Spring 3-2011

Examination of Existing Strategies to Support State Physical Fitness Standards: A Case Study of a Large Mid-Western Urban School District

Tyrone D. Smith
Lindenwood University

Examination of Existing Strategies to Support State Physical Fitness Standards: A Case Study of a Large Mid-Western Urban School District

by

Tyrone D. Smith

March 2011

A Dissertation submitted to the Education Faculty of Lindenwood University

in partial fulfillment of the requirements for the

degree of

Doctor of Education

School of Education

Examination of Existing Strategies to Support State Physical Fitness Standards:

A Case Study of a Large Mid-Western Urban School District

by

Tyrone D. Smith

This dissertation has been approved as partial fulfillment of the requirements for the degree of

Doctor of Education

at Lindenwood University by the School of Education

Sherrie Wisdom Ed.D.	4-29-11
Dr. Sherrie Wisdom, Dissertation Chair	Date
Jill Hutcheson	5-2-11
Dr. Jill Hutcheson, Committee Member	Date
Suzanne Hinrichs	4/29/11
Dr. Suzanne Hinrichs, Committee Member	Date

Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work here at Lindenwood University and that I have not submitted it for any other college or university course or degree here or elsewhere.

Full Legal Name: Tyrone D. Smith

Signature: Tyrone D Smith Date: 4-29-2011

Acknowledgements

Thank you is simply not a strong enough sentiment to express my sincere gratitude and deep regards for the following individuals who are all very unique and special to me for many reasons; one reason includes the completion of this document. I will start with my colleagues who helped me in my journey by taking the time to fill out the survey questionnaire and those who allowed me to interview them. Thanks go out to the former Physical Education Supervisor of the Study District, Ms. Leanne White and Dr. Paul Wright, my former chairperson who initially got me started on this journey. Thanks to Dr Jill Hutcheson, one of my committee people, who played a key role in the completion of this journey, and to Dr. Suzanne Hinrichs, the other committee person who was a reliable link to completion of the journey.

Then there is Dr. Sherrie Wisdom, my chairperson, whose last name is befitting of her character and very diligent hard working ethics. Dr. Wisdom is a true professional and has been the wind beneath my feet in this journey. Finally, I would like to thank my wife Karen C. Smith who has survived this journey with me as well as my godson, Tajahuan, better known as T.J.

Abstract

The purpose of this study was to identify which Missouri Physical Education Fitness Assessment strategies were implemented by high schools in the Study School District to meet state physical fitness standards and to identify physical fitness personnel perceptions of district-provided support for physical education programs and their possible benefits to students involved. Results may increase reader awareness of fitness related health issues such as teen obesity and early onset diabetes.

The secondary data used for this research study was obtained from the study school fitness assessment results. The researcher generated the Teacher Resource survey administered by the district. Responses to the survey allowed the researcher to then generate interview questions for voluntary follow up sessions.

The student physical fitness measurements from the school years fall 2007-spring 2008, fall 2008-spring 2009, and fall 2009-spring 2010 were analyzed for highs, lows, trends, and fall-to-spring and year-to-year increases or decreases in student performance, for the study site population, in achieving the Missouri Health Fitness Range requirements for the mile-run, push-ups, sit-ups, and sit and reach fitness indicators. A Seven Point Likert Scale Physical Education Resources Survey was administered to 18 physical education professionals in the Study School District. The survey questions were linked to effective teaching strategies and best practices, which were also linked to the state standards. Interviews were conducted with three PE teachers, one Health teacher and one athletic director from the Study District. The survey data and interview

responses were analyzed for similarities and differences. Conclusions and recommendations were formulated.

Results of this study may provide information regarding strategies implemented in physical education classrooms in the Study School District, teacher perception of the support for the frameworks of physical education provided by the school district, and teacher perception of the impact physical education programs have on students. This information may be used to make recommendations concerning the best practices necessary in physical education classrooms to promote a positive impact on students. This information may also address recent concerns over fitness and the tendency toward obesity in teens.

Table of

Contents

List of Tables

List of Figures

Chapter I: Background

Health and Physical Education (PE) are not mentioned as core curricula subjects according to the No Child Left Behind (NCLB) Act 2001. According to NCLB, all core curricula teachers were required to be highly qualified by the end of the 2005-2006 school years (Napper-Owen, Marston, Volkinburg, Afeman, & Brewer, 2008, p. 26). A highly qualified teacher, according to NCLB, is one who holds a bachelor's degree, full state certification, and demonstrates competence in each content area they taught (Napper-Owen et. al, 2008, p. 26).

The National Association for Sport and Physical Education (NASPE) has provided leadership for years in the field of physical education. NASPE issued a position statement indicating what constitutes a highly qualified physical education teacher. NASPE's statement defined the term highly qualified as one that describes an educator who has completed an accredited physical education program in order to deliver a standards-based curriculum which will (a) assist students in adopting and maintaining healthy lifestyles, (b) possess the skills and knowledge to facilitate improved teaching practices, (c) strengthen the quality of physical education instruction, and (d) empower students to achieve and maintain healthy active lifestyles (Napper-Owen et al., 2008, p. 1). With the possibility of legislation for the reauthorization process to include PE as a core subject, it was NASPE which defined and established the national, standard definition of a highly qualified PE teacher. Providing quality leadership, best practices, excellent programs, adequate facilities and resources are essential components necessary to implement effective strategies to promote student achievement that will meet state physical fitness standards and guidelines.

Successful and effective teachers must employ appropriate or best practices to help increase and improve student learning in physical education. These effective teachers use a variety of activities which range from non-competitive to highly competitive. For instruction to prove successful, effective teachers use both team and individual oriented activities, both indoor and outdoor structured activities, teacher-facilitated activities designed to promote appropriate motor development, and the inclusion of motor learning in instruction (Monti, 2004, p. 7).

Appropriate learning activities should reflect student interests and with students grouped according to individual skill levels. Monti described best practices for PE teachers as those providing students with critical thinking skills, problem solving strategies, safety information, the importance of physical fitness activities, and the benefits all these skills and attributes to a person's day to day life. When a teacher can reach students on this level in any curricular subject, information will stay with the student long after their high school years have ended (Monti, p. 9).

A positive classroom environment should be established and maintained by the PE teacher. According to Monti, it is the teacher's responsibility to model appropriate behaviors in class, prepare and maintain safe instructional space, provide safe equipment, and maximize practice time and learning based on individual needs within an appropriate class size. Positive social interaction reinforcement for student development is important and is an appropriate teaching practice. Positive social interaction occurs through student exposure to challenging activities, learning the importance of game rules, and making connections to game rules and the rules found in society (p. 11).

Incorporating a variety of teaching styles (i.e. command, reciprocal, guided discovery, divergent and practice) will satisfy the students' different learning style needs which are concerned with visual, auditory, kinesthetic, and tactile learning opportunities (Monti, 2004, p. 12). In the command style the teacher makes all decisions. Reciprocal style involves students working in pairs. One student performs while the other provides feedback. Guided recovery promotes problem solving as students solve teacher set movement problems, with assistance. The divergent style allows students to solve problems without assistance from the teacher. The practice style promotes student abilities to carry out teacher prescribed tasks (Monti).

Physical Education classrooms should make use of a variety of best practice strategies for teaching. Warm-up drills and activities which are instructionally sound and that will lead into practice for learning and skill acquisition are also considered appropriate best teaching practices (Monti, 2004, p. 3). The use of technology when designing outside-of-class assignments that extend class activities, and which provide extra practice and reinforcement of skills and knowledge covered in class, is an appropriate best teaching practice as well (p. 14).

Involvement in professional growth activity is an appropriate best teaching practice because a primary concern of a PE teacher should be the pursuit of current researched information in the field of study and interest. This activity provides the professional educator with opportunities to stay up-to-date on topics and issues which will strengthen effectiveness and knowledge acquisition for student enhancement and development (Monti, 2004, p. 17). The teacher development and growth process can be accomplished through participation in professional classes, attendance at workshops,

review of professional and peer reviewed journal articles, and access of data from researched and reliable websites on the internet.

The importance of physical fitness in today's society cannot be overstated. An issue of increasing concern for teenaged children is early onset of obesity. School-based physical education programs are directly related to intervention and prevention of obesity in school-aged children. Despite the correlation between physical education programs and the prevention of obesity, PE programs have been drastically cut. Since the passing of the No Child Left Behind Act (2002), 44 percent of school districts reported cutting time in social studies, art, music, physical education, and recess (Trost and van der Mars, 2009). The number of high school students who take PE classes on a daily basis has decreased by 14 percent since 1991. In 1991, 42 percent of all high school students were enrolled in some type of physical education class on a daily basis as compared to 28 percent in 2003 (Cawley, et al., 2006).

According to the Archives of Pediatrics and Adolescent Medicine, American teenagers ranked number one for the highest rate of obesity among the 15 nations rated (Patrick, Norman, Calfas, Sallis, Zabinski, Rupp, and Cella, 2004). Processed foods that are high in calories and low in nutritional value have been consumed by children and adolescents, and in many cases cost less than healthy fresh foods (Gay, 2006). Excess fat and calories were generally associated with eating fast foods. In a study in 2004, American children aged four to nineteen showed that at least one-third ate fast foods on a daily basis (Gay).

Regular physical activity for children and adolescents promotes better fitness and health, according to the 2008 Physical Activity Guidelines for Americans. Physically active adolescents are characterized by having low body fat, higher levels of cardio respiratory fitness, stronger muscles, stronger bones, lower symptoms of anxiety, and depression, and could possibly produce healthier adults (USHHS, 2008). Chronic diseases such as heart disease, hypertension, type II diabetes, and osteoporosis can begin to develop in childhood and adolescence, but by performing moderate and vigorous physical activities for at least 60 minutes per day, along with muscle and bone strengthening activities the adolescent is able to attain a healthier life style (USHHS, 2008).

Genetics and the food industry are two factors that promote obesity. Genetics are passed down from one generation to another, but by maintaining a proper diet and physical activity an individual can monitor and control genetic conditions which are exacerbated by obesity (Obesity and Overweight, 2009). The food industry has become more advanced and aware of its ability to tempt and satisfy children and adolescents' cravings for fat, sugar, and salt in their daily diets. However, a health movement adopted by the federal government under the Food and Drug Administration promoted healthier eating policies and habits which were regulated in school cafeterias for school age children (USHHS, 2008).

Statement of the Problem

The rise of obesity and other health issues among teenagers and the decline of the amount of time spent in physical education programs in American public schools combine to create a problem that educators should address. Missouri experienced a rise in

obesity rates three straight years in a row (Draper, 2008). One solution is more physical activities and more involvement by students in those activities.

The ultimate purpose of any physical education program is to help adolescents gain the skills and knowledge to be physically active for a lifetime. Physical education accommodates a variety of individual differences such as cultural identity, previous movement experiences, fitness and skill levels, and intellectual-physical and social-emotional maturity. Appropriate instruction in physical education incorporates best practices derived from both research and experience for teaching lessons in ways that facilitate success for all students (Monti, 2004). Providing a safe and inclusive learning environment allows the adolescent to experience positive, challenging, and enjoyable physical activity while learning skills and developing an understanding of the benefits and importance of physical activity. In conjunction with these active experiences, students develop a positive self-image and social skills that provide personal competence in work and leisure situations (Monti, 2004).

Physical education is a unique and important component of the total school program, providing total education, which facilitates optimal physical development and health maintenance. Physical education also focuses on integrating the emotional, social, and intellectual components that develop the whole child. The program prepares the adolescent to safely meet the physical demands of daily life, to use activity health benefits for a lifetime, and to enjoy physical activity during leisure time (Monti, 2004). The school community focuses on balanced learning opportunities addressing the three major goals of academic achievement, developmental responsiveness and social equity according to a report by the Carnegie Council on Adolescent Development (2000).

Over a ten year period there was a trend that showed that schools in Missouri have increased time spent sitting in classrooms and decreased time dedicated to physical education. Some experts feel that by the end of 2010, twenty percent of these children will be obese. According to Bonnie Linhardt (2009), the Missouri state advocacy director for the American Heart Association (AHA), a child's academic, social and emotional development will suffer from the lack of regular physical activity gained during physical education classes (p.2).

The solution to improvement of teenage health seems straightforward. Medical, public health, education organizations, the Department of the Health and Human Services, the department of education, the National Association of State Boards of Education, and the American Academy of pediatrics have all called for students to spend more time in PE classes (Cawley, et al., 2006). Cawley, Meyerhoefer, and Newhouse (2006) noted that legislatures in 44 states introduced bills to increase or reform school physical education to provide more programs for youths. Alabama proposed hiring an additional 289 PE teachers in each of two years. Kentucky, like several other states, would require 30 minutes of PE a day for its students. Maryland decided to hire a full-time director of physical education (Cawley, et al., 2006).

Cawley, Meyerhoefer, and Newhouse (2006) stated that more PE seemed like a logical response to the childhood obesity epidemic, but one set of questions remained: Will mandating more time in gym classes actually result in more exercise for kids? Will it help them lose weight? Surprisingly, studying the relationships between PE classes and actual physical activity presents some research challenges, as does judging the connections between PE and student weight (Cawley, et al., 2006).

According to Cawley, Meyerhoefer, and Newhouse (2006), a 2000 study by sports researchers Ken Hardman and Joe Marshall, estimated that, at the time of the study, 26 percent of PE classes in the United States failed to comply with state regulations. Even when schools complied with rules, gym classes did little to promote exercise. The U.S. Department of Education has criticized physical education for too often holding the philosophy of "rollout the balls and let them play" unstructured and unmotivated class time involving little vigorous activity (Cawley, et al., 2006).

Purpose of the Study

The purpose of this study was twofold. First, the researcher identified which Missouri Physical Education Fitness Assessment strategies were implemented by high schools in the Study School District to meet state physical fitness standards. Student performance was analyzed through pre and post score comparison and an examination for year-to-year trends. Second, the researcher examined physical fitness personnel's perceptions of district-provided support for physical education programs and their possible benefits to students involved. Perceptions of the presence of effective physical fitness strategies in the high school classroom and the extent to which they are implemented were gathered through use of a district-wide survey of district faculty and staff. Perceptions of the strengths and weaknesses of district support for physical fitness activities were also gathered and discussed.

Rationale of the Study

Results of this study may provide information regarding strategies implemented in physical education classrooms in the Study School District, teacher perception of the support for the frameworks of physical education provided by the school district, and

teacher perception of the impact physical education programs have on students. This information may be used to make recommendations concerning the best practices necessary in physical education classrooms to promote a positive impact on students. This information may also address recent concerns over the lack of fitness and the tendency toward obesity in American teens.

