using student identification numbers and then were disseminated, analyzed, and reported in summaries removing the identification of any individual student. The overall analysis reported students who received choice vs. no choice and the potential link to performance in health-related fitness indicators, current motives for physical activity and perceptions of the social environment and support.

Summary of Methodology

The methods, data collection, analysis, and instrumentation provided evidence on whether choice vs. no choice had an impact on students in grades eleven and twelve on health-related fitness indicators. The research also explored the impact of students who received choice vs. no choice and the relationship to motives for physical activity and perceptions of climate in their physical education program. A quantitative method was used for collecting and analyzing the data from a pre and post health-related fitness assessment, as well as a student survey. The control group was the students who did not receive choice in the physical education curriculum program. The results of the study are delineated in Chapter 4.

The study included fitnessgram pre and post school year data. The quantitative data collected was from the first semester (January 2009) and in the second semester (June 2009). The fitnessgram data was analyzed using male and female analysis, grade eleven and twelve comparisons, and individual track differences or similarities. The student survey occurred in the final week of physical education classes during the academic year. This data collected consisted of analyzing survey questionnaire
information and determining if connections were made to motivation, fitness scores, and the impact of the social environment on the student’s performance and motivation to be physically active. The data was also used to determine if students improved health-related fitness indicators as a result of program choice.
Chapter 4: Results

Research Questions

Lack of physical activity and poor nutrition are factors that contribute to the obesity epidemic. Promotion and support of meaningful, effective physical education programs and experiences may be an appropriate focus to improve the overall health, fitness and wellness of students.

This study was a quasi-experimental investigation about the impact of giving students in grades 11 and 12 choice vs. no choice in their physical education curriculum on health related fitness indicators. The study also investigated the impact that choice has on motivation for students to engage in physical activity. The last focus of the study was the relationship that students having choice vs. no choice in physical education curriculum had on their perception of class climate. Self-determined motivation is based on factors such as choice, autonomy, and social climate factors. These factors will impact the levels of intrinsic and extrinsic motivation in individuals. Physical education is conducted in a social environment and this must be considered when determining if student performance is impacted by curriculum, social influences of peers or the environment the physical education teacher creates and supports. The results of the study addressed the following questions:

What is the impact of giving students choice vs. no choice in physical education curriculum health related fitness indicators and what is the relationship to motivation for physical activity? What is the relationship of giving students choice vs. no choice in
physical education curriculum to their perception of the class climate (social environment)?

This chapter presents the results from the fitnessgram pre-test and post-test health related fitness assessments. This assessment includes components of health related fitness such as cardiovascular fitness (Pacer assessment), muscle strength and endurance curl up and push up assessment), flexibility (sit and reach), and Body Mass Index. Three schools participated in the study and pre and post fitness assessment data was collected and analyzed. Comparisons were made to determine any changes in pre and post fitness assessment components when compared with curriculum choice vs. no choice. The control group was the students who indicated they did not receive their choice in curriculum program.

Data were collected and analyzed from a student survey that was focused on motives for physical activity using the Motives for Physical Activity survey (MPAM-R) and perceptions of class climate using the Perceived Autonomy Support: The Climate survey. Both survey tools are based on the research of the Self-Determination Theory. The data from each student survey were analyzed using information students provided regarding their choice or no choice in physical education curriculum. A comparison was made between the control group and the students who received choice. Additionally, each curriculum track was analyzed to determine if one curriculum track was more significant in student performance and perceptions than another curriculum track. A summary of the findings from the results of student pre and post health-related fitness indicators, student motive for physical activity, and climate perceptions is included as the final part of the chapter.
Data Analysis and Findings

The study explored three sources of data to determine if choice had an impact in student performance, motives for physical activity and perceived autonomy support: the climate. In this study the students who did not receive choice in physical education curriculum were used as the control group. The dependent variables in the study were health-related fitness indicators, motives for physical activity and autonomy support climate perceptions. The independent variable in the study was the students who received choice compared to students who did not receive choice in physical education curriculum. The relationship between student performance, motives for physical activity, perceptions of autonomy support, and choice vs. no choice are presented and explained.

Health-related fitness indicator assessment data (Fitnessgram). The pre and post health-related fitness indicator data was statistically analyzed using a Analysis of Variance (ANOVA) on all five components of health-related fitness. The assessments were administered to students nine months apart, once at the beginning of the physical education program and once at the end of the physical education program. There are five components of health-related fitness categories and each assesses a major component of fitness necessary for good health and fitness. The five components include cardiovascular endurance, muscle strength, muscle endurance, flexibility and body to muscle ratio. The number of students in the study fluctuates with each component of health-related fitness due to absenteeism or other factors on the day of the pre and post assessment that may impact student performance on the particular assessment. Table 4.1 provides the results of all five components of fitness.
Table 4.1

<table>
<thead>
<tr>
<th>Measure</th>
<th>Choice</th>
<th>No Choice</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacer</td>
<td>M -2.69</td>
<td>-5.11</td>
<td>.71</td>
<td>.40</td>
</tr>
<tr>
<td></td>
<td>SD 14.63</td>
<td>11.81</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>n 420</td>
<td>27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curl Up</td>
<td>M -1.11</td>
<td>-.16</td>
<td>.13</td>
<td>.72</td>
</tr>
<tr>
<td></td>
<td>SD 16.73</td>
<td>9.38</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>n 508</td>
<td>43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Push Up</td>
<td>M -.03</td>
<td>2.51</td>
<td>3.40</td>
<td>.07</td>
</tr>
<tr>
<td></td>
<td>SD 8.02</td>
<td>13.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>n 502</td>
<td>41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sit and Reach Rt.</td>
<td>M .09</td>
<td>.15</td>
<td>.08</td>
<td>.78</td>
</tr>
<tr>
<td></td>
<td>SD 1.55</td>
<td>1.63</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>n 490</td>
<td>46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sit and Reach Lft</td>
<td>M .14</td>
<td>.15</td>
<td>.003</td>
<td>.96</td>
</tr>
<tr>
<td></td>
<td>SD 1.62</td>
<td>1.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>n 489</td>
<td>46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI</td>
<td>M -4.93</td>
<td>11.47</td>
<td>.46</td>
<td>.52</td>
</tr>
<tr>
<td></td>
<td>SD 145.94</td>
<td>85.47</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>n 372</td>
<td>34</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Pacer assessment. The pacer assessment is a cardiovascular endurance assessment that students perform by running to a mark 30 feet away and returning at to the start at the pace provided by a recorded cadence. This cadence progressively increases in frequency throughout the assessment. The student attempts to perform as many runs as possible meeting the pace of the cadence for a reliable score. The total number of participants in the health-related fitness indicator study for the Pacer cardiovascular endurance assessment was 446. This mean indicated the change in score from the pre and post assessment. The F test result was $F(1, 446) = 0.71, p = .40$. The F test was not statistically significant and therefore the means are the same in pacer assessment category. There is no difference in pacer scores due to choice.

Curl up assessment. The curl up assessment is an abdominal strength and endurance assessment that students perform by doing curl up abdominal raises. Students perform the curl up to a cadence as many times a possible until they break form. The total number of participants in the health-related fitness indicator study for the curl up assessment was 551. The F test result was $F(1, 531) = 0.13, p = .72$. The F test was not statistically significant and therefore the means are the same in curl up assessment category. There is no difference in curl up scores due to choice.

Push up assessment. The push up assessment is a test of upper body muscle strength and endurance and performed to a cadence. This cadence paces students throughout the assessment. The student attempts to perform as many push ups as possible meeting the pace of the cadence for a reliable score. The total number of participants in the health-related fitness indicator study for the push up assessment was 542. This mean indicated the change in score from the pre and post assessment. The F test result was $F(1, 542) =$
The F test was not statistically significant and therefore the means are the same in push up assessment category. There is no difference in push up scores due to choice.

**Sit and reach (left side).** The sit and reach assessment is a flexibility assessment that students perform by with legs straight and bending forward to reach their arms over their legs as far as possible. The assessment is performed both using the left hand and right hand as the dominate hand. The student attempts to perform the sit and reach by stretching as far forward as possible and holding for one second. The total number of participants in the health-related fitness indicator study for the sit and reach left side assessment was 535. This mean indicated the change in score from the pre and post assessment. The F test result was $F(1, 535) = .08, p = .78$. The F test was not statistically significant and therefore the means are the same in sit and reach left assessment category. There is no difference in sit and reach left scores due to choice.

**Sit and reach (right).** The sit and reach assessment is a flexibility assessment that students perform by with legs straight and bending forward to reach their arms over their legs as far as possible. The assessment is performed both using the left hand and right hand as the dominate hand. The student attempts to perform the sit and reach by stretching as far forward as possible and holding for one second. The total number of participants in the health-related fitness indicator study for the sit and reach right side assessment was 534. This mean indicated the change in score from the pre and post assessment. The F test result was $F(1, 534) = .003, p = .96$. The F test was not statistically significant and therefore the means are the same in sit and reach right assessment category. There is no difference in sit and reach right scores due to choice.
Body mass index (BMI). The body mass index assessment is obtained by recording student’s height and weight and placed in a statistical formula. It is a useful tool as an estimate of body weight but does not measure body fat percentages. This is often problematic for individuals who are more muscular and often score at an unhealthy BMI rating. A negative score change in BMI indicates the student actually improved their BMI or gained an appropriate or healthy level of BMI or height to weight ratio. The total number of participants in the health-related fitness indicator study for the BMI assessment was 405. This mean indicated the change in score from the pre and post assessment. The F test result was $F(1, 405) = .46, p = .52$. The F test was not statistically significant and therefore the means are the same in BMI assessment category. There is no difference in BMI scores due to choice.

Motives for physical activity data (MPAM-R). The student survey data on motives for physical activity is divided into five possible areas that are reasons why someone chooses to be physically active. The MPAM-R consisted of 30 questions ranked on a one through seven rating. Seven is ranked as very true for me and one is ranked as not true for me at all. The single classification analysis of variance (ANOVA) statistical analysis was completed to determine significance of differences between the means of both groups. Students completed this survey one time at the end of the school year.

Data on MPAM-R: Interest/enjoyment. The questions that related to interest/enjoyment were focused on involvement in physical activity because the student enjoys the activity or is interested in the activity. The total number of participants in the study on motives for physical activity in the interest response categories was 843.
Table 4.2

*MPAM-R: Interest/Enjoyment*

<table>
<thead>
<tr>
<th>Student Group</th>
<th>n</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Received choice</td>
<td>776</td>
<td>5.07</td>
<td>1.54</td>
</tr>
<tr>
<td>Control group (no choice)</td>
<td>67</td>
<td>4.45</td>
<td>1.61</td>
</tr>
</tbody>
</table>

The F test result was $F(1, 841) = 9.94, p < .002$. The F test was statistically significant and therefore the means are different in the interest/enjoyment category. There is a difference in scores for interest/enjoyment due to choice. Specifically, those who had choice scored higher on levels of interest/enjoyment than those who did not have a choice.