Research by Morrow, Jackson, & Payne (1999) suggested that recent decreases in physical education were a result of two factors: the need for additional time for academics and financial crisis often resulting in the deletion of PE from the curriculum. Provision of adequate facilities, and their maintenance, represents a large financial commitment from a sizeable district. Morrow, et al. stated that 12.5 percent of adolescents that fell into the obese category were likely to become obese adults, resulting in higher health costs and reduction of productivity.

Teaching Strategies Implemented at the Study School District

As a result of his work as a physical education teacher, extensive training and research, the researcher has developed the opinion that an effective health/physical education teacher must be able to demonstrate certain criteria in order to implement a successful physical education program. The program offered to students must be based on best practices grounded in research such as: a set, thoroughly implemented curriculum syllabus and an established and enforced grading rubric (Napper-Owen, Marston, Van Volkinburg, Afeman, & Brewer, 2008, p. 28). Both formative and summative feedback criteria should be incorporated in assessing student success in meeting requirements (National Association for Sport and Physical Education, 2007, p. 2).

Napper-Owen et al. (2008) stated that coursework should be modified when necessary, teacher monitoring and supervision should be in place, classroom activities should include self-assessment tasks, and that there should be student accountability for knowledge of Grade Level Expectations (GLEs) (p. 28-29). A student portfolio should provide evidence of accomplishments, use of pre- and post-assessments should be in place, and clear student behavior expectations should be established (p. 29). Professional development and career growth should be a priority, regular reflection on effective strategies should be encouraged, and collaboration with colleagues from other content areas should be promoted (Napper-Owen et al., 2008, 27-30).

Research Questions

Questions for this study include the following:

Research Question # 1: What strategies are physical education teachers who are employed in the Study School District implementing to promote success for their students in meeting the state physical fitness indicators?

Research Question # 2: To what degree are identified strategies being used by physical education teachers who are employed in the Study School District?

Research Question # 3: What are the perceived strengths and weaknesses in support provided for physical education in the Study School District?

Research Question # 4: What are the perceived benefits of current physical education programs for students in the Study School District?

Limitations of the Study

Study-Site data. The research study results may only be true to the study site school or populations similar to the urban location, size, and demographics of the study site school.

Sample size. There may be a possibility that because of the small number of students enrolled in some physical education classes the percentage results may appear misleading to the reader.

Timeframe. There is a possibility that the time of year for fitness pre-testing did not allow enough preparation time for the student to obtain the desired results for each particular fitness component measured.

Researcher's role. The district-wide survey of faculty and staff was created by the principle investigator, a physical education instructor and sports coach for the study district. The researcher's prior knowledge of district processes and procedures may have added to bias in the study. The survey was examined and approved by district physical fitness personnel before administration.

Definition of Terms

Body composition. The ratio of body fat to lean body tissue is body composition (Friedman, Stine, & Whalen, 2004, p. 129).

Body Mass Index (BMI). BMI is a measure of body weight relative to height, and is a tool that may be used to determine if a person's health is at risk (Bronson & Merki, 2007, p. 145).

Diabetes. A disease in which the body does not make enough insulin or does not use it efficiently is called diabetes. There are two major types of diabetes: Type I and Type II (Friedman, Stine, & Whalen, 2004, p. 355).

Fitness test indicators. Activities, which are assessed by tests on various types of activities, such as curl-ups, the one mile run, push-ups, the sit and reach, and measurement of body mass index are fitness test indicators. The results are given in time; distance, and/or points assigned to the number completed, distance covered, or amount of time elapsed (Study School District, 2004b, p. 1).

Frequency, Intensity, Time, & Type (FITT). FITT is an acronym which stands for Frequency, Intensity, Time, & Type which represent the four parts of fitness training (Friedman, Stine, & Whalen, 2004, p. 136).

Health-related Fitness. Health-related Fitness is a set of fitness qualities that are necessary to maintain and promote a healthy body (Friedman, Stine, & Whalen, 2004, p. 126).

Healthy Fitness Range (HFR). The HFR is a scale which determines the degree, or level, of health which is measured through fitness activities/indicators (USHHS, 2007).

Lifestyle Disease. A disease that is caused in part by having unhealthy behaviors and in part by other factors is a lifestyle disease (Friedman, Stine, & Whalen, 2004, p. 340).

Obesity. Excess body fat with a measured index of body mass index of 31 or more is referred to as obesity (Bronson & Merki, 2007, p. 146).

Overweight. A condition, which is determined by a chart that depicts the standard weight range for an individual's height with a body mass index in the range of 25-30 is called overweight (Bronson & Merki, 2007, p. 146).

Physical activity. Physical activity is any form of exercise or movement that causes a person's body to use energy (Bronson & Merki, 2007, p. 74).

Physical education. Physical education is a learning process in which a person increases his or her knowledge, attitude, and behavior towards physical activities (Pangrazi, & Darst, 1991, p. 2).

Physical fitness. The ability to perform daily tasks easily and have enough energy to perform other tasks is a measure of physical fitness (Friedman, Stine, & Whalen, 2004, p. 126).

Sedentary lifestyle. Sedentary lifestyle is a way of life that involves a small amount of physical activity (Bronson & Merki, 2007, p. 77).

Urban school. A school located within the radius of a large city's boundary is referred to as urban. This type of school is usually not as financially stable as one located in a county or suburban settings (Rural, Suburban, & Urban, 1999-2009, p. 1).

Summary

This chapter provided the reader and physical education and health teachers with useful information concerning essential teaching strategies and effective guidelines which may help high school students meet the Missouri healthy fitness range (HFR) requirements. The No Child Left Behind Act (2001) requires all core curricula teachers to be highly qualified teachers by the end of the 2005-2006 school years. However, neither physical education nor health was mention as being core subjects.

NASPE, a non-profit professional organization that is a recognized leader in sport and physical activity, provided strategies and guidelines, and defined what constitutes a highly qualified PE teacher and best teaching practice. NASPE also supported the connection between quality programs and adequate facilities and resources as necessary

components for student success in meeting the Missouri physical fitness healthy fitness range (HFR) requirement.

Technology and professional development for the PE teacher are also essential components which should be incorporated into the curriculum. Technology can help the PE teacher enhance instruction beyond the classroom by providing relevant assignments to be completed at home. Through continued study and professional development the PE teacher can remain up-to-date and adequately informed on researched current information in the fields of physical and health education.

Finally, chapter one introduced the problem of obesity which is a major concern facing physical and health education teachers throughout the United States. Contributing factors that have aided the obesity epidemic which can be addressed by the high school PE and health students are health disorders that occur due to being obese, genetic disorders that are passed down from generation to generation, more accessibility to unhealthy low nutritional processed food items, fewer high school students who take daily PE classes due to the demands that they become more proficient in core subjects, and a decrease in the number of school aged children being involved in moderate or vigorous physical activities on a regular basis.

Chapter II: Literature Review

Overview

The purpose of this study was to identify which Missouri Physical Education Fitness Assessment strategies were implemented by high schools in the Study School District to meet state physical fitness standards and to identify physical fitness personnel perceptions of district-provided support for physical education programs and their possible benefits to students involved.

There are benefits associated with participating in physical activity according to the Centers for Disease Control and prevention (CDC), and they are: controlling weight, reducing risk for disease, improvement in mental health or mood, and strengthening of bones and muscles. According to the CDC these health improvements can become possible through students dedicating 30 to 60 minutes per day for at least five days per week to performance of aerobic, flexibility, and muscle strengthening exercises (Helaine, n.d., p. 1). Many schools now are dedicated and focused on conquering and eliminating obesity at the elementary school level. During the past 30 years childhood obesity has tripled according to the national Center for Chronic Disease Prevention and Health Promotion. This obesity epidemic occurred due to factors such as: sedentary lifestyle, too many calories, and genetics (Helaine, n.d., p. 1).

The assessment tests that are commonly used for the physical fitness test in Missouri schools are the President's Challenge and the FitnessGram. However, even though these are two different physical fitness tests, all Missouri Physical Fitness Assessment tests must measure the components of fitness which are concerned with Aerobic Capacity, Abdominal strength and endurance, Upper body strength and

endurance, Flexibility, and Body Composition (King, 2000, p. 4). Each of these will be described in more detail in this chapter.

Even with proper implementation of classroom strategies and appropriate physical fitness testing for teenage students, an adequate budget and facilities are primary and essential components of any quality physical activity instructional program. Regardless of what type of physical activity program (community program or recreational program) rarely will there be sufficient funds or resources available to support their efforts (Morbidity and Mortality Weekly Report [USHHS], 1997, p. 8). Schools and communities must be diligent in their efforts to provide high schools with adequate funds and resources to implement their PE, health education, and physical activity programs (USHHS, 1997, p. 8).

Monetary resources are not the only important factor need to ensure a quality program. High schools must also have policies and procedures in place that will ensure that PE teacher-to-student ratios are comparable to the core classroom ratios. School administrators must be cognizant of the importance of not assuming the authority to designate the PE spaces or facilities for other events (USHHS, 1997, p. 8).

In an effort to provide more time and funds to better prepare students for state academic testing, many schools cut PE and art programs (Armour, 2007). When the 1990s presented the childhood obesity epidemic, which was possibly due to a decline in children participating in PE during the 1980s and 2000s, the Center for Disease Control and Prevention (CDC) started a campaign to promote schools to provide for more physical activity and healthier school meals (Hermes, n.d., p. 1).

In 2010, the CDC showed that only four percent of elementary schools, eight percent of middle schools, and only two percent of high schools required year round daily PE for all of their students. However, there were still some elementary school PE classes that consisted of a weekly game of kickball or another similar game. First Lady Michelle Obama received criticism in the news concerning comments made about childhood obesity (Giarrusso, 2010). She took positive action when she started the Let's Move Campaign (Hermes, n.d., pgs.1-2). A primary goal of the Let's Move Campaign was that PE classes, recesses, sports, and other physical activities build at least 60 minutes per day into their school schedules (Hermes, n.d., p. 2).

Definition of Physical Education

Physical education is a learning process that "focuses on increasing knowledge and affecting attitudes and behaviors relative to physical activities, including exercise, sports, games, dance, aquatic activities, and outdoor adventure activities. It can occur inside or outside the schools. Physical education can be formal or informal" (Pangrazi & Darst, 1991, p. 2). "Physical activity is any form of movement that causes your body to use energy. It may be purposeful, such as when you exercise or play sports" (Bronson & Merki, 2007, p. 74). It may occur as part of a person's regular routine such as when he or she washes the car or walks the dog, (Bronson & Merki, 2007, p. 74).

Physical fitness is the "ability to carry out daily tasks easily and have enough reserve energy to respond to unexpected demands. Maintaining a high level of physical fitness shows that you accept responsibility for your own health and that you value regular physical activity" (Bronson & Merki, 2007, p. 74). There are two main areas for physical fitness: health- related and skill-related (Pangrazi & Darst, 1991, p. 290).

Health-Related Physical Fitness includes "those aspects of physiological function that offer protection from diseases resulting from a sedentary life-style. Health-related physical fitness can be improved or maintained through properly directed physical activity" (Pangrazi & Darst, 1991, p. 290).

Brief History of Physical Education

From the beginning, physical education in America was a product of physical fitness programs from countries located overseas. In many cases in today's educational structure, physical education is viewed as just a class that is offered to primary and secondary students, but in the early history of physical education there were other organizations that offered physical education programs (Helaine, n.d., and p. 1). Other countries had a model for physical education programs and later the United States followed their lead as the concept of physical education gained popularity.

Due to a need for more funds for educational programs and the push for academic improvement, PE classes were one of the first programs to suffer from the program cut-backs (Hermes, n.d., p. l). Childhood obesity has become a nationwide concern and the physical activity on a daily basis, which can be administered through daily PE classes, is a proven solution to this life threatening disease (Hermes, n.d. p. 1).

PE programs today originated with the ancient Greeks around 700 B.C., according to Siedentop, a retired professor of Sport and Exercise Education at Ohio State University (Sidentop as cited by Hermes, n.d., p. 1). In ancient times Greek boys received their physical and military training in educational facilities known as gymnasiums. Girls were not allowed the privilege of participating in gymnasiums where Greek boys practiced sporting activities such as wrestling, jumping, running, and throwing the discus and

javelin (Hermes, n.d., p. l). Physical education programs were also a part of Ancient Roman society. The Roman boy's military training consisted of activities which involved swimming, running, jumping, and throwing (Hermes, n.d., p. 1).

From 400 A.D. to the 1400's during the Middle Ages physical education was somewhat non-existent, formal schooling was not popular, and sports and physical activities were looked upon as sinful acts (Hermes, n.d., p. 1). During the Renaissance era, from 1300 to 1600, many Greek and Roman educational ideas, including physical education programs were re-established. In fact, part of the educational programs consisted of physical activities such as boxing, swimming, and other body-building activities (Hermes, n.d., p. 1).

In the 18th century physical education programs were introduced into schools in countries such as Germany, Sweden, and the United Kingdom, and in the mid 1800s these same ideas spread to the United States (Sidentop as cited by Hermes, n.d., p. 1). Gymnastics and an exercise routine were the primary focus areas of the German and Swedish physical education programs. Team sports were the focus area of the British schools, and many European physical activity programs were adopted by U.S. schools (Hermes, n.d., p. 1)

Interest in Physical Education began to increase rapidly for young people when, during the late 18th and early 19th century, American colleges sporting competition became popular in baseball, football, and other sports (Hermes, n.d., p. 1). Physical education before the 1800s focused on military training, recreational activities, such as swimming, dancing, and horseback riding, and after the opening of Young Men's Christian Association (YMCA) in 1851, other sports became popular (Helaine, n.d., p. 1).

School systems began to adopt physical education programs, and laws were passed that included physical education programs in public schools after the American Civil War. It was because of the physical fitness requirements needed during World War II as well as for manual labor, that physical education programs became more common and popular for U.S. men and women (Helaine, n.d., p. l). The U.S. government began to raise its standards regarding the physical fitness level of American soldiers. This was due to the fact that history had shown that U.S. soldier's fitness level was less than adequate during war time (Helaine, n.d., p. 1). A lack of funds became an issue for many of the schools and eliminating time and money spent on physical education programs seemed to be a practical solution. Today, there is a law which requires all school districts that receive federal funds to include a program which addresses nutrition and physical activity (Helaine, n.d., p. 1).

Girls were not permitted to take physical education classes until the late 19th century. At first physical education classes were segregated by sex but by the late 1900's most PE classes were integrated to include both sexes. Many sports included boys and girls competing together, and many more sports became available to females during this time. Also, federal laws were passed in 1969 and 1970 which enabled students with disabilities and special needs to have access to physical education programs, as well as the regular PE student (Sidentop as cited by Hermes, n.d., p. 1). The Federal education act in the 1970s provided opportunities for females to participate and compete in high school and collegiate athletic programs. This amendment allowed the physical education and athletic programs to progress to higher levels in the field of education and sports (Helaine, n.d., p. 1).