*Data on MPAM-R: Competence.* The total number of participants in the study on motives for physical activity in the competence response categories was 844. The questions related to competence indicate that the student is involved in physical activity because they want to be better or more competent or proficient in one or all physical activity they participate in.
Table 4.3

*MPAM-R: Competence*

<table>
<thead>
<tr>
<th>Student Group</th>
<th>n</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Received choice</td>
<td>n=776</td>
<td>4.92</td>
<td>1.57</td>
</tr>
<tr>
<td>Control group (no choice)</td>
<td>n=68</td>
<td>4.43</td>
<td>1.59</td>
</tr>
</tbody>
</table>

The F test result was $F(1, 842) = 6.14$, $p < .01$. The $F$ test was statistically significant and therefore the means are different in the competence category. There is a difference in scores for competence scores due to choice. Specifically, those who had choice scored higher on levels of competence than those who did not have a choice.

*Data on MPAM-R: Appearance.* The total number of participants in the study on motives for physical activity in the appearance response categories was 840. Questions related to appearance indicate the student chooses to be involved in the activity because they want to look better and are concerned with their physical appearance.

Table 4.4

*MPAM-R: Appearance*

<table>
<thead>
<tr>
<th>Student Group</th>
<th>n</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Received choice</td>
<td>n=771</td>
<td>4.96</td>
<td>1.59</td>
</tr>
<tr>
<td>Control group (no choice)</td>
<td>n=69</td>
<td>4.00</td>
<td>1.70</td>
</tr>
</tbody>
</table>
The F test result was $F(1, 838) = 3.09, p = .079$. The F test was not statistically significant and therefore the means are not different in the appearance category. There is no difference in appearance scores due to choice.

*Data on MPAM-R: Fitness.* The total number of participants in the study on motives for physical activity in the fitness response categories was 842. The questions related to fitness indicated the student chooses physical activity because they want to improve their fitness or are concerned with fitness.

Table 4.5

<table>
<thead>
<tr>
<th>Student Group</th>
<th>n</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Received choice</td>
<td>n=776</td>
<td>5.37</td>
<td>1.45</td>
</tr>
<tr>
<td>Control group (no choice)</td>
<td>n=66</td>
<td>4.89</td>
<td>1.60</td>
</tr>
</tbody>
</table>

The F test result was $F(1, 840) = 6.60, p<.01$. The F test was statistically significant and therefore the means are different in the fitness category. There is a difference in scores for fitness due to choice. Specifically, those who had choice scored higher on levels of fitness than those who did not have a choice.

*Data on MPAM-R: Social.* The total number of participants in the study on motives for physical activity in the social response categories was 839. The questions related to social indicate the student chooses to be physically active because they want to be with friends or around other people who are doing the physical activity.
Table 4.6

*MPAM-R: Social*

<table>
<thead>
<tr>
<th>Student Group</th>
<th>n</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Received choice</td>
<td>772</td>
<td>4.81</td>
<td>1.47</td>
</tr>
<tr>
<td>Control group (no choice)</td>
<td>67</td>
<td>4.48</td>
<td>1.60</td>
</tr>
</tbody>
</table>

The F test result was $F(1, 837) = 3.17, p = .08$. The F test was not statistically significant and therefore the means are not different in the appearance category. There is no difference in scores for social due to choice.

*Perceived autonomy support: Climate data.* The student perceived autonomy climate support survey consisted of six climate questions ranked on a one through seven rating. The single classification analysis of variance (ANOVA) statistical analysis was completed to determine significance of differences between the means of both groups. The total number of participants in the study on climate was 861. The questions in this survey indicate if the student felt they had choices, were supported and understood by the physical education teacher.
Table 4.7

*Perceived Autonomy Support: The Climate*

<table>
<thead>
<tr>
<th>Student Group</th>
<th>n</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Received choice</td>
<td>792</td>
<td>5.33</td>
<td>1.59</td>
</tr>
<tr>
<td>Control group (no choice)</td>
<td>69</td>
<td>4.45</td>
<td>1.54</td>
</tr>
</tbody>
</table>

The F test, which is the value by which variance homogeneity was tested is $F(1, 859) = 19.50, p<.001$. The F test was statistically significant therefore the means are different in the climate study. There is a difference in scores for perceived autonomy support: climate due to choice. Specifically, those students who had a choice scored higher on levels of perceived autonomy support than those who did not have a choice.

*Additional data for climate perceptions: Analysis of curriculum tracks.* The student climate survey was analyzed by curriculum tracks to delineate the relationship of climate perceptions in each curriculum program with perceptions of climate in the individual curriculum tracks. The single classification analysis of variance (ANOVA) statistical analysis was completed to determine significance of differences between groups as it pertains to the three curriculum tracks (team games/alternative sports, personal fitness/lifetime activities, outdoor adventure education). If the climate grouped mean was $0 - 2.999$ this was coded as dissatisfied with the autonomy support. If the climate grouped mean was $4 - 7$ this was coded as satisfied with the autonomy support. The number of students in all curriculum tracks was 854. The overall F test results for
climate ranking satisfaction is $F(3, 854) = 6.98, p<.001$. This test showed students were mostly satisfied and therefore the means were different.