> Darst and Pangrazi described the introduction of Title IX in the excerpt below: Title IX of the Educational Amendments Act of 1972 had a significant impact on most secondary school physical education programs. The law is based on the principle that school activities and programs are of equal value for both sexes. Students should not be denied access to participation in school activities based on sex. This law has stirred up much debate and controversy. Interpretations and details are still being worked out by school districts, state departments of education, and the judicial system. (1991, p. 13)

Legal ramifications have forced schools to provide equal access to physical education activities for both boys and girls. Co-educational classes have become the rule instead of the exception, and separate classes for males and females have been eliminated" (Pangrazi & Darst, 1991, p. 13).

President's Council on Physical Fitness and Sports

In the late 1940's, Kraus and Prudden published papers describing the poor physical fitness status of the nation. Weber and Kraus designed and administered the Kraus-Weber Tests for Muscular Fitness (History of President's Council on Physical Fitness and Sports [PCPFS], 2010, p. 1). A study was conducted on about 4,400 public school students across the United States, ages 6-16 years. About 3,000 European students, ages 6-16 years, were given the same Kraus-Weber Tests for Muscular Fitness. Some of the activities tested were leg lifts, sit-ups, trunk lifts, and toe touches. Test results showed that fifty-six percent of the U.S. students failed at least one of the test components, and only about eight percent of the European students failed even one of the test components (PCPFS, 2010, p. 1). European students' superior test results over the

U.S. students were attributed to the more rigorous lifestyle. European students did not rely on automobiles, buses, and elevators as did their U.S. counterparts (PCPFS, 2010, p. 2). In December 1953, Kraus and Prudden published "Muscular Fitness and Health," and described the Americans as becoming soft due to its affluent lifestyle of the 20th century. In fact, American children and adults were rapidly losing muscle tone, which was due to a lack of engaging in regular exercise. This lifestyle was uncommon when compared to an earlier era of less transportation and manual labor (PCPFS, 2010, p. 1).

In 1954 at the national convention of the American Medical Association in Atlantic City, Kraus delivered his report which told how American public schools were not offering sufficient amounts of physical activities which would help develop our first grade children (PCPFS, 2010, p. 2). On July 11, 1955 Kraus and Prudden presented their test results to 30 government leaders at a White House luncheon. President Dwight Eisenhower appointed Vice President Richard Nixon to oversee a meeting to decide what actions the government should take because of the results of the Kraus Weber test results (PCPFS, 2010, p. 2).

PE leaders took advantage of this opportunity to help promote more school PE programs. With Vice President Nixon presiding as the conference chairman at the U.S. Naval Academy in Annapolis, MD on June 18-19, 1956, the President's Conference on the Fitness of American Youth was held, and on July 16, 1956, President Eisenhower established the President's Council on Youth Fitness (PCPFS, 2010, p. 2-3). The outcome of this conference resulted in the decision that the field of physical education required more resources and more time should be spent on the physical education program. This initiative later became the President's Council on Physical Fitness and

later the President's Challenge Youth Fitness Award. These tests measure several physical abilities developed under President Ronald Regan in 1986, and are taken by many PE students through the country (Hermes, n.d., p. 1).

Missouri Physical Fitness Assessment

In Missouri, student progress toward the Show-Me Standards is measured with components of the Outstanding Schools Act of 1993. The Department of Elementary and Secondary Education (DESE) introduced the Missouri Assessment Program (MAP) for Health and Physical Education (PE) for grades five through nine in the spring of 2000. All fifth and ninth grade students were tested in the spring of 2001 (King, 2000, p. 3). The School Districts' and State's expectation for Missouri high school students was that they would be motivated and achieve a high level of activity and fitness, which has been found to link with academic achievement (King, 2000, p. 3).

The Missouri Physical Fitness Assessment was "to promote enjoyable regular physical activity and to provide a wellness related fitness assessment and baseline data for Missouri's youth" (King, 2000, p. 3). The Physical Fitness Assessment is required for students in grades five and nine. However, it is hoped that all students in Missouri will achieve a level of activity and fitness associated with excellent health (King, 2000, p. 3).

> Physical education for Missouri was designed with a solid rationale.
>
> The purpose behind a quality health and physical education program is to develop understanding and behavioral habits for all students regardless of gender, age, or disability status. A key concept of the Missouri Physical Fitness Assessment is that physical activity should be enjoyable and that physical activity contributes to good health, optimal functioning, learning, and well being, and is important

> throughout a person's lifetime. Physical fitness testing is most effective when it is part of a comprehensive physical education program that supports testing with educational and motivational information. School program should have the long term view of promoting appropriate physical activity rather than focusing only on developing athletic physical fitness. (King, 2000, p. 3)

The Missouri Physical Fitness Assessment meets three purposes. The assessment "provides students, teachers, and parents/guardians with information regarding the student's current fitness status" (King, 2000, p. 3). Information can be used to develop an individualized fitness program. The assessment provides information for program evaluation. A teacher can track the number of students who need improvement toward meeting measurements in the Healthy Fitness Range (HFR), adjust the curriculum, and provide encourage improvement for students at the lower end of the range In addition, the assessment provides information for "statewide monitoring of fitness levels of Missouri's fifth and ninth grade students" (King, 2000, p. 3).

FitnessGram

FitnessGram is committed to health-related physical fitness, criterion-referenced standards. At the time of this writing, FitnessGram is an educational assessment and reporting software, but initially Charles L. Sterling, the Director of Health and Physical Education of a Richardson, Texas school system, designed the FitnessGram/Activity Gram to be a physical fitness "report card," like the ones used in other educational areas (Plowman, Sterling, Corbin, Meredith, Welk, & Morrow, 2006, p. 55).

The mainframe of each school district's computer system had its own customized software which was designed to process the students' personalized fitness report cards.

Sterling saw the potential for recording student records on computers, and he along with four other teachers administered the Texas physical Fitness-Motor Ability Test in their respective schools (Plowman et. al., 2006, p. 52).

Charles Sterling joined the Cooper Institute for Aerobics Research (CIAR) and used a mainframe computer that was capable of batch processing physical fitness reports, which would allow this concept to be exposed to a larger audience; however a name was needed for this new program. The name FitnessGram was taken from the concept of a telegram since it communicates important fitness information to children and parents. Nancy Voith, a local district contestant, is credited for the winning entry (Plowman et. al., 2006, p. 52). The FitnessGram Test tool was nationally sponsored by The Campbell Soup Company's Institute for Health and Fitness, and in 1982 Marilu Meredith from the Cooper Institute was hired as the national Project Director (Plowman et. al., 2006, p. 55)

The FitnessGram used the American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD) Youth Fitness Test (YFT), which included "pull-ups for boys, modified pull-ups for girls, straight leg sit-ups, shuttle run, standing broad (long) jump, 50 yard dash, softball throw for distance, 600-yrad run/walk, and three rarely used aquatic tests" (Plowman et. al., 2006, p. 56).

The FitnessGram Program was established in phases in the State of Oklahoma. Thirty schools in a Tulsa, Oklahoma School District in (1982-83) conducted the first pilot. In the second year (1983-84) the participants were able to choose to administer the AAHPERD YFT or the AAHPERD Health Related Fitness Test (HRPFT) throughout approximately one hundred twenty five Oklahoma schools. After the first two pilots' successes, the FitnessGram (FG) was implemented as a national pilot program, one

district per state in (1984-85), and then on an unrestricted basis (1985-86) (Plowman et. al., 2006, p. 56). By 2006, FG had been used by thousands of teachers and millions of youths, as an assessment and reporting software system which produced past and up-to-date health related fitness and physical activity information for children, teachers, parents, and school administrators (Plowman et. al., 2006, p. 56).

Criterion and Normative Referencing

FitnessGram and the President's Challenge use criterion referenced standards (CRS). The South Carolina Physical Fitness Test was the first true CRS developed in 1978. The FitnessGram (FG) Scientific Advisory Board in 1987 established CRS for the mile run, percent Body Fat (BF)/Body Mass Index (BMI), sit-and-reach, sit-ups, and pull-ups (Plowman, et al., 2006, p. S12). One cutoff point was set by these standards, and the scores that exceeded the designated cutoff point were acknowledged, however those scores that were below the cutoff juncture were omitted. The Healthy Fitness Zones (HFZ) replaced the target score, and each test could also be evaluated as Needs Improvement (NI) in the 1992 Test Administration Manual. The first youth fitness FG CRS was used nationally and internationally (Plowman et. al., 2006, S12).

CRS are useful for promoting health and are based on research. A fitness test must measure some element that is part of being healthy in order to be a CRS (Norm vs. CRS, n.d., para. 5). CRS has a closer relationship to desirable health outcomes than normed standards, but CRS also have flaws. The amount of appropriate research has an impact on the accuracy of the standards, highly fit students may become less motivated if the standards are too low, and the standards must be studied closely to ensure the test results are correlated with the intended outcome of the test (Norm vs. CRS, n.d., para. 6).

Many fitness test users in the past evaluated test scores by comparing them to norms. Norms are created by gathering test results from a representative number of people from a large group of participants. The result is usually expressed as a percentile when the student's test score is compared to the group (CRS, n.d., para. 1). The inherent flaws associated with norms are the concern for the child and that the reference group's established norms are compatible or properly assigned to the youth (Norm vs. CRS, n.d., para. 2). Norms are based mostly on individual rather than group results, and they (norm) tend to give group averages a low estimate. If the results are higher than the middle of the distribution, this yields a high estimate if the true results are lower than the middle (Norm vs. CRS, n.d., para.3).

Establishing a certain percentile as a standard is obviously a disadvantage or unfair in certain situations because of the comparison of the current level of performance of the youth to other similar youths. If other factors are not considered and the standard/norm is too high, the youth may become discouraged and have difficulty reaching the high standard with their best effort (Norm vs. CRS, n.d., para.4).

The President's Council on Physical Fitness and Sport (PCPFS, 1999-2000) Presidential Physical fitness Award is a norm-reference based award. Scoring at or above the eighty-fifth percentile on all five items of the President's Challenges Physical Fitness Test qualifies boys and girls as eligible candidates to receive the Presidential Physical Fitness Award. Those candidates who score at or above the 50th percentile on all five items are eligible to receive the National Physical Fitness Award (Morrow, Zhu, Frank, Meredith, & Spain, 2009. p. 10). Norm-Referenced (percentile) Standards are easy for the student to interpret and to use to learn how they compare with other youths in the well-

defined group. However, on the negative perspective is that the standards are based on the adolescent's current level of performance rather than the expected level of achievement and the discouraging high level established as standards for the moderate to low fitness leveled student (Morrow & Zhu et al., 2009, p. 10). Criterion-Referenced Standards (CRS) are most concerned about the information gained from the fitness test score in relationship to information about the student's health status (Morrow & Zhu et al., 2009, p. 11).

Assessment of Aerobic Capacity

One focus of Missouri's physical fitness plan is aerobic capacity.

> Possibly, the most important fitness program or assessment component area is aerobic capacity. This assumption is indicated through research which suggests that acceptable levels of aerobic capacity are associated with a reduced risk of high blood pressure, coronary heart disease, obesity, diabetes, some forms of cancer, other health problems in adults, and relative to a person's body weight is considered to be the best indicator of a person's overall cardio respiratory capacity. (King, 2000, p. 5)

When administering aerobic capacity assessment for reporting to the state of Missouri, one of the following tests must be used: One-Mile Run/Walk or the Progressive Aerobic Cardiovascular Endurance Run (PACER) (King, 2000, p. 6).

When administering the President's Challenge One-Mile Run/Walk test, the objective is to record the time in minutes and seconds which the student takes to complete the one-mile distance (King, 2000, p. 5). When administering the FitnessGram PACER test, which required the student to run back and forth (shuttle) over a 20 meter

distance for as long as possible, the pace in which the student must cover the distance was increased for each minute ran. The score is the number of laps (20 meter distances) completed (King, 2000, p. 6).

Assessment of Abdominal Strength/Endurance

Abdominal Strength and Endurance is an important component for promoting good posture and correct pelvic alignment. The President's Challenge fitness test measures abdominal strength and endurance with curl-ups (sit-ups). The objective of curl-ups is for the student to perform as many curl-ups as possible, correctly, in one minute. The number of curl-ups performed correctly in one minute is recorded (King, 2000, p. 7). The FitnessGram fitness uses a curl-up (cadence) test. This test's objective is to count, up to a maximum of seventy-five seconds, the number of curl-ups a student could successfully execute in three seconds. The scoring is recorded as the number of curl-ups performed with proper form and in rhythm (King, 2000, pgs.7-8).

The President's Challenge test also uses a Partial Curl-up test to measure student abdominal strength and endurance. The objective of this test is to have the student perform the partial curl-up with the proper form and in rhythm; and the number of partial curls is recorded (King, 2000, p. 8).

Assessment of Upper Body Strength/Endurance

"Upper Body Strength/Endurance is important for maintaining functional health and correct posture" (King, 2000, p. 8). The President's Challenge and the FitnessGram both administer a push-ups assessment. The objective is to count the number of push-ups the student can perform correctly at a rhythmic pace, and the number correctly completed is recorded as the student's score (King, 2000, p. 9).

The FitnessGram Fitness Test allows the use of Modified Pull-ups to measure upper body strength and endurance. Its objective is to count the number of successfully completed modified pull-ups, and record the number of correctly performed modified pull-ups (King, 2000, p. 9-10).

The President's Challenge and FitnessGram both may administer the Flex-Arm Hang test. The objective of this test is to time how long the student can maintain the flexed-arm hang position, and the scoring is recorded in minutes and seconds held in the hanging position (King, 2000, pgs.10-11).

Assessment of Flexibility

Flexibility is important to functional health and the ability to manage range of motion as the student ages. The President's Challenge Fitness Test uses the Sit and Reach test when measuring flexibility. The objective is to measure lower back flexibility and hamstring muscle groups by reaching as far as possible with the fingertips. The score is recorded to the nearest centimeter in distance reached by the student (King, 2000, p. 11).

The Back-Saver Sit and Reach is administered by the FitnessGram Fitness Test. The objective of this test is to measure the hamstring flexibility by measuring the distance the student can reach on the right and left sides of the body. The healthy fitness range is age and sex related, and the scoring is measured to the nearest half inch on both sides of the body (King, 2000, pgs.11-12).

The President's Challenge may use the V-Sit Reach test for flexibility. This test's objective is to measure how far a student can reach forward in the V-position. The student's score is recorded as a positive number in distance reached beyond the

established baseline and is recorded as a negative number if the distance is behind the established baseline (King, 2000, p. 12-13).

Assessment of Body Composition

Body Composition is an optional component of the Missouri Physical Fitness Assessment Test. Due to the sensitive issues involved in this component of the assessment schools are not required to submit the results to DESE. However School Districts may and possibly should choose to collect this data, since body composition calculation is simply an estimation of the student's height and weight proportion (King, 2000, p. 13).

The President's Challenge and FitnessGram Fitness Tests administer the Body Mass Index computation. The objective of both tests is to measure the appropriateness of the student's weight relative to height.

The FitnessGram Fitness Test also administers skin fold measurements as a way of computing body mass index (BMI). Its objective is to measure a student's triceps and calfskin fold thickness for calculation of the percent of body fat. The measurements registered on the dial of the caliper are taken three times for each measurement. The median (middle) score from each measurement should be recorded to the nearest 0.5 millimeter (King, 2000, p. 15).

In Missouri, school districts must report their Physical Fitness Assessment results annually to DESE for all fifth and ninth grade students. The district staff should inform the individual student and parents (guardians) of the fitness test results in an attempt to help set goals and develop a self-improvement plan (King, 2000, p. 15).

Assessment of Skill-Related Components

Skill related physical fitness is composed of six fitness components which are: reaction time, speed, coordination, balance, agility, and power. All of these are important determiners of athletic performance in sports activities.

"Agility is the ability of the body to change position rapidly and accurately while moving. Wrestling and football are both examples of sports that require agility" (Pangrazi & Darst, 1991, p. 292).

"Balance refers to the body's ability to maintain a state of equilibrium while remaining stationary or moving. Maintaining balance is essential to all sports but is especially important in the performance of gymnastic activities" (Pangrazi & Darst, 1991, p. 292).

Cardiovascular endurance is the "ability of the heart, the blood vessels, and the respiratory system to deliver oxygen efficiently over an extended period of time**"** (Pangrazi & Darst, 1991, p. 290).

"Coordination is the ability of the body to perform smoothly and successfully more than one motor task at the same time needed for football, soccer, tennis, baseball, and other sports that require hand-eye and foot-eye coordination skills. Coordination can be developed by practicing repeatedly a skill to be learned" (Pangrazi & Darst, 1991, p. 292).

"Power is the ability to transfer energy explosively into force. To develop power a person must practice activities that are required to improve strength, but at a faster rate involving sudden bursts of energy. Skills requiring power include high jumping, long jumping, shot putting, throwing, and kicking" (Pangrazi & Darst, 1991, p. 292).

"*Speed* is the ability of the body to perform movement in a short period of time. Usually associated with running forward, speed is essential for the successful performance of most sports and general loco-motor movement skills" (Pangrazi & Darst, 1991, p. 292).

Missouri Standards and Expectations

The State of Missouri has 73 Show-Me Standards. These standards define what students should learn by the time they graduate from high school. These standards consist of 33 performance standards which consist of four broad goals, and 40 knowledge standards which consist of six subject areas: Communication arts (CA), Social Studies (SS), Mathematics (MATH), Fine Arts (FA), Science (Sci.) and health/Physical education (HPE) (DESE, 1996, p. 1).

The performance standards' four goals suggest that students in Missouri public schools will acquire the knowledge and skills to:

Goal One, Gather, analyze and apply information and ideas;

Goal Two, Communicate effectively within and beyond the classroom;

Goal Three, Recognize and solve problems; and

Goal Four, Make decisions and act as responsible members of society. (Bihr, 2001, p. 3)

The school and workplace are significantly impacted by the Show-Me Standards' concept and areas of study. However, they will require alteration and modification as the educational process advances (DESE, 1996, p. 2).

Missouri students are expected to attain a solid foundation of factual knowledge and basic skills in the traditional content areas, which should be carried over into courses

in vocational education and practical arts. Each grade level and course sequence should build on knowledge base and skill acquisition that students have previously acquired (DESE, 1996, p. 2). Teachers and districts may require that their curricula be modified or adapted to what their students must know and what they must be able to do in order to meet the state standards (DESE, 1996, p. 2). Curriculum frameworks were developed in each of the six content areas by teachers throughout the state of Missouri.

How a district organizes and implements the themes of its curriculum is a preference allowed from district to district, and sanctioned by Missouri law. However, these framework models can be used as a resource to demonstrate how school districts might be able to demonstrate how others have balanced concepts and abilities for students at all grade levels (DESE, 1996, p. 2).

Health/Physical Education, as a Knowledge standard, states that Students in Missouri public schools will acquire a solid foundation which includes knowledge of:

HPE 1-Structures, functions of, and relationships among human body systems.

HPE 2-Principles and practices of physical and mental health such as personal health habits, nutrition and stress management.

HPE 3- Disease and methods for prevention, treatment, and control.

HPE 4- Principles of movement and physical fitness. (Bihr, 2001, p. 4)

This standard addresses all of the physical education skills and activities. Also included are:

HPE 5-Methods used to assess health, reduce-risk factors, and avoid high-risk behaviors (such as violence, tobacco, alcohol and other drug use).

HPE 6-Consumer health issues (such as the effects of mass media and technologies on safety and health).

HPE 7-Responses to emergency situations. (Bihr, 2001, p. 4)

The Missouri School Improvement Plan (MSIP) is part of the Schools Act of 1993, responsible for accrediting school districts in Missouri. The MSIP states the following about PE programs "All Health Physical Education Programs are required to have a written curriculum that should meet certain specification based on the Frameworks" (Bihr, 2001, p. 6).

This has helped Health and PE in Missouri by:

1) Forcing many districts to actually create a written curriculum for health/PE and make teachers more accountable for what they teach. 2) It has provided many hours of in-service and professional development training for health/PE teachers. 3) It has enhanced the development of coordinated School Health in many districts. 4) It has ranked up there with the "big guys"- Math, Science, Social Studies and Communication Arts. (Bihr, 2001, p. 17)

Grade Level Expectations (GLEs) is another list created by DESE written by teachers from across the state of Missouri. The GLEs are learner outcomes of student achievement that should be assessed and appraised at the local (district) level. Designing district objectives to meet the Show-Me-Standards may be enhanced by grouping GLEs together into well-planned, sequential, and targeted lessons whenever possible (DESE, 2007, p. 2). Basic ideas taken from the Health and Physical Education (PE) Frameworks, which align with national health and physical education standards, were used to help create these GLEs. Each expectation depicts what students should be able to do and can

be assessed by the end of each grade level. Health and Physical Education were separate curricula areas when the GLEs were written, whereas in the past the Show-Me-Standards and the "Frameworks" guidelines presented Health and Physical Education as one area of study (Grechus, 2010, p. 89).

For fitness, there are two GLE Strands: Physical Activity and Lifetime Wellness (PA), and Efficiency of Human Movement and Performance (HM) (DESE, 2007, p. 2). There are six GLE Big Ideas: (1) Personal Fitness and Healthy Active Living, (2) Responsible Personal and Social Behavior in Physical Activity Setting, (3) Injury Prevention, Treatment and Rehabilitation, (4) Fundamental Movement Skills and Games, (5) Sport Skills and Lifetime Activities, and (6) Rhythms and Dance (DESE, 2007, pp.3-25).

GLE Concepts use the capital letter to designate the concept being used, and there are 23:

> (A) Health Related and Skill Related Fitness, (B) Wellness, (C) Fitness Principles, (D) Body Systems, (A) Personal/Social Responsibilities, (A) Prevention, (B) Treatment, (A) Loco-motor, (B) Non-Loco-motor, (C) Manipulative Skills, (D) Body Management, (E) Movement Concepts, (F) Developmental Games, (A) Skill Techniques, (B) Individual, Dual and Team Sports, (C) Outdoor Pursuits/Recreational Activities, (D) Specialized Activities, (E) Careers, (A) Essential Elements of Rhythm, (B) Creative/Interpretive, (C) Rhythmic Activities, (D) Forms of Dance, and (E) Social/Cultural Aspects of Dance (DESE, 2007, pp.2-25).

Course-Level Expectation (CLE's) are no longer generic to a grade level, due to having been sorted to be specified for certain courses in grades 9-12. They were once known as Grade-Level Expectations, and in most cases were worded like they were in the original list of GLE's (DESE, 2007 p. 3). Missouri's Grade-Level Expectations (GLE's) and Course-Level Expectations (CLEs) are considered to be measurable learner-objectives, which are assessable, specific performance indicators. Measurable Learner-Objectives are statements of intended learning targets, outcomes, objectives, etc (DESE, 2007, p. 2). District-Level Expectations (GLE's) identify what students are supposed to know and be able to do as a result of specific performance indicators based upon the Show-Me Standards. Districts can establish their own District-Level Expectations to increase the expectations of their students (DESE, 2007, p. 2).

National Standards and Guidelines

Objectives for the state of Missouri are aligned with national standards, set by "the National Association for Sport and Physical Education (NASPE), the only national professional organization from K-12 physical educators" (Monti, 2004 p. 1). These standards state that a physically educated person:

Standard 1: Demonstrates competency in motor skills and movement patterns needed to perform variety of physical activities

Standard 2: Demonstrates understanding of movement concepts, principals, strategies, and tactics they apply to the learning and performance of physical activities

Standard 3: Participates regularly in physical activity

Standard 4: Achieves and maintains a health enhancing level of physical fitness

Standard 5: Exhibits responsible personal and social behavior that respects self and others in physical activity settings

Standard 6: Values physical activity for health, enjoyment, challenge, self-expression, and/or social interaction. (*Shape of the Nation*, 2010, p. 1)

NASPE is a non-profit professional organization that is a recognized leader in sport and physical activity. It is also a dominant national authority on physical education as well. NASPE's mission statement proclaims that, "Our mission is to enhance knowledge, improve professional practices and increase support for high-quality physical education, sport and physical activity programs" (AAHPERD, 2010, p. 1).

NASPE's publications and resources provide health/physical education instructors with the necessary current researched information aimed to help develop high-quality programs, measure student success, and achievement. NASPE also recommends that high schools provide at least 225 minutes of instructional physical education, and NASPE also believes that a quality physical education and physical activity program should be given to every child in the United States (Ballard, et al., 2010, p. 1).

NASPE's national standards have also provided guidance for PE instructional planning strategies, program administration, teacher and student accountability, and rigor. This philosophy can be justified by the National guidelines whose criterion depicts the key points described in the four components contained in a "High-Quality Physical Education Program". It is also evident in the Position Statement which suggest what attributes a "Highly Qualified Physical Education Teacher" should exhibit (NASPE, 2007, p. 1-2).

However, no such definition can be found in federal legislation, at least for PE teachers. Leaving out certain subjects such as physical education from the list of core subjects has caused consequences. Less time and fewer resources provided for those areas not identified as core subjects is one lash back. In order to achieve the objectives of No Child Left Behind, it is critical that all children be provided with a balanced and comprehensive education to be prepared for life in the 21st century. "Providing balance includes incorporating physical education and health education as fundamental components in the curricula" (*Shape of the Nation*, 2010, p. 2). The report, written by NASPE and the American Heart Association, stated:

> Another of NCLB's major elements is a requirement for "highly qualified" teachers. However, the requirement applies only to teachers of the listed core subject areas. To provide a truly world class, comprehensive education, it is critical that all teachers be highly qualified. Reports from physical educators around the country indicate that professional development resources are mainly being utilized for teachers of core subjects, thus depriving teachers of other subject areas and their students the benefits of continuing professional education. (*Shape of the Nation*, 2010, p. 2)

One program providing funding for PE programs is the Carol M. White Physical Education Program. This program's purpose was to provide grant funds to local educational agencies and community-based organizations to initiate, expand, and improve physical education programs. These grants were designed to assist students in making progress toward meeting state standards for physical education and to enable students in grades K-12 to participate in physical education activities by providing funds

for the training and education of teachers and staff and for the purchase of equipment (*Shape of the Nation,* 2010, p. 1).

Physical Activity School and Community Guidelines

Daily physical activity is necessary to build healthy bodies and healthy lifestyles in today's youths. Participation in physical activities seems to decline during adolescence development. To help encourage and nurture our adolescents and to keep them physically active is the responsibility in which the school and community programs must share in their leadership (CDC, 2008, p. 1).

Studies have shown that adolescents who engages in regular physical activities has demonstrated an improvement in strength and endurance, bones and muscle development, weight control, a reduction in stress and anxiety and building of self-esteem, and possible improving blood pressure and cholesterol levels. Also, adolescents reported that being physically active was fun, built peer relationships, contributed to health conditioning, personal enhancement, and skills development (CDC, 2008, p. 1).

Physical activity is defined as any activity that increased their heart rate, made them breath hard some, and engage in the activities for at least sixty minutes per day on five or more of the seven days before the survey was taken, the results showed that 25.6 percent of the high school girls surveyed met the requirements and 43.7 percent of the high school boys also met the requirements (CDC, 2008, p. 1). An inactive adolescent high school student will probably become an adult with a greater likelihood of heart disease disorders, diabetes, types of cancer, high blood pressure, strokes, being overweight or obese, as well as contacting gallbladder disease (CDC, 2008, p. 1-2).

A national survey was administered to determine how many high school boys and girls participated in physical activity and physical education in 2007 (CDC, 2008, p. 1). The survey also consisted of what percentage of high school girls and boys attended physical education classes five days a week, and the results showed that 27.3 percent of the high school girls attended physical education classes daily, and 33.2 percent of the boys attended daily physical education classes (CDC, 2008, p. 1).

Statistical analysis showed that approximately 35% of high school students had participated in physical activity on five or more of the seven days before the survey for at least 60 minutes per day. Approximately 25% of the high school students did not engage in any kind of physical activity for 60 or more minutes on any day (CDC, 2008, p. 2). About 54% of high school attended physical education classes in 2007, 67% of ninth grade students attended physical education classes in 2007, and approximately 41% of twelfth grade students attended daily physical education classes (CDC, 2008, p. 2). Also, there was a 42% percent reduction in high school students who attended daily physical education classes in 1991, to 25% of high school students who attended daily physical education classes. In 2007 approximately 30% of the high school students attended daily physical education classes, and of which, approximately 40% were ninth grade students and 24% were twelfth grade students who attended daily physical education classes (CDC, 2008, p. 2).

High school children should be actively engaged in physical activities for at least five to seven days per week, and the activities should be a combination of moderate to vigorous activities in their make-up (CDC, 2008, p. 2). Moderate activities may consist of brisk (power) walking, bicycling, actively playing, and dancing. Vigorous activities may

consist of running activities, jumping rope, in-line or roller skating, and games involving skipping (CDC, 2008, p. 2-3).