Table 4.8 compares percentages of students satisfied in their perception of autonomy support: the climate in each curriculum track. If the climate grouped mean was 0 – 2.999 this was coded as dissatisfied with the autonomy support. If the climate grouped mean was 4 – 7 this was coded as satisfied with the autonomy support. There is a difference in curriculum track satisfaction and the data are helpful to utilize in future curriculum considerations and teacher professional development opportunities.

Table 4.8

Comparisons of Curriculum Track Climate Satisfaction

<table>
<thead>
<tr>
<th>Curriculum Track</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>% Satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team games/alternative sports</td>
<td>489</td>
<td>5.24</td>
<td>1.65</td>
<td>89.4%</td>
</tr>
<tr>
<td>Personal fitness/lifetime activities</td>
<td>213</td>
<td>4.98</td>
<td>1.55</td>
<td>88.9%</td>
</tr>
<tr>
<td>Outdoor adventure education</td>
<td>105</td>
<td>5.84</td>
<td>1.28</td>
<td>99.0%</td>
</tr>
</tbody>
</table>

The data presented analyzes students who received their choice in curriculum and degree of satisfaction with their perceptions of the class climate against students who did not receive their curriculum choice and their degree of satisfaction with their perceptions of class climate. The number of students who completed the survey on climate was 772. The number of students who received their choice was 717.
did not receive their choice was .55. The mean of students who received their choice was .91. The mean for students who did not receive their choice was .89. The standard
devation of students who received their choice was .28. The standard deviation for
students who did not receive their choice was .39. The F test is $F(1, 771) = 5.29$, $p < .02$. The F test showed a trend in the expected direction and therefore the means are different. There is a difference in scores for highly satisfied students who received their choice.

*Gender.* Gender differences were analyzed as a covariance in all tests and did not result as having any significance in the study.

*Summary of Results*

The pre and post health-related fitnessgram data show no statistically significant changes in improvement scores as a result of being in any particular physical education curriculum track, regardless of receiving choice or not receiving choice (control group) in curriculum program. On the other hand, the students receiving choice showed a statistically significant higher mean in motives for physical activity in three of the five categories (interest/enjoyment, competence and fitness). The social and appearance categories did not show any statistical significance between the two groups. The fitness category mean was the highest for both male and female students, indicating fitness as reasons for being physically active. The perceived autonomy: climate analysis showed the group that received choice to have a higher means score than the control group that did not receive their choice. Autonomy and choice are related concepts in the Self-Determination Theory.
Chapter 5 will provide a discussion and the implications of the results from the study. It will also provide considerations and recommendations based on the findings in this study that may inform future program decisions.
Chapter 5: Summary and Discussion

Introduction

This study was an examination of the impact that students in grades 11 and 12 receiving choice vs. no choice in their physical education curriculum had on health-related fitness indicators. The study also examined the relationship of the motives for physical activity with students who received choice vs. no choice in their physical education curriculum. Lastly, the study examined the impact of the students who received choice vs. no choice and their perceptions of autonomy support: the climate, in their physical education class. This chapter presents a discussion of the study and examines the implications the study may have in relation to the literature and current practice in the physical education field. Limitations in the study will be identified and recommendations for future research will be provided.

The vast numbers of studies on obesity suggest that our national school system has the potential to have a profound impact on the health of the children and adolescents (Lee & Solomon, 2007). Sound programs can have potential to offer critical information in how to be physically active, why to be active, and how healthy behaviors can impact your life. Literature has suggested that all members of school systems must become involved in the hopes of making any contribution to reversing the obesity epidemic (Cavallini, Wendt & Rice, 2007). Classroom based physical education is being promoted in many schools in the effort to increase daily physical activity for all students, regardless of the day they have their actual physical education class. Teachers must begin to believe
they must help provide students with daily physical activity and commit to this effort, especially at the elementary level (Stewart, Dennison, Kohl & Doyle, 2004).

**Discussion.** The lack of physical activity and poor nutrition are major factors that contribute to the obesity epidemic for children, adolescents and adults. Promotion and support of quality physical education programs may be an important focus for future solutions to assist in improving the health, fitness and overall wellness of students. The research indicates that students become less active in high school and therefore this study focused on students in grades 11 and 12 (Lee, 2007). The importance of the age group in this study is significant. Students are entering adulthood and becoming more independent. Students will soon face the decision to become active individuals and potentially utilize the knowledge and skills necessary to lead a healthy and fulfilling life.

**Methodology.** This study was conducted in a large suburban district in Upstate New York, consisting of three high schools with similar programs, teacher training, and curriculum. The methodology for this study was a pre and post health-related fitness assessment. The fitness assessment, called a fitnessgram, was given at the beginning of the program and end of the nine month period. The major five components of fitness were used in the study (cardiovascular endurance, muscle strength, muscle endurance, flexibility and body to fat ratio) and are considered health-related fitness indicators. The second instrument utilized in the study was an electronic survey focused on motives for physical activity (MPAM-R) student survey (Deci & Ryan, 2007). The final instrument is this study was the perceived autonomy support: the climate student survey in class. This survey was given to students during their physical education class. All students in grades 11 and 12 were given the opportunity to participate in the study. The students who did
participate were those who were in school the day of the student survey and were interested in providing feedback on their program.

Findings and interpretations. The health-related fitness indicators from the fitnessgram assessment did not show statistically significant differences in improved scores when compared with pre and post assessment data in any of the components of fitness tested, regardless of the student group (receiving choice vs. no choice). Based on this research, students receiving choice in their physical education program did not have an impact on their health-related fitness scores. Student improvements in fitness scores after nine months in specific physical education programs were not significant in this study. In many cases students health-related fitness scores were lower and showed a slight decrease in performance. The average score of students who were in a healthy fitness zone in the pre-assessment, remained in the healthy fitness zone, regardless of the decrease in fitness assessment scores in the post assessment.