High schools must be committed to educating the student to become a lifelong physical activity participant by establishing policies and procedures which are enjoyable and fulfilling in nature. To accomplish this mission the schools must push for daily physical education classes and health education classes which emphasizes physical activity within their lesson structures (CDC, 2008, p. 3). Meeting the needs and interests of all students must be the primary objective of the schools as well as the community organizations by providing the adequate supervision, funds, and equipment needed to assure quality programs (CDC, 2008, p. 3). Providing a safe environment which encourages students to enjoy physical activities, have access to safe and adequate facilities, providing school time for unstructured physical activities, not using physical activities as a punishment tool, and make provision for school faculty and staff health promotion programs (CDC, 2008, p. 3).

Quality physical education programs are established which incorporates sequential instructional game activities with emphasis placed on development of lifelong physical activities of non-competitive nature such as walking, rope jumping and dancing. Emphasis must also involve maximizing class time, applying National Standards for physical education classes, and encouraging students to develop the knowledge, attitude and skills base needed to adopt and maintain a healthy lifestyle for the present and future of the active student (CDC, 2008, p. 4). The High School's health education curricula must demonstrate learning strategies, develop student knowledge, attitudes and skills needed to adopt and maintain a healthy lifestyle (CDC, 2008, p. 4).

Making provisions for the high school student to be exposed to extra-curricular physical activity programs which provides activities that are competitive, non-competitive, diverse and developmentally appropriate for all students is a key ingredient for the physical activity program's success (CDC, 2008, p. 4). Including physical activity into the family events, being physically active role models as parents and guardians will help win student commitment and involvement in the physical activity program (CDC, 2008, p. 4). Providing training for all of the stakeholders in the physical activity program will help promote, maintain proper supervision, and recruit new prospects for the program (CDC, 2008, p. 4).

The adolescent must be assessed and guided to physical activity programs which are appropriate and adequately supervised for their enjoyment. Lastly, the physical activity program's instructional staff, the implemented programs, and facilities must be evaluated on a regular and ongoing basis (CDC, 2008, p. 4).

Health Issues and Consequences of Sedentary Lifestyle

According to (Bronson & Merki, 2007 p. 78), the numbers of children and teens who are overweight have tripled between 1980 and 1999. Asthma and type-2 diabetes are two health problems which have resulted from the increased number of obese adolescents. Adolescents can eat well balanced diets and participate regularly in physical education classes and physical activities to help minimize obesity, asthma, and type-2 diabetes (Bronson & Merki, 2007 p. 78). Growth charts, physical development, gender, and age are determining factors which measure obesity for youth and adolescents (Fierro, 2002, p. 3).

Physical inactivity is a contributing factor to becoming overweight and obese. A reduction of energy expenditure allows the body to store excess calories as fat. The following lists of societal changes have caused adolescents of today to reduce their opportunities for physical activity:

1. Fewer children walk to school today than did so 30 years ago.
2. Children are watching 12 to 14 hours of television a week and spending seven hours playing video games.
3. Schools have reduced the frequency and intensity of physical education classes for children.
4. Families live in communities designed for car use, and unsuitable and unsafe for activities such as walking, biking, and running. (Fierro, 2002, p. 3)

Asthma causes difficulty for many youth in the United States:

> *Asthma* is a leading chronic illness among children and youth in the United States. In 2007, 5.6 million school-aged children and youth (5-17 years old) were reported to currently have asthma; and 2.9 million had an asthma episode or attack within the previous year. On average, in a classroom of 30 children, about three are likely to have asthma (Healthy Youth! Asthma, 2009, p. 1). Estimated from 2005-2007 indicated that Non-Hispanic Black and Puerto Rican children had higher prevalence rates compared to Non-Hispanic White children. Asthma is one of the leading causes of school absenteeism. In 2003, an estimated 12.8 million school days were missed due to asthma among the more than 4 million children who reported at least one asthma attack in the preceding year. (Healthy Youth! Asthma, 2009, p. 1)

Diabetes is a chronic disease, which weakens and affects every organ system within the body. The two types of diabetes are: type-1 and type-2 (General diabetes facts, 2008, p. 1).

According to the American Diabetes Association (ADA) the blood glucose levels are above normal for diabetics. Diabetics have problems converting food into energy. Food is broken down into glucose, which is a sugar carried throughout the body by blood cells. The pancreas makes insulin, the hormone needed to help convert blood glucose into energy (American Diabetes Association, 2008, p. 1).

Type-1 diabetes is an

> autoimmune disease in which a person's pancreas stops producing insulin, a hormone that enables people to get energy from food. Type-1 diabetes usually strikes in childhood, adolescence, or young adulthood, but lasts a lifetime. People with Type-1 diabetes must take multiple injections of insulin daily or continually infuse insulin through a pump just to survive. (General Diabetes Facts, 2008, November, p. 1)

Type-2 diabetes is a

> metabolic disorder in which a person's body still produces insulin but is unable to use it effectively. Type-2 is usually diagnosed in adulthood and does not always require insulin injections. However, increased obesity has led to a recent rise in cases of type-2 diabetes in young adults. (General Diabetes Facts, 2008, November, p. 1)

Type-2 diabetes is developed due to improper use of insulin in muscles, liver, and fat cells. There is an inability of the pancreas to produce enough insulin needed for the

body. This lack of insulin creates an energy shortage. Over a number of years, the lack of adequate amounts of insulin and energy deprivation results in heart disease, stroke, blindness, kidney disease, nerve problems, gum infections, and amputation (American Diabetes Association, 2008, November, p. 1). "Taking insulin does not cure any type of diabetes nor prevent the possibility of its eventual and devastating effects: kidney failure, blindness, and nerve damage, amputation, heart attack, stroke, and pregnancy complications" (General Diabetes Facts, 2008, November, p. 1).

> Many chronic diseases are costly for individuals and for the health industry: Diabetes is the single most costly chronic disease. In 2007, diabetes accounted for $174 billion in health-care costs in the U.S. Diabetes accounted for 32 percent of all Medicare expenditures. The nation spends $11,744 on each person with diabetes, compared to $2,935 on those who don't have diabetes, as of 2007. People with diabetes in the U.S. incur medical expenses that are approximately 2.3 times higher than people without diabetes. The "National Bill" for hospital stays related to diabetes totaled $58.3 billion in 2007. An estimated 22 percent of hospital inpatient days in the U.S. were incurred by people with diabetes in 2007, (General Diabetes Facts, 2008, November, p. 1).

Physical activity is only one aspect of a healthy lifestyle; nutrition is another. The CDC identified six critical health behaviors for adolescents (2009), one of which was nutrition and another was physical activity. "These behaviors usually are established during childhood, persist into adulthood, and are inter-related, and are preventable. In addition to causing serious health problems, these behaviors also contribute to the educational and social problems that confront the nation, including failure to complete

high school, unemployment, and crime" (Six Critical Health Behaviors, 2009, August p. 1).

Being overweight as a child can potentially mean the individual could result in serious health risk issues, such as low self-esteem, diabetes, high cholesterol, high blood pressure, and respiratory disorders (Costa, 2008 p. 2). Obesity has prompted some researchers to speculate that U.S. children life span expectations may be shorter than their parents (Costa 2009 p. 2).

Factors which researchers have identified as influencing children's good health when making decisions on nutrition and physical activity are "ethnicity, socio-economic status, work demands, school lunch programs, school PE programs, neighborhood safety, accessibility to recreational facilities, and access to convenience foods and restaurants" (Costa, 2008 p. 2).

Body Mass Index guidelines were developed from historical data:

> History of BMI-for age was produced by the Centers for Disease Control (CDC) in 2000 based on survey data over the previous 25 years. The percentiles are similar to the charts created by the National Center for Health Statistics in 1977. At that time, only five percent of the child population at any given age would have been overweight, but the percentage of children falling above the 95th percentile for BMI has increased since that time. Now approximately 18% of all children younger than 18 years of age have a BMI over the 95th percentile (Costas, 2008, p. 2).

Overweight and obesity are two categories or classifications of Body Mass Index (BMI), which is calculated by "dividing an individual's weight in pounds by their height

in inches squared and then multiplying that number by 703. An adult is overweight with a BMI greater than 25, and obese if BMI is greater than 30" (Costas, 2008, p. 2). Children as well as adults' BMI is calculated in the same manner, however when calculating a child's BMI, the BMI is shown as a percentile that is compared to other children of the same age and gender status.

The Youth Risk Behavior Surveillance System (YRBSS) stated that children are not receiving the nutrients or exercise required (Costas, 2008, 2008 p. 2). The 2005 data resulted in statistics which indicated the need for policies designed to increase physical activity and healthy eating among youth, because one in three of America's young participate in the recommended amount of physical activity, and only one of five consumed the recommended five servings of fruits and vegetables a day (Costas, 2008, p. 2).

Trends in the State of Missouri

Missouri is ranked as the 15th worst state by the Trust for Americas' Health in 2004, in terms of the percentage of overweight children at a rate of 15.6 percent and the national average was 14.8 percent (Costas, 2008, p. 3). In the 10 years leading up to 2005, data from the YRBSS indicated an increase in the physical activity among Missouri teens (Costas, 2008, p. 3).

YRBSS indicated that the number of students that reported participating in rigorous physical activity for 20 minutes at least three days per week was up to nearly 70 percent in 2005 compared to approximately 63 percent in 1995 (Costas, 2008, p. 3). However, nationwide students that participated in rigorous physical activity for 20

minutes at least three days per week went unchanged at around 64 percent – 65 percent in the same 10 years period 1995-2005 (Costa, 2008, p. 3).

The national trend shows fewer students consuming at least five daily servings of fruits and vegetables, and Missouri show that only one in six teens consumed at least five daily servings of fruits and vegetables from 1995-2005 (Costas, 2008, p. 3).More students were reported to be more active in Missouri, there was a higher rate of overweight students, indicates a need for coordinated policies to increase physical activity and improve nutrition (Costas 2008, p. 3).

The CDC and NASPE recommended 225 minutes of PE per week for older students. Missouri's' physical education requirements for public schools are lower (Costas 2008, p, 3). A one year course of physical education is required for high school students in Missouri. House Bill 1891 which requires 4 semesters of physical education for high school students, was considered by Missouri legislators in 2008, but was not adopted as a law (Costas 2008, p. 3).

All school lunch standard requirements are governed by the United Stated Department of Agriculture (USDA). Any foods sold in competition with the lunch program, such as soda, chips, and other junk food are classified as competitive foods (Costas 2008, p. 3). Many of the states of the United States have stricter restrictions than the USDA standards, concerning competitive foods sold at school. A school wellness policy is mandatory from all schools in Missouri, participating in the federal school lunch program (Costas 2008, p. 3).

In 2005 about 30% of Missouri's high school students were either overweight or obese according to the CDC (Costa 2008, p. 3). CDC recommends better health

education, more physical education, physical activity, healthier school environment, community involvement, and informational outreach as ways to address childhood obesity (Costa 2008, p. 3).

Schools are recommended by the CDC to help with addressing the rise in childhood obesity by implementing a "coordinated school nutrition policy" with nutrition lessons, healthy food options, staff training, family involvement, and health education policies be implemented into the classroom curriculum (Costa 2008, p. 3). "Children who participated in physical education five days per week were 28% less likely to be overweight as young adults than those who did not, according to the National Longitudinal Study of Adolescent Health data" (Costa 2008, p. 3).

Schools in Lafayette County, Missouri are developing creative ways to improve the nutritional option available at breakfast or lunch, by utilizing local farmer's produce for school lunches. Utilizing this typed of policy resource enables the students to gain access to fruits and vegetables, students may be able to visit local farms and increase their knowledge about farming and gardening, and promote an economic relationship between the farmers and the participating schools (Costas 2008, p. 3).

Multilevel community approaches which will slow or reverse BMI gains in children have been suggested through recent research. Parents, physicians, business leaders, restaurant owners, and schools will be brought together in order to address childhood obesity (Costas 2008, p. 4). This community approach will entail increasing recreation opportunities; altering local restaurant's cooking techniques to reduce fat content, and increasing access to healthier foods and offering cooking classes to parents. Walking and bike riding to school are good ways to increase physical activity among

children. The Robert Wood Johnson Foundations Active Living by design promotes walking and biking to school (Costas, 2008, p. 4). Federal Safe Routes to School grants to improve the safety of sidewalks near schools are available to smaller residential communities in Missouri.

Healthy People 2010

Dr. Julius Richmond, a Surgeon General and Assistant Secretary for Health in 1979, was given credit for creating the Healthy People Initiative in the United States Department of Health and Human Services (HHS). The original formation of Healthy People was based upon "preventive medicine, disease surveillance, vaccine and therapeutic development, and information technology" (Healthy People, 2010, p. 1). Healthy People Initiative was a Surgeon General's Report released by Dr. Richmond in 1980 (Satcher, n.d., p. 1). This report was the forerunner to The Healthy People 1990 plan, and was later followed by The Healthy People 2000 National Health Promotion and Disease Prevention objectives. On January 25, 2000, Healthy People 2010 the third set of national health objectives were released (Satcher, n.d., p. 1).

Healthy People 2010 was built on initiatives that had been prevalent over the preceding 20 years. Healthy People 2010 focused on two major goals which served as the basis for the development of state and community plans (Satcher, n.d., p. 1). To increase the years and quality of healthy life was the first major goal of Healthy People 2010. Americans gained thirty years of life expectancy during the twentieth century. Life expectancy in 1900 was 47 years of age, but in 2000 it was 77 years of age and because of this 30 years increase in life expectancy the first goal focused on increasing the quality and years of expectancy (Satcher, n.d., p. 1).

One of the primary goals of Healthy People 2010 is to decrease or do away with the unequal health issues and status that now exist between certain racial and ethnic groups. Due to the major concern for this nation's rapidly increasing diverse population, presented a question to whose answer was to eliminate disparities; so that all groups benefit and the needs of the most vulnerable are met (Satcher, n.d., p. 1).

Ten Leading Health Indicators are incorporated into Healthy People 2010. There are five health indicators that are concerned with lifestyle choices such as: tobacco use, overweight and obesity, physical activity, responsible sexual behavior, and substance abuse (Satcher, n.d., p. 2). Since the inception of the Healthy People Initiative in 1980 the nation's overall health has improved considerably, however to continue improving the health of this nation is a long-term investment and commitment which will require participation from all sectors of society (Satcher, n.d., p. 4).

Summary

This literature review was concerned with informing the reader of the importance of having adequate funding facilities, resources, quality teachers, implementing professional development, effective teaching strategies, and student co-operation, all of which are vital components for the success of any physical education program.

Chapter two provided the reader with historical information on how physical education emerged from ancient societies and foreign countries. The reader was also provided with information concerning the role females held in the early development of the physical education program, and how females were given a prominent role in its development. The chapter also informed the reader of reasons for the importance of

physical education to adolescents and what some of the barriers are in facing the support of PE curriculum and the physical education profession.

The literature review provided information concerning the FitnessGram and President's Challenge which are the two types of physical fitness assessments used in the state of Missouri. The chapter discussed the components of health and fitness that are tested by the Missouri physical fitness Assessment Test such as body composition, aerobic capacity, muscular strength, flexibility, and muscular endurance. In addition, Chapter two discussed standards and expectations that students in the State of Missouri must adhere to in compliance to state and federal mandates.

The literature review discussed the meaning of physical education and how physical activity, physical fitness, and health-related physical fitness all play a role in human development and academic growth. Included in this chapter were physical education mandates and statues which governed the physical education and health education professions curriculum.

The literature review also discussed recommendations and benefits of incorporating and maintaining regular physical activities and the consequences for leading a sedentary lifestyle. Researched statistics and types of physical activities that are moderate and rigorous in nature were mentioned. A recommendation which may ensure a quality physical activity program was also discussed in this chapter.

A concluding remark for the literature review chapter was that research has disclosed that many healthy disorders that occur in youths and adults are due to obesity which can be addressed through educating our youths in proper eating habits, regular physical activity, and choosing life-long activities aimed at maintaining a healthy and

active lifestyle throughout their lifetime. This is the focus and mission of a critically important national organization known as Healthy People 2010, which had two major goals to increase the quality and number of years expected to live and to decrease or eliminate the unequal health issues which now exist between certain race and ethnic groups in today's society.

Chapter III: Methodology

The review of literature presented in chapter two focused on fitness indicators and other factors which may impact a high school student's fitness assessment scores. This research focused on a three-school-year study (Fall 2007- Spring 2008, Fall 2008- Spring 2009, and Fall 2009- Spring 2010) of a secondary school in the Study School District. The study was concerned with the Physical Fitness Assessment Test, which is given in compliance with the Missouri Department of Elementary and Secondary Education (DESE) state standards. In the Study School District, all ninth and fifth grade physical education students must take a physical fitness pretest in the fall semester and a posttest in the spring semester. Even though the state of Missouri only required each school district to report the fifth and ninth grade results, the Study School District assessed all of its secondary students who enrolled in physical education.

Purpose of the Study

The purpose of this study was to identify which Missouri Physical Education Fitness Assessment strategies were implemented by high schools in the Study School District to meet state physical fitness standards and to identify physical fitness personnel perceptions of district-provided support for physical education programs and their possible benefits to students involved.

Research Questions

Research Question # 1: What strategies are physical education teachers who are employed in the Study School District implementing to promote success for their students in meeting the state physical fitness indicators?

Research Question # 2: To what degree are identified strategies being used by physical education teachers who are employed in the Study School District?

Research Question # 3: What are the perceived strengths and weaknesses in support provided for physical education in the Study School District?

Research Question # 4: What are the perceived benefits of current physical education programs for students in the Study School District?

Background of Research Setting

The history and background of Study Site High School will help the reader to understand the cultural and social impact that the demographics and competitive nature of the sports teams had upon physical fitness activity. The history of the school can also help the reader to visualize the abundance or lack of facilities for physical education activity at the site.

The original Motto of Study Site High School, which was "Truth, Honor, Freedom, and Courtesy," is still used today along with the current Mission Statement.

> The mission of Study Site High School is to create productive world citizens and to promote unity in diversity. Students graduating from Study Site High School are life-long learners who are prepared for participation in the global society. (Study School District, 2004a)

Study Site High School was named after the individual who was Superintendent of the Study School District from 1895-1908. Study Site High School was opened in September 1909. Study Site was closed in 1990 for renovation and was re-opened in 1993 with an approximate enrollment of 640 students. Study Site High School had a diverse population and was a college preparatory school that offered courses in specialty

areas, such as foreign languages, as well as traditional disciplines. Study Site's curriculum offered six world languages; Chinese, Spanish, German, Russian, French, and Arabic. Other specialty areas of study were the three academies the Study Site offered to its students. These were International Business and Trade Academy, Global Studies Academy, and Academy of Information and Technology. Study Site also offered an Air Force Jr. ROTC Program and a nationally acclaimed Choir program.

Study Site High School was a magnet school that offered innovative coursework and specialized training. Study Site's grade levels were 9-12 with over 30 nations represented by the students, teachers and other staff members. Over 100 students were served by the English as a Second Language (ESL) Program. All of the School District middle schools' students were eligible to be recruited to attend Study Site High School. Study Site High School had a larger number of Black students than many area high schools.

Study Site High School was a North Central Association accredited school, with a mission to provide a strong, exemplary, inter-disciplinary, instructional program which emphasized high academic achievement. Its focus of world languages, world cultures and global awareness enabled its students to develop skills in problem solving, critical thinking, technology, and language proficiency (Study School District, 2004a).

Study Site had educated students from numerous nations, six continents, and several islands. In 2009, Study Site celebrated 100 years of offering outstanding educational opportunities to high school students in the Study School District. Study Site offered students a variety of clubs, student activities, and organizations in which to participate and become involved, such as Cheerleading, Flag Line, Forensics Team,

Future Business Leaders of America, Model United Nations, National Honor Society, Dance Squad, Band, and the Speech and Debate Clubs. Local University graduate students collaborated with the Study Site administrative staff and teachers in order to help tutor students in academic areas of need (Study School District, 2004a). The athletics program was a valuable and much needed asset to the culture and makeup of Study Site's environment. The athletic program consisted of Varsity/ Junior Varsity boys' baseball, boys' and girls' basketball, boys' and girls' cross country and track, boys' and girls' soccer, boys' and girls' tennis, girls' volleyball, girls' softball, and wrestling (Study School District, 2004a).

Football was a highly regarded and popular sport at Study Site and in the City. However, due to the diverse student population and interest level of the foreign students, the large number of participants needed to form a competitive football team had not been possible. Whereas, in the years before the school closed in 1990, Study Site was a football and basketball power in the City League. The football, basketball, and girls' and boys' track teams were gradually becoming more competitive in athletics throughout the City and state as well.

Soccer was another highly regarded sport at Study Site High School, which had won numerous Public High School League Championships in the past six years, previous to this study, under the leadership of Athletic Director and Coach. The success of the boys' soccer team was due to the talents of the foreign students who attended Study Site High School with skills that exceeded those of most of the students in the other urban public schools. However, a Sister High School in the Study School District was beginning to rival Study Site in boys' soccer. In the past few years, previous to this study,

the Sister High School's foreign student population had increased and it began to attract athletes, who in the past would have attended Study Site.

The urban athletic program would have had more success with the skill level and competitive teams in every sport, if the athletic facilities were readily available throughout the Study School District, but due to the lack of needed funds, the progress of the athletes was minimized. An example is that Study Site had one gym which was shared by the boys' and girls' basketball teams; there was a football stadium near the school, but there was no track to practice running. The track team had to be bussed each day to a different location in order to practice. The baseball team had to be bussed across town to practice as well. The soccer team had to share the football field with the football team or go to a nearby park for soccer practice. The tennis team had to go to the park or to a facility which had tennis courts.

Study Site High School's Demographic Data from 2005-2009

Five years of demographic data for Study Site High School is discussed in this section of the chapter. Throughout that time there is a trend of lowering enrollment within the Study School District renovating and reducing the number of buildings, again because of lack of funding (See Table 1). The study site had demographics differing from the state of Missouri in a number of areas. Asian enrollment at the study site ranged from 4.6 to 5.6 percent during the study timeline. The state Asian enrollment ranged from 1.5 to 1.9 percent. The Black subgroup enrollment at the study site ranged from 59.4 to 69 percent during the study timeline. The state Black subgroup enrollment ranged from 17.8 to 18.1 percent. Hispanic enrollment at the study site ranged from 5.7 to 9.0 percent during the study timeline. The state Hispanic enrollment ranged from 2.8 to 3.8 percent.

White enrollment at the study site ranged from 16.5 to 29.2 percent during the study timeline. The state White enrollment ranged from 76.1 to 77.4 percent. Free and Reduced Lunch enrollment at the study site ranged from 67.5 to 84.6 percent during the study timeline. The state Free and Reduced Lunch enrollment ranged from 40.8 to 43.7 percent. Table 1.

Demographic Data, 2005-2009

		STUDY SITE				
Year		2005	2006	2007	2008	2009
		837	801	703	677	648
Asian	Number	47	41	35	31	34
	Percent	5.6	5.1	5	4.6	5.2
Black	Number	497	526	478	445	447
	Percent	59.4	65.7	68	65.7	69
Hispanic	Number	49	46	43	56	58
	Percent	5.9	5.7	6.1	8.3	9
Indian	Number	0	0	0	0	2
	Percent	0	0	0	0	0.3
White	Number	244	188	147	145	107
	Percent	29.2	23.5	20.9	21.4	16.5
Free/Reduced	Number	669	600	558	423	428
Lunch (FTE)*	Percent	84.6	83	83.3	67.5	69

Source: Missouri Department of Elementary and Secondary Education (DESE, 2009)
Core Data As Submitted by Missouri Public Schools
Data as of November 2, 2009

Data Collection

The researcher observed and analyzed secondary data generated by students from one Study School District high school, utilizing measurements from four physical fitness assessment indicators which were gender specific. The students were enrolled in the researcher's physical education courses over a span of three years from 2007-2008, 2008-2009, and 2009-2010. Physical fitness events were graded according to the time in which the event was completed, the number successfully completed in the expected time

allotted, and the expected distance to be obtained by the participant. The five health indicators were classified into categories of fitness according to the individual's BMI which was used by health professionals as a screening tool to identify possible weight issues and risk for many diseases and health conditions, such as diabetes, hypertension (high blood pressure), coronary heart disease, stroke, high cholesterol, and some cancers (kidney, colon, breast, endometrial) (BJC, 2009, p. 73). BMI is calculated as a ratio of the individual's weight in (lbs.) multiplied by 703 and divided by the square of the height in (inches) (BJC, 2009, p. 73).

The following events and measurements were recorded to indicate levels of fitness and levels of health, indicated by BMI.

1. Aerobic capacity (one-mile run) – timed.
2. Abdominal strength (curl-ups) – timed and number completed in time allotted.
3. Upper body strength (push-ups) – timed and number completed in time allotted.
4. Flexibility (sit-and-reach) – distance measured.

Health Indicators:

1. Healthy (BMI) – 15-24 points
2. Overweight (BMI) – 25-30 points
3. Obese (BMI) – 31-35 points
4. Severely obese (BMI) – 36-40 points
5. Morbidly obese (BMI) – 41+ points

The researcher also conducted surveys and interviews to gather perceptions from physical education, health, and athletic personnel throughout the Study School District to obtain a view of how well best practices were implemented in the classroom and how

well programs were supported by the Study School District. These procedures will be described in more detail in the next section.

Methodology

The researcher of this study is a licensed K – 12 physical education teacher who used his physical education pupils' physical fitness assessment test results as statistical data related to state standards for Healthy Fitness Range (HFR) score achievements. In the classroom, the researcher used self induced strategies as well as best practices he obtained at workshops, observations made of other classroom teachers, peers, and written materials from physical education professional organizations. The steps followed during the research for this study are as follows:

1. Compiled physical fitness data from school years 2007-2008, 2008-2009, and 2009-2010.
2. Organized data according to assessment events for males and females, semesters, and year-to-year totals.
3. Analyzed data for trends and comparisons to the Missouri Healthy Fitness Ranges (HFR).
4. Surveys were administered to physical education professionals in the district. Survey questions were linked to teaching strategies, which were linked to the state standards.
5. Compiled survey data for analysis of similarities and differences with responses.
6. Interviewed Physical Education classroom professionals, Health classroom professionals, and a building athletic director.

The secondary data used for this research study was obtained from the study school fitness assessment results. The researcher generated the Teacher Resource survey administered by the district. Responses to the survey allowed the researcher to generate interview questions for voluntary follow up sessions.

Instrumentation

The primary tool implemented to gather information for this study was the researcher's physical fitness assessment test results for physical education enrollment from the past three school years, 2007-2008, 2008-2009, and 2009-2010. Physical education teachers at the Study Site, along with the entire Study School District secondary schools, were expected to administer and collect physical fitness assessment test results as a fall semester pretest, as well as a spring semester post-test. The State of Missouri Department of Elementary and Secondary Education (DESE) required only grades five and nine to be reported to the state; however, the Study School District reported all middle and secondary schools' statistical results. The body mass index (BMI) results are optional to report, but the Study School District submitted their BMI results along with other data.

The researcher administered the student assessments for each of the fitness and health indicators, recorded, analyzed, and organize data into tables for comparison. He also gathered and organized results from the Physical Education Resource Survey and Interview Question response. State-wide assessment results for the state of Missouri for the year 2007 are summarized on Table 2. These data provide a baseline for comparison to the Study Site data gathered for analysis in this study.

Table 2.

Missouri 2007 Physical Education Fitness Assessment Data

Gr	Sex	Category	Not Tested	Tested	> HFR	% > HFR
09	F	AERO	4786	24877	14399	57.88%
		ABDO	4724	25188	17693	70.24%
		FLEX	4611	25057	17893	71.41%
		UPPER	4680	25266	16073	63.62%
	M	AERO	5062	27437	17632	64.26%
		ABDO	4830	27951	20134	72.03%
		FLEX	4952	27502	17904	65.10%
		UPPER	4818	27625	19777	71.59%

Gr	Category	Not Tested	Tested	> HFR	% > HFR
9	AERO	9,848	52,314	32,031	61.23%
	ABDO	9,554	53,139	37,827	71.19%
	FLEX	9,563	52,559	35,797	68.11%
	UPPER	9,498	52,891	35,850	67.78%

Note: Missouri Department of Elementary and Secondary Education (DESE, 2008).

Study District Physical Fitness Assessment Test

One of the main responsibilities required of a PE teacher in the Study School District was to administer the Physical Fitness Assessment Test (PFAT) to all students who are enrolled in PE classes. The PFAT is given during the fall (September) and again in the spring (April-May) of each school year.

Before the various assessments were given to the students a conditioning time period of at least two weeks was provided. In past years this amount of time had proven to be a reasonable adjustment time frame for most of the students' conditioning levels to be ready for PE class participation. However, because of the ethnic makeup of the student body, customs, and beliefs of many of the students, there were also some adjustments that were honored. For example, many of the Asian and African (Muslim) female students would not wear conventional physical education gym wear, such as shorts, sweat shirts or tee-shirts and must be allowed to wear the native custom attire of long skirts and head

wraps. Therefore, these students were considered properly dressed and prepared for PE class when they were dressed in tennis shoes or sneakers.