The motives for physical activity survey data provided some insight on why students choose to be physically active. This data can provide some meaningful information to inform future program and curriculum considerations. The motives for physical activity assessed five different categories (interest/enjoyment, competence, appearance, fitness, and social). The students who received their choice in physical education curriculum showed a difference in scores in three of the categories. The statistical level of \( p > .5 \) was used to determine significance. The three categories that showed a difference in reported motives for physical activity due to choice were students the following: Interested/enjoyed physical activity, want to be competent in physical activity, want to improve their fitness. The fitness category had the highest mean score.
for motive for being physically active in both males and females regardless of choice or no curriculum choice.

The final research question focused on the students’ perceived autonomy, which is their perception of the climate in the class and the support they feel from their physical education teacher. The data from the climate survey showed that there was a difference between the students who received their choice in physical education curriculum and the control group, which were the students who did not receive their choice in curriculum. The students who received choice responded that they felt more autonomy support in the class than the students who did not receive their choice.

This data are important to consider and supports the critical role the teacher plays in motivating students, helping them to feel comfortable and being more self-determined in their current and future physical activity pursuits. The findings support the need for students to feel they have choice in their program. An element of autonomy support is the feeling of having a choice. People tend to engage in activity if the social conditions support motivation, engagement, and they feel they have a full sense of choice. This data has implications for teachers to consider as they help students to become more self-determined and lifelong physically active individuals. Autonomy support and climate is linked to self-determination behaviors. Helping students to feel they have a voice, have choices, and are supported, is important and supported in the findings of this study.

Additional findings that are useful to consider in future physical education curriculum decisions is the information provided that indicates most (99%) students in the outdoor adventure education curriculum were highly satisfied with their autonomy support. One factor that could explain the reason outdoor adventure education was ranked
higher than the other curriculum areas is that most, if not all of the students in this particular program wanted to be there. It is also important to consider that the students who received their choice ranked their satisfaction with autonomy support as highly satisfied on the scale.

*Data.* To differentiate the groups in the study the students were given labels of choice and no choice (control group). The data were linked using student identification numbers. The groups performed their pre fitness assessment and post fitness assessment with no prior knowledge of being connected to a study. Specific fitnessgram assessments were chosen based on consistency of application of all three schools and each represented a major component of fitness necessary for good health. This analysis showed that the pacer test was not statistically significant in student performance regardless of the group F(1, 446) = 0.71, p=.40. The student group receiving choice had a mean of -2.69 on the pacer and the control group, with no choice, had a mean of -5.11. The post assessment raw data scores were actually less in some assessments than the pre assessment scores for both groups, but were not statistically significant. The remaining health related fitness components showed similar patterns in the findings.

The motives for physical activity data provided evidence that supports the need to continue to consider choice and options in physical education curriculum programs. The students who received choice indicated that fitness, enjoyment/interest, and competence were reasons for being physically active. There was no difference in social and appearance scores regardless of choice, but it was identified as a motive for being physically active for many of the students. The reasons students choose to be physically active must be a consideration by leaders and teachers in future curriculum decisions and
program design. This finding is supported by Weiss and Ferrer-Caja (2002) in the study of high school elective physical education courses and intrinsic motivation in students. The study was similar in the claim that choice should never be eliminated as a part of effective physical education programs.

The perceived autonomy support: climate findings provided evidence that supports the need to develop and maintain a learning environment that helps students to feel they have options, choices, feel understood, have a voice and supported by the physical education teacher. The teacher creates the climate for individual students in the physical education class, as well as feeling they had a choice in their experience. The student mean scores for perceived autonomy support who received their choice in curriculum were higher than students who did not receive their choice. The student’s feedback and findings should be a consideration in future scheduling, teacher professional development opportunities, and curriculum considerations. Both motive for physical activity and perceived autonomy support show trends in the expected direction though they do not reach the traditional level of statistical significance. These findings are supported in the studies on self-determined motivation. The findings by Ferrer-Caja and Weiss (2000) reported that the perception of choice is important for students and directly connected to intrinsic motivation and factors related to self-determined motivation.

One aspect of the study that is important to note is that the majority of the students in all three high schools received their curriculum choice in a very complex and challenging scheduling system. Providing student’s program options must be a
consideration for future efforts to improve existing programs and help students learn skills and knowledge necessary to improve health, fitness and wellness.

Implications

Literature. The literature suggests the need to reform physical education programs (Lee & Solomon, 2007). The studies related to health-related fitness indicators have been used infrequently by researchers. One study indicated that students who perceived the motivational climate as a mastery climate had higher levels of perceived competence and better, healthier scores on the health indicators (Bryan, 2006). Another study indicated the need for physical education teachers to overcome the resistance to achievement-based grading and therefore increase the need for student accountability (Johnson, 2008). Programs have suffered for decades due to lack of administration, teacher and student accountability. Student performance expectations have been limited and non-existent in most programs.

One limitation that will be discussed in greater detail is the lack of consistent performance expectations in physical education classes, especially in health-related fitness assessments. Teachers frequently provide feedback regarding their struggle to motivate secondary students to perform their best on fitness assessments. Students provide feedback to teachers that they will often stop when they achieve their healthy fitness zone regardless of mastery of performance. The lack of student motivation and mastery or proficiency performance expectations can be a potential explanation for the disappointing health-related post fitness scores in all the fitnessgram assessments collected.
The findings regarding motives for physical activity provides some insight as to why the students choose to be engaged in physical activity. These findings are important as they relate to the need for researchers to focus on curriculum models as a method of improving physical activity in students. The activities need to focus on promotion of lifelong physical activity at the secondary level (Ciccomascolo & Riebe 2006). The findings in this study suggested that students who had choice were physically active because fitness was important, competence in the activity was important, and enjoyment/interest was important to them. This information is necessary to consider in future curriculum revisions and reform efforts.

The competence category may provide some insight for future performance expectation and accountability in physical education. Exploring consistent performance expectations in physical education has been addressed in the literature as a necessary focus in future programs and research (Johnson, 2008). Students indicated they are physically active because they want to be competent in activities. Educators need to consider how they can shift programs and begin to address the need to create a learning environment that is focused on performance expectations. Better connections also need to be made for students, to help them understand that health-related fitness indicators are factors that are directly related to overall fitness, wellness, and quality of life. The fitnessgram assessment is a measurement tool that can provide students the data to inform them about necessary fitness areas to focus on.

The motives students indicated they become physically active is also important to consider and continue to study. Previous studies in Self-Determination Theory have shown that people who are physically active for body-related issues are considered
extrinsically motivated because the goals or reasons for the physical activity are outside
the activity itself (Deci & Ryan, 2008). Eventually a shift to intrinsic motivation is
necessary for students to adhere to in order to continue a physically active lifestyle. This
motivational shift is necessary to consider when reviewing secondary physical education
programs and the necessary goal of helping students choose to adhere to a lifetime of
physical activity. This study helps show a trend towards the need to support considering
reasons why students choose to be active when designing programs and curriculum
offerings for secondary students.

The motives for physical activity findings should be linked to the perceived
autonomy support findings, as they provide additional information that supports the need
to consider student choice in current and future program considerations. The findings
from the student autonomy support perceptions: climate was favorable for students who
had choice in their curriculum. They felt they had choices and options, were understood
by the teacher, believe the teacher had confidence in them, encouraged them, listened,
and understood them. These findings are necessary for educators to consider and support
the literature that has determined the teacher can influence students’ self-determination
through the motivational strategies they use. Students respond positively to autonomy
support as evidenced in this study. Students also respond to structure and involvement as
motivational strategies that support self-determination. Literature supports the notion
that teachers who invest time and energy in understanding and showing students affection
are more likely to support self-determination in their students (Taylor & Ntoumanis
2007). This is such a critical factor for teachers to understand based on their need to help
motivate students and assist them in becoming more self-determined individuals.
Teachers often express frustration in student motivation levels at the secondary level but often continue to provide students with the same curriculum and traditional environment they learned 30 years ago (Doolittle, 2007). Many programs are beginning to take responsibility for their role in diverse curriculum options and the need for physical education teachers to help students learn to be extrinsically motivated, with the hopes of moving them towards intrinsic motivation in some lifetime activities. This study supports the need to continue to explore programs and options that may help all students become more involved in physical activity. Efforts should continue in educational leadership that supports the need for teachers to create an environment that offers students choice, support, and a voice. The focus on student motivation in physical education should continue to focus on the role choice may have on motives for physical activity and perceived autonomy support. Future efforts to improve programs and curriculum offerings for students should continue to explore what students choose to focus on.

This study included student perceptions of autonomy support because the social environment is a necessary focus with self-determination behaviors. The central focus in the self-determination framework is the assumption that the social contexts influence an individual’s motivation (Standage et al., 2006). The social framework had to be a consideration in the study due to the social aspect in each physical education program. The physical education teacher’s ability to support individual student autonomy in a class with 30 students is an important finding in this study and something that should be considered a trend in the direction supported by literature in the field and in the Self-Determination Theory.
Student satisfaction in the environment (climate) is essential to feeling autonomous motivation. The literature suggests that the physical education environment may be a predictor of future involvement in physical activity (Ferrer-Caja & Weiss, 2000) and must continue to be an area of focus for educators. Again this study supports the need for teachers to invest the time and energy in supporting student autonomy as a strategy of increasing student motivation to be physically active in future physical activity pursuits. A positive experience in the physical education program may increase future adherence to some type of physical activity.

The findings related to individual curriculum options revealed that outdoor adventure education had a 99% satisfaction rating from students on their autonomy support perceptions. The literature has suggested that the aim of outdoor adventure education programs is to facilitate individual’s personal development in a broad range of skills (Richards, 1997). The favorable student responses in the outdoor adventure education programs should be studied for future program decisions and effective, quality physical education models. The program is focused on student’s personal development in skills that they find interesting and enjoyable, skills that are new and challenging, and pursuits that require team and individual commitment. Outdoor adventure education philosophy and program goals may inform future curriculum models and programs. The program is focused on building competence in new skills that are performed in enjoyable activities, with a foundation in improving overall fitness and wellness. Student satisfaction and feelings of autonomy support are directly linked to self-determined behaviors. Future programs and leaders may want to explore the qualities of outdoor
adventure education programs and consider methods of increasing opportunities for students.

*Practice.* Implications of this study can be examined from many levels of the educational process. The findings suggest that choice in program may have a relationship with student's motivation and self-determination behaviors. It is important for physical education teachers to know and understand that they can have an impact on student motivation by helping them to have choices, feel they are supported, successful and have a voice in the class. Physical education professional development opportunities should include strategies that assist teachers in managing large groups, while helping individual students feel connected and important.