During the first few weeks of school in the fall, the PE class activities were dedicated to mild-to-moderate exercises and stretching exercises as preparation warm-up activities before more vigorous aerobic activities such as, power walking, running activities, soccer, rope jumping, basketball participation, flag football participation, and other active games were incorporated into the class activities.

The students were given at least two class period notifications before the PFAT was administered. Charts were posted on the walls of the gym which showed how to perform each PFAT indicator, as well as the minimum passing cut off point for each assessment which was called the Healthy Fitness Range (HFR) for each assessment. The charts that were posted on the gym walls thoroughly showed and explained the minor details of each assessment given. The charts included how many attempts would be allowed and which attempts would be recorded.

The PFAT is flexible in that the components (indicators) may be administered in any order that the PE teacher chooses. However, the researcher always found that taking the student's BMI, which is not a test, may be the most sensitive issue involved in the PFAT because of the labels associated with the height-to-weight relationship. For example, if a student's height-to-weight is between 15-24 points he or she is considered to be in the HFR. However, if a student's height-to-weight is between 25-30 points he or she is considered as being overweight (Study School District, 2004b, p. 1). This comparison makes measuring the student's BMI sensitive. Getting students to cooperate and allow the teacher to take their height-to-weight could sometimes be a problem. Also,

asking the student to remove their shoes could sometimes create a situation because of their personal hygiene issues or other reasons that could cause a student to refuse.

The second fitness indicator the researchers normally assessed was the Sit and Reach. The HFR is different for high school girls (33cms/14 inches) than for the boys. Both girls and boys were given three reaches each and the best reach of the three attempts was recorded (Study School District, 2004b, p. 1).

Curl-ups were usually the third PFAT indicator assessed. It measured abdominal strength and endurance. The precaution of having a sterile and padded mat to administer this test was important due to the high number of asthma suffers and possible staphylococcus (staph) issues that could result from administering this test. High school girls had to execute a minimum of 36 sit-ups in one minute to be considered in the HFR.

The fourth PFAT indicator assessed was push-ups which were a measure of upper body strength and endurance. Again, precaution was taken when the teacher administered push-ups on a padded mat or floor area in the gym because of students with asthma which may be triggered by dust. High school girls must execute a minimum of 12 straight leg push-ups with proper form, in thirty seconds, with only the palms of the hands and toes or feet contacting the floor, in order to score in the HFR. The high school boy had to execute 23 push-ups with the same rules and time span applying, in order to score in the HFR in the pushups fitness indicator (Study School District, 2004b, p. 1).

The fifth, and final, PFAT indicator was the mile run-walk which measured aerobic capacity. This indicator was considered by many to be the most important indicator of a person's health and fitness status, in relationship to the lungs capacity, heart pressure, and blood circulation processes (King, 2000, p. 5). High school girls were

expected to complete the one mile course in 10:00 minutes in order to meet the HFR. High school boys were expected to finish the one mile course in 9:00 minutes to be considered in the HFR for the one mile endurance run (Study School District, 2004b, p. 1).

The physical fitness measurements recorded for students from the Study Site in each physical fitness category were compared to standard criteria suggested by the Missouri Department of Elementary and Secondary Education (Tables 3 and 4).

Table 3.

Girls - Missouri Criteria for Healthy Fitness Range

	Girls			
Age	Push Up Number Completed	Sit & Reach Centimeters	1-Mile Run/Walk Minutes	Curl Up Timed
13	7	31	11:30	37
14	7	33	11:00	37
15	7	36	10:30	36
16	7	34	10:00	35
17	7	35	10:00	34

Note. From Missouri Physical Fitness Assessment Manual (DESE)

Table 4.

Boys - Missouri Criteria for Healthy Fitness Range

	Boys			
Age	Push Up Number Completed	Sit & Reach Centimeters	1-Mile Run/Walk Minutes	Curl Up Timed
13	12	26	10:00	
14	14	28	9:30	45
15	16	30	9:00	45
16	18	30	8:30	45
17	18	34	8:30	44

Note. Missouri Physical Fitness Assessment Manual (DESE)

Survey

A Seven point Likert Scale was utilized on the survey evaluation tool. Responses to the survey were confidential. The survey consisted of 26 scaled questions and two open ended questions for comments administered to physical education, health, and athletic personnel in the study district during opening meetings for the academic year. The questions were grouped into four distinct categories which represented classroom policies and procedures (question 1.1 through 1.5), school resources and professional staff development (questions two through ten), and school policies, procedures, and professional view point concerning physical education (questions 11 through 20). The last two questions dealt with how much class time was dedicated to PE and a participant rating of the quality of the Study School District PE program (Appendix C).

Interview Questions

There were eight questions included in the interview conducted with PE and health teachers and one athletic director in the Study School District (See Appendix A). The first three PE teachers, health teacher, and athletic director who voluntarily responded to the interview process were included in this study.

The teacher interviews were conducted at the interviewee's campus. In the interest of time, they were tape recorded which provided an opportunity for the researcher to review and transcribe the recording later (See Appendix B). The interviews took approximately 30 minutes to conduct, though, in many cases, thirty minutes was not enough time to capture the detailed information necessary to provide specific examples as the questions were discussed.

The Study District's five interviewees were chosen on a first response, voluntary basis. The health teacher is referred to as Coach A in this study. There were three PE teachers referred to as Coach B, Coach C, and Coach D. The fifth interviewee was an athletic director referred to as Coach E.

Data Analysis Procedure

Physical Fitness Assessment data gathered for this study consisted of the total number of 9th grade students tested from the Study School District, the number of students not tested, the percentage of 9th grade students enrolled in PE and the average class size that contained 9th grade students.

The Physical Fitness Assessment indicators targeted by this study were aerobic capacity (mile run for time), abdominal strength (curl up for number in a one minute limit), upper body strength (push-up for number completed in 30 seconds), and flexibility (sit-and-reach measured in inches or centimeters) with a minimum HFR for girls and boys. The five Health Indicators consisted of Healthy (BMI – 15-24), Overweight (BMI – 25-30), Obese (BMI – 31-35), Severely Obese (BMI – 36-40), and Morbidly Obese (BMI – 41+).

Data was gathered and organized into tables separated by gender and year. Further analysis was conducted through a compare and contrast system. Data were compared pre- to post-measure and year-to-year. The organized data, in table format, is descriptive and discussed in this chapter.

Table 5. *First year pre and post Physical Fitness Assessment Test: Female, fall 2007 and spring 2008*

Gender (Female)	Fitness Indicators (4)								Health Indicators (5)									
Indicator	Mile-run		Push-up		Sit-up		Sit & Reach		Healthy		Overweight		Obese		Severely Obese		Morbidly Obese	
Time/Category	10:00		12		36		33 cm.		15-24		25-30		31-35		36-40		41+	
Semesters	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S
Years	07	08	07	08	07	08	07	08	07	08	07	08	07	08	07	08	07	08
Numbers	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
HFR	6	7	29	33	31	24	20	32	40	39	13	16	7	8	1	1	7	8
Percents	9.2	10.8	44.6	50.8	47.7	36.9	30	49.2	61.5	60	20	24.6	10.8	12.3	1.5	1.5	10.8	12.3
Total Numbers	13/130		62/130		55/130		52/130		79/130		29/130		15/130		2/130		15/130	
Total Percent	10		47.7		42.3		40		60.8		22.3		11.5		1.5		11.5	

Note: HFR = Number of students in the Healthy Fitness Range.
F = Fall data
S = Spring data

Table 6. *First year pre and post Physical Fitness Assessment Test: Male, fall 2007 and spring 2008*

Gender (Male)	Fitness Indicators (4)								Health Indicators (5)									
Indicators	Mile-run		Push-up		Sit-up		Sit & Reach		Healthy		Overweight		Obese		Severely Obese		Morbidly Obese	
Time/Category	10:00		12		36		33 cm.		15-24		25-30		31-35		36-40		41+	
Semesters	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S
Years	07	08	07	08	07	08	07	08	07	08	07	08	07	08	07	08	07	08
Numbers	61	54	61	54	61	54	61	54	61	54	61	54	61	54	61	54	61	54
HFR	22	17	27	23	28	24	10	19	40	31	7	7	4	6	3	3	5	3
Percents	36.1	31.5	44.3	42.6	45.9	44.4	16.4	35.2	65.6	57.4	11.5	13.0	6.6	11.1	4.9	5.6	8.2	5.6
Total Number	39/115		50/115		52/115		29/115		71/115		14/115		10/115		6/115		8/115	
Total Percents	33.9		43.5		45.2		25.2		61.7		12.2		8.7		5.2		0.7	

Note: HFR = Number of students in the Healthy Fitness Range.
F = Fall data
S = Spring data

Table 7. *Second year pre and post Physical Fitness Assessment Test: Female, fall 2008 and spring 2009*

Gender (Female)	Fitness Indicators (4)								Health Indicators (5)									
Indicator	Mile-run		Push-up		Sit-up		Sit & Reach		Healthy		Overweight		Obese		Severely Obese		Morbidly Obese	
Time/Category	10:00		12		36		33 cm.		15-24		25-30		31-35		36-40		41+	
Semesters	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S
Years	08	09	08	09	08	09	08	09	08	09	08	09	08	09	08	09	08	09
Numbers	10	9	10	9	10	9	10	9	10	9	10	9	10	9	10	9	10	9
HFR	1	0	2	2	4	4	3	7	5	4	3	2	1	2	1	1	1	2
Percents	10	0	20	22.2	40	44.4	30	77.8	50	44	30	22.2	10	22.2	10	11.1	10	22.2
Total Numbers	1/19		4/19		8/19		10/19		9/19		5/9		3/19		2/19		3/19	
Total Percents	5.3		21.1		42.1		52.6		47.4		26.3		15.8		10.5		15.8	

Note: HFR = Number of students in the Healthy Fitness Range.
F = Fall data
S = Spring data

Table 8. *Second year pre and post Physical Fitness Assessment Test: Male, fall 2008 and spring 2009*

Gender (Male)	Fitness Indicators (4)								Health Indicators (5)									
Indicators	Mile-run		Push-up		Sit-up		Sit & Reach		Healthy		Overweight		Obese		Severely Obese		Morbidly Obese	
Time/Category	10:00		12		36		33 cm.		15-24		25-30		31-35		36-40		41+	
Semesters	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S
Years	08	09	08	09	08	09	08	09	08	09	08	09	08	09	08	09	08	09
Numbers	6	4	6	4	6	4	6	4	6	4	6	4	6	4	6	4	6	4
HFR	1	1	2	3	4	3	1	3	4	2	1	1	1	1	0	0	0	0
Percents	16.7	25	33.3	75	66.7	75	16.7	75	66.7	50	16.7	25	16.7	25	0	0	0	0
Total Number	2/10		5/10		7/10		4/10		6/10		2/10		2/10		0/10		0/10	
Total Percent	20		50		70		40		60		20		20		0		0	

Note: HFR = Number of students in the Healthy Fitness Range.
F = Fall data
S = Spring data

Table 9. *Third year pre and post Physical Fitness Assessment Test: Female, fall 2009 and spring 2010*

Gender (Female)	Fitness Indicators (4)								Health Indicators (5)									
Indicator	Mile-run		Push-up		Sit-up		Sit & Reach		Healthy		Overweight		Obese		Severely Obese		Morbidly Obese	
Time/Category	10:00		12		36		33 cm.		15-24		25-30		31-35		36-40		41+	
Semesters	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S
Years	09	10	09	10	09	10	09	10	09	10	09	10	09	10	09	10	09	10
Numbers	89	84	89	84	89	84	89	84	89	84	89	84	89	84	84	84	89	84
HFR	5	8	49	46	45	42	46	44	58	48	19	18	7	6	4	2	7	6
Percents	5.6	9.5	55.1	54.8	50.6	50	51.7	52.4	65.2	57.1	21.3	21.4	7.9	7.1	4.5	2.4	7.9	7.1
Total Numbers	13/173		95/173		87/173		90/173		106/173		37/173		13/173		6/168		13/173	
Total Percents	7.5		54.9		50.3		52		61.3		21.4		7.5		8.8		7.5	

Note: HFR = Number of students in the Healthy Fitness Range.
F = Fall data
S = Spring data

Table 10. *Third year pre and post Physical Fitness Assessment Test: Male, fall 2009 and spring 2010*

Gender (Male)	Fitness Indicators (4)								Health Indicators (5)									
Indicators	Mile-run		Push-up		Sit-up		Sit & Reach		Healthy		Overweight		Obese		Severely Obese		Morbidly Obese	
Time/Category	10:00		12		36		33 cm.		15-24		25-30		31-35		36-40		41+	
Semesters	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S
Years	09	10	09	10	09	10	09	10	09	10	09	10	09	10	09	10	09	10
Numbers	45	48	45	48	45	48	45	48	45	48	45	48	45	48	45	48	45	48
HFR	13	19	28	27	20	27	23	22	28	29	12	13	4	3	1	3	0	0
Percents	28.9	39.6	62.2	56.3	44.9	56.3	51.1	45.8	62.2	60.4	26.7	27.1	8.9	6.3	2.2	6.3	0	0
Total Numbers	32/93		55/93		47/93		45/93		57/93		25/93		7/93		4/93		0/93	
Total Percents	34.4		59.1		50.5		48.4		61.3		26.9		7.5		4.3		0	

Note: HFR = Number of students in the Healthy Fitness Range.
F = Fall data
S = Spring data

Descriptive Summary of Study Site Student Fitness Data

In Tables 5 and 6, the number of females and males who achieved the healthy fitness range for fall of 2007 and spring of 2008, the first year examined in the study, is summarized. In Tables 7 and 8, the number of females and males who achieved the healthy fitness range for fall of 2008 and spring of 2009, the second year examined in the study, are summarized. In Tables 9 and 10, the number of females and males who achieved the healthy fitness range for fall of 2007 and spring of 2008, the third year examined in the study, are summarized. These tables were utilized in the comparative analysis of the measurements. Results are discussed in chapters four and five.

Summary

Chapter three outlined procedures and methodology for this study as it related to the researcher's three years of physical fitness assessment scores gathered at the Study Site High School from the fall 2007 through the spring 2010 school years. A pre-test was given in the fall semester and a post-test was administered in the spring semester of each school year during the three year period. Events from the Missouri Physical Fitness Assessment Test were used as measurement tools for data gathering. Four Physical Fitness Assessment Components (mile run-aerobic capacity, curl-ups abdominal strength, push-ups-upper body strength, and sit-and-reach-flexibility were utilized in the study.

Chapter three presented four research questions which were addressed by the eight interview questions which were answered by three PE teachers, one health teacher, and one athletic director. The researcher administered surveys and conducted follow up interviews with physical education personnel in the Study School District to identify perceived strengths and weaknesses of the programs and facilities available for physical

fitness, along with the best practices and strategies employed by the personnel. Perceptions of the Study School District's support or lack of support provided for the students enrolled in physical education courses were also gathered and recorded through use of the survey and interview questions.