Policies tend to exist in written form only and little, if any, substantial action takes place to improve and track program and student success. The federal government has released physical education grant funds over the past eight years, but the needs of the schools far exceed the availability in funds. Programs must have leadership support, time in scheduling, and funding to assist in moving programs towards more meaningful, quality physical education.

At the school and district level many of the stakeholders do not have a shared vision on the importance of health, fitness, and wellness. Often lack of finances impedes choice programs, progress, and program growth. Scheduling challenges often limit options and choices for students. Large class sizes impede teacher efforts to create autonomy supportive learning environments for all students. Many programs continue to utilize curriculum that existed 30 years ago (Doolittle, 2007). Since the New York State Learning Standards release in 1996, programs were forced to adjust curriculum
documents, but often the reality of program options for students continue to be traditional. A systemic approach is important to consider when attempting to improve the impact that physical education programs can have on student health, fitness, and overall adherence to physical activity.

Policies at the state level exist and require physical education in grades K-12. The average time in physical education should be 120 minutes per week for grades 4-8. Grades K-3 is required to have daily physical education. Grades 9-12 are required to average 90 minutes per week (NYSED). This usually results in physical education one day a week and sometimes two days a week. This physical education class is often the only time students are active during the week. The requirements in the commissioner’s regulations are specific to time. The state education department rarely enforces regulations in physical education and districts are left to comply to the regulations with little if any accountability. At the national level, physical education guidelines have recommended students at the secondary level receive at least 225 minutes of physical education per week. Most of the states do not comply. All students can benefit from increased time spent in quality physical education programs that include curriculum choice options and focus on motivational strategies to enhance physical activity pursuits (Doolittle, 2007).

Physical education college preparation programs and professional associations should continue to focus efforts on program accountability, and performance expectations for leaders, staff, and students. Students should be required to obtain skills and knowledge of fitness-based curriculum and non-traditional activities as a core to their educational program.
Future research. The current literature is extensive in the area of obesity and overweight and the need for action. Current statistics on childhood, adolescent, and adult obesity and overweight are dismal and not showing signs of improving. This epidemic continues to worsen regardless of the vast number of studies, media attention, and health care costs and concerns. Schools continue to focus efforts on state tests in math and English, and seldom link student achievement to include the physical education programs, student’s health, fitness, and overall wellness. A recent study (Texas, 2009) provided evidence that students who are physically fit tend to perform better on state exams, have fewer disciplinary problems and fewer absenteeism. Given this research, educational leaders continue to reduce time in physical education and physical activity for students. Future efforts must include assisting all schools to enhance the efforts to provide increased physical activity for all students on a daily basis. It is clear that physical education alone will not reverse the obesity epidemic, but it can certainly lead the effort by a commitment to quality programs for all students.

This study could impact future research and efforts at the secondary physical education level. Secondary students lack meaningful daily physical activity and this continues to be a major health concern in middle and secondary. Schools across the nation devote little curriculum and program time to physical education (National Education Association, 2007). Future research should continue to explore the need to focus efforts on secondary programs. As the literature indicated the needs to focus efforts on students at the secondary level are well documented, but the response is slow (Lynn, 2007). Based on research that 60% of adults do not get daily physical activity and 25% of adults do not get any physical activity, the future is not bright for our adolescents who are
moving into adulthood (Strategies, 2007). The value and impact of choice in program curriculum for secondary students from this study has implications for future curriculum models and future research on health related fitness indicators. Future research focused on effective quality physical education curriculum models could also enhance and improve practices and the overall goal of improving the health, fitness, and wellness of students. Future efforts must also continue to explore the role of performance accountability in leaders, teachers, and students in physical education.

This study can also have an impact on future research focused on motivation for students at the secondary level to be physically active. Professionals are seeking answers and methods for motivating students to be physically active. The motives for physical activity and autonomy support data should be considered valuable contributions to consider when determining methods of helping students become more self determined individuals. Future research should consider physical activity that students enjoy and are interested in and motivated to do, and how can districts expose students to these types of experiences.

Limitations

While the study provides some insight into the impact of choice as it relates to health related fitness indicators, motives for physical activity, and perceptions of autonomy support by physical education teachers, which may lead to increased self determination; there are some limitations of this study that should be acknowledged. The study could have been strengthened by administering the post fitness assessment earlier in the school year, instead of waiting until the last month of school. Students in grades eleven and twelve appeared to lack motivation when performing the fitness assessments.
Students in this study have completed fitness assessments as part of their regular physical education program since third grade. Typically, the results of the fitnessgram assessment tend to be impacted by effort and motivation at the high school level and less and this directly effects actual achievement. Additionally, student absence, or students who did not complete both the pre and post fitnessgram were not used in the study. The sample size could have been increased with more complete student assessments and more importance placed on effort to reflect students’ actual health-related fitness. Future efforts by teachers can be focused on enhancing the performance of students by considering performance expectations and increasing importance of assessment with students.

The study provided some valuable feedback from students, but could be expanded on with student focus groups. Focus groups would allow students to provide some additional information regarding their program, choices, and the value they place on physical activity. Student voice is critical and valuable, especially with seniors who are leaving the program and potentially providing valuable program information. Lastly, teacher feedback and perceptions on student motivation for physical activity would be valuable to consider and compare with student feedback.

Recommendations

Although the purpose of this study was to present evidence of improved student performance on health-related fitness indicators, as a result of participating in a choice physical education curriculum, improvements in student mean scores did not occur. However, the data regarding motives for physical activity and student perception of autonomy support should be noted as findings that show a trend in the expected direction, though they do not reach the traditionally accepted levels for statistical significance. The
results of this study indicated that choice can inform future program considerations for students and makes sense to continue given the student satisfaction ratings. Providing students options and choices can enhance their interest, enjoyment and overall satisfaction with the climate of the class, and their perception of autonomy support by the physical education teacher. The perception of autonomy support is linked to self-determination behaviors and is a goal for physical education teachers to foster in students. The study also suggests a link must be made between motives for physical activity and perceived autonomy support when identifying why choice works for students and why students perceive the experience as positive and satisfying.

It is recommended that schools and districts establish ongoing professional development to aide teachers in program, class, and student performance expectations. Students working towards mastery or proficiency in skills and knowledge during physical education could add the necessary element students need to enhance their performance, achievement, and overall effort. Fostering the extrinsic motivation in students may lead to increased intrinsic motivation and physical activity pursuits. The professional development plan should also include training, and support to assist teachers in continuing to develop strategies that enhance perceived autonomy support of all students in the physical education class. Administration should be aware of the need and value of appropriate class sizes to assist teachers in their efforts to connect with students and personalize experiences for all students. Increased student self-determination should be seen as a school goal and an integral role of all educators across curriculum areas.

Efforts should be made to continue to analyze curriculum programs and take the necessary steps to provide options and lifelong lifetime activities, adventure activities,
and fitness activities to students. Ongoing analysis of program effectiveness through increased program accountability should be part of every district's improvement plans. Student performance and student satisfaction should become part of regular data collection and program analysis. Lastly, expanding curriculum efforts to include the promotion of effective quality programs needs to continue so physical education can be supported as an effective and worthwhile option to consider when addressing the obesity epidemic.

Conclusion

Given the current state of low fitness levels, poor nutrition, overweight, and obesity in the United States, as well as the well-documented decline in physical activity among all age groups, determining ways to improve engagement in physical activity in adolescents should be a focus and priority. The literature further suggests that adolescent's levels of physical activity continue to decline in the United States. The intention of this study was to examine the impact of choice vs. no choice on health-related fitness indicators for students in grades 11 and 12. The study was also focused on students' motives for physical activity and their perceptions of autonomy support in the physical education class.

The data collected utilized students' pre and post health-related fitness assessment scores and compared students who received curriculum choice with students who did not receive their curriculum choice. Other data collected involved student survey information. Students responded to their motives for being physically active and their perceptions of autonomy support from their physical education teacher. The findings provided information to inform future curriculum development opportunities, funding
opportunities and teacher professional development. Based on this study, several implications are supported for future program, teacher, and administration consideration, in addition to, future research opportunities.

Although the study was disappointing in terms of supporting that choice had an impact on the performance of students in their health-related fitness indicator scores, the information is useful for future research on students' performance expectations and accountability in physical education. One contribution of this study was that choice in physical education curriculum did show a trend on providing evidence that student's motives for physical activity were impacted in the areas of fitness, competence, and enjoyment/interest. Students indicated that fitness was the primary reason students were involved in physical activity. This information is important to consider when designing curriculum opportunities for students in physical education. If future programs can focus on providing students choice and consider fitness, interest/enjoyment, and competence as areas of importance for students, there may be some future impact on improving overall adherence to physical activity.

A second contribution of this study was that choice in physical education curriculum did have an impact on the student's perceptions of autonomy support by the teacher. The feeling of autonomy support is critical to moving students towards increased self-determination and possibly lifelong physical activity pursuits. This research supports the literature on Self-Determination Theory and the necessary components that assist students in becoming more self-determined and intrinsically motivated. This research also supports the idea that the physical education teacher plays a critical role in the success of each student and their perceptions of autonomy support. This study supports
the importance of the environment that the teacher creates for the student. The students indicated they feel the teacher supports and offers options and choices, the teacher believes in the student, has confidence in the student, listens to the student, and tries to understand the student. This study also provided evidence that suggests and supports the literature that a quality physical education program is necessary and is at the heart of any plans to promote lifelong participation in enjoyable activities (Lee, 2007). Quality programs are liked to student satisfaction, success, and enjoyment.

The potential exposure and positive impact a quality physical education program can provide students may help them to choose to be involved and become more physically active. The information provided by students in the outdoor adventure education curriculum regarding their level of satisfaction is important to consider in future programs. The findings are supported in research focused on curriculum development and the potential for student voice (Koven, et al, 2001). Students are highly satisfied with the support they feel they get from teachers. Overall, there is evidence from this study that supports the trend to offer choice as a method of enhancing student motivation. Students who receive choice in their physical education curriculum program and experience autonomy support may increase their future physical activity pursuits and increase their involvement and participation in lifelong physical activity, as a result of their experiences.

Given the current state of obesity, overweight, poor nutrition, and lack of daily physical activity, improving programs that assist students should be a high priority. This study will contribute to the efforts of educators to closely examine current practices and contribute to the efforts of enhancing and developing quality physical education.
programs to help students develop the critical skills and knowledge necessary to live a lifelong physically active, healthy life after high school. Physical education programs have been identified extensively in research as an important component to improving student health, but little research based evidence exists to suggest exactly how schools should accomplish this goal. As secondary student's physical activity levels continue to decline each year, the need for substantial physical education program solutions increases. Considering program choices and options for students, as well as teacher motivational strategies may be a necessary focus in future physical education programs.
References