The purpose of the analysis of three years of physical fitness assessment data was to attempt to identify patterns of growth in student achievement in the area of physical fitness. A discussion of which strengths and strategies were implemented in order to help the Study Site High School students meet the HFR on state mandated physical fitness assessment indicators within the urban setting is included in chapter five. The results of this study may provide useful information concerning the effective strategies a large, urban, Mid-Western high school in the areas of PE and health.

Chapter four provides discussion of results from comparative analysis of physical fitness measurements over the span of the three-year study and a discussion of the perceptions of physical education personnel from the Study School District regarding the knowledge and use of best practices and good teaching strategies and the perceived support or lack of support provided for the students by the Study School District.

Chapter IV: Presentation of Research

The purpose of this study was to identify which Missouri Physical Education Fitness Assessment strategies were implemented by high schools in the Study School District to meet state physical fitness standards and to identify physical fitness personnel perceptions of district-provided support for physical education programs and their possible benefits to students involved.

To allow a base-line picture of how well students from the Study Site High School were meeting Healthy Fitness Ranges for Physical Fitness Indicators this chapter provides a discussion of the descriptive analysis of secondary data gathered through use of the Physical Fitness Assessment Test (PFAT) from the Study Site High School over a three year time span. Results of the Physical Education Resource Survey and Interviews are also discussed. The students' fitness and health indicators are categorized according to gender and discussed. This data was analyzed through comparison of performance levels which were evaluated as high, low, and surprising performances. Trends were analyzed through observation and comparison of year-to-year data and fall-to-spring improvements.

Analysis reported in chapter four is based on the statistical data summarized for male and female students on Table 5 through Table 10. Recorded measurements from the Physical Fitness Assessment Test (PFAT) are categorized on these tables by event type for the three school years (fall 2007 and spring 2008, fall 2008 and spring 2009, and fall 2009 and spring 2010).

Measurements for four physical fitness events were recorded for physical education students at the Study Site High School for the three years examined throughout this study. The time elapsed for the mile run/walk was a measure of aerobic capacity. The number of curl-ups completed provided a measure of abdominal strength. The number of push-ups-upper completed measured upper body strength. And, the sit-and-reach event provided a measure of flexibility.

Run / Walk for Aerobic Capacity

The One-Mile Run/Walk fitness indicator is a measure of a student's aerobic capacity. The male student has nine minutes to complete the one-mile run to meet the Healthy Fitness Range (HFR).

The highest number of male students who met the mile run HFR was 19 of 48, or 39.6 percent during the spring 2010 semester (Table 10). The highest individual male accomplishment for the one-mile run/walk occurred during the spring 2010 semester when a male student ran the mile in five minutes and 13 seconds. The spring 2010 results were a large improvement over both the 2008 and 2009 results. During the fall 2008 and spring 2009 semesters the lowest mile run/walk fitness indicator was recorded for the Study Site High School with one male student meeting the mile run/walk HFR during each of the two time frames (Table 8).

A check for changes in the percentage of successful completion of the mile run/walk from the fall to the spring of each study year yielded two improvement periods. There was no observable change in class enrollment from pre- to post-measurement in each case, which allowed a solid comparison.

Comparison of the fall 2008 semester's 16.7 percent total against the spring 2009 semester's 25 percent resulted in an increase of 8.3 percent of male students who met the mile run HFR (Table 8). Comparison of the fall 2009 semester's 28.9 percent against the spring 2010 semester's 39.6 percent resulted in a 10.7 percent increase in the number of male students who met the mile run HFR (Table 10).

There was no notable trend in the year-to-year comparison. Each individual year of the three examined in the study yielded 33.9, 20.0, and 34.4 percent of the Study Site male students meeting the HFR. The drop in percentage in the middle year was accompanied by a drop in overall male student enrollment in physical education class.

The female high performance result for the mile run indicator came during the spring 2008 semester when 65 female students were tested in the mile run, and only seven female students, or 10.8 percent, met the mile run/walk HFR (Table 5). There have been semesters when there were zero females who met the HFR for the one-mile run/walk.

The most disappointing semesters for low female mile run/walk indicator results was during both the fall 2008 and spring 2009 semesters when 19 female students were tested and only one student met the HFR (Table 7). There were no surprises in the one-mile run/walk, because it is an indicator in which female students normally did not meet the HFR. A factor that should be considered is that the students did not have the use of a running track for this event. The students ran through the neighborhood on the sidewalks around the school campus or around a football field that was located across the street from the school.

In the fall 2007 semester 9.2 percent of the female students met the mile run HFR. Then, in the spring 2008 semester 10.8 percent of the female students met the HFR, for a 1.6 percent increase when comparing the pre- to post-measurement for the year (Table 5).

On average, the percent of female students who met the HFR for the mile run/walk for each of the three years examined in the study were 10.0, 5.3, and 7.5. The average percentages do take into consideration the two semesters in which zero female students met the HFR

Sit-Ups for Abdominal Strength

The sit-ups PFAT indicator is an activity which tests the abdominal muscles for strength and endurance. In order for a male student to meet the HFR he must demonstrate using the proper body positioning technique when performing the sit-ups, and execute 45 sit-ups for a one-minute period.

High percentages met the HFR for sit-ups, with low numbers of male student participants, during the fall 2008 and spring 2009 semesters yielding 66.7 percent, or four of six male students, and 75 percent, or three of four male students (Table 8). The lowest sit-ups performance numbers came during the spring 2008 semester when 44.4 percent, or 54 male students, were tested in the sit-ups indicator and 24 students met the HFR requirement number (Table 6). The lowest sit-ups performance total for a school year for male students came during the fall 2007 and spring 2008 semesters when 45.2 percent, or 115 male students were tested and 52 students met the sit-ups HFR requirement number (Table 6).

In the fall 2008 semester 66.7 percent of the male students met the sit-ups HFR. And in the spring 2009 semester 75 percent of the male students met the sit-ups HFR

(Table 8). In the fall 2009 semester 44.9 percent of the male students met the sit-ups HFR. And, in the spring 2010 semester 56.3 percent of the male students met the sit-ups HFR (Table 10). These two academic years yielded noticeable increase in successful sit-ups HFRs when comparing pre- to post-measurements.

The three years examined in this study yielded successful percentages for meeting the HFR for the Sit-Ups Physical Fitness Indicator of 45.2, 70.0, and 50.5. There was an increase in year two followed by a decrease in year three. However, the overall percentages are much better than those for the run/walk HFR success.

The highest number of female students successful for the sit-ups indicator was achieved during the fall 2009 semester when 50.6 percent met the sit-ups HFR (Table 9). The highest sit-ups performance improvement for a school year came during the fall 2009 and spring 2010 semesters when 173 female students were tested for the sit-ups indicator and 87 students, or 50.3 percent, met the sit-ups HFR (Table 9).

The success for meeting the Sit-Ups HFR for female students at Study Site High School during the three-year examination of data remained fairly steady with 50.6, 50.0, and 47.7 percent meeting the goal. As a personal opinion, this researcher has always perceived the sit-ups indicator to be a less challenging activity in contrast to push-ups.

Sit and Reach for Flexibility

The Sit and Reach indicator is a measurement of joint flexibility and range of motion of the student. The student must maintain the proper body, arms, hands, legs, and knees positions while stretching forward in an attempt to reach the required 30 centimeters distance for the male. The Sit and Reach test for the female student requires using the proper technique and the ability to stretch the required distance of 33

centimeters without bending the knees. The student is given three tries, and the best one of the three tries is recorded.

During the fall 2009 semester 45 male students were given the sit and reach PFAT and 23 students met the HFR required distance. The percentage total was 51.1 percent (Table 10). The highest total percentage for the three year study period came during the fall 2009 and spring 2010 semesters with a 48.4 percent (Table 10).

The lowest number of male students who met the sit and reach HFR requirement distance came in the fall 2007 semester when 16.4 percent met the HFR requirement distance (Table 6). The lowest yearly total percentage number of male students who met the sit and reach HFR requirement distance was 25.2 percent during the fall 2007 and spring 2008 semesters (Table 6).

In the fall 2009 and spring 2010 semesters a surprising 48.4 percent of the 93 male students who were tested met the sit and reach HFR requirement distance (Table 10).

The sit and reach indicator does not have an observable trend, but an examination of the data results from six semesters presents an interesting discovery. In two of the three years, the fall semester percentage number of male students who met the sit and reach HFR requirement distance was less than the spring semester's percentage total. In the fall 2007 semester 16.4 percent of the male students met the sit and reach HFR requirement distance followed by 35.2 percent in the spring 2008 semester (Table 6).

In the fall 2008 semester 16.7 percent of the male students met the sit and reach HFR requirement distance followed by 75 percent in the spring 2009 semester (Table 8).

Comparing the first year 25.2 percent total number of male students who were assessed and met the sit- and reach HFR distance against the third year 48.4 percent total

resulted in a 23.2 percent increase in the number of male students who met the sit and reach HFR (Table 6 and Table 10).

The Sit and Reach indicator for the female student requires using the proper technique and the ability to stretch the required distance of 33 centimeters without bending the knees. The highest sit and reach performance number occurred when nine female students were tested in the sit and reach indicator and seven students, or 77.8 percent, met the HFR (Table 7). The lowest sit and reach performance came during the fall 2007 semester when 65 female students were tested and 20 students, or 30 percent, met the HFR (Table 5). The lowest sit and reach performance for a school year came during the fall 2007 and spring 2008 semesters, when 130 female students were tested and 52 students, or 40 percent, met the HFR (Table 5).

The sit and reach indicator is one which is deceiving in that it is does not require strength or endurance to perform, but requires a different type of athletic skill. The average physical education student, who does not do calisthenics, warm-up activities, and stretching exercises, will normally struggle with the Sit and Reach Fitness Indicator. Females were expected to be more flexible than males because the HFR for high school females had been set at 33 centimeters, but the HFR for high school males was 30 centimeters.

In the spring of 2009 approximately 77.8 percent of the female students met the sit and reach HFR requirement distance (Table 7). However, in the spring 2010 semester approximately 52.4 percent of the females met the sit and reach HFR requirement number (Table 9). Though females are expected to be flexible the trend for students at the Study Site High School was downward during this study.

Push-Ups for Upper Body Strength

The push-ups test is a measure of upper body strength and endurance. In order to meet the HFR requirement the student must be able to maintain the proper body alignment, and once the test begins, the student's body must not come into contact with the floor except for the tips of the toes of both feet. The participant must be able to bend the arms at the proper angle and complete 23 up and down body positions within 30 seconds.

In the spring 2009 semester four male students were tested for the push-ups PFAT indicator, and three met the HFR. Therefore, 75 percent of the male students tested met the requirement (Table 6). In the fall 2009 semester 45 male students were tested for the push-ups indicator and 28 met the HFR. So, 62.2 percent of the male students tested for the push-ups indicator met the HFR (Table 10).

When comparing the Fall 2007 Semester's 27 of 61, or 44.3 percent, total against the spring 2008 semester's 23 of 54, or 42.6 percent total, resulted in a 1.7 percent decrease in the number of male students who met the push-ups HFR requirement number during the spring 2008 semester (Table 6). When comparing the fall 2009 semester's 28 of 45, or 62 percent total, against the spring 2010 semester's 27 of 48, or 56.3 percent total, resulted in a 5.9 percent decrease in the number of male student s who met the push-ups HFR requirement number during the spring 2010 semester (Table 10).

Comparing the fall 2007 and spring 2008 school year total of 43.5 percent against the fall 2008 and spring 2009 semester's total of 50 percent resulted in a 6.5 percent increase in the number of male students who met the HFR (Table 6 and Table 8). Comparing the fall 2008 and spring 2009 school year total of 50 percent of the male

students who were tested and met the HFR against the fall 2009 and spring 2010 school year total of 59.1 percent resulted in a 9.1 percent increase in the number of male students who met the HFR (Table 8 and Table 10).

Comparing the fall 2007 and spring 2008 school year total of 43.5 percent of the male students who were tested and met the HFR against the fall 2009 and spring 2010 school year total of 59.1 percent resulted in a 15.6 increase in the number of male students who met the HFR (Table 6 and Table 10).

The high push-ups performance came during the fall 2009 semester when 55.1 percent of the female students HFR (Table 6). The female push-ups indicator surprised the researcher as the teacher and administrator of the fitness test. The highest yearly total came in the fall 2009 and spring 2010 semesters when 54.9 percent or 95 of 173 of female students met the HFR requirement number (Table 9).

In the spring 2010, 54.8 percent of females met the push-ups HFR requirement number (Table 10), and in the spring 2008 there were 50.8 percent of the female students who met the HFR (Table 7). The researcher was very surprised to see that at least 50 percent of the female students who were tested consistently met the push-ups HFR requirement number (Table 9).

After comparing the fall 2007 and spring 2008 push-ups percent against the fall 2009 and spring 2010 percent, the results showed a 7.2 percent increase in the number of female students who met the push-ups HFR requirement number during the fall 2009 and spring 2010 school year (Table 7 and Table 9).

Trends in the Physical Fitness Health Indicator Results

This section of the data analysis concerns any noticeable trends or patterns which may be present in the health indicators during this three year research study of the PFAT results from the Study Site High School. The male healthy Body Mass Index (BMI) trends are noticeable upon reviewing data from the six semesters which the study covered. The results indicated a pattern which was consistent throughout the three years. The pattern was a repeated improvement in measurement in the fall semester increased percentage of male student classified as healthy according to BMI rating.

In the fall 2007 semester 65.6 percent of the male students were classified as healthy according to their BMI rating, and the spring 2008 semester's percentage total was 57.4 percent (Table 6). In the fall 2008 semester 66.7 percent of the male students was classified as healthy according to their BMI rating, and in the spring 2009 semester 50 percent of the male students were classified as healthy according to their BMI rating (Table 8). In the fall 2009 semester 62.2 percent of the male students were classified as healthy according to their BMI rating, and in the spring 2010 semester 60.4 percent of the male students were classified as healthy according to their BMI rating (Table 10).

The overweight BMI trend is similar to the healthy BMI trend. The overweight trend shows that each of the three year fall semester male overweight percentage numbers was smaller than the spring percentage numbers.

In the fall 2007 semester 11.5 percent of the male students were classified as overweight according to their BMI rating, and in the spring 2008 semester 13.0 percent of the male students were classified as overweight (Table 6). In the fall 2008 semester 16.7 percent of the male students were classified as overweight according to their BMI

rating, and in the spring 2009 semester 25 percent of the male students were classified as overweight (Table 2). In the fall 2009 semester 26.7 percent of the male students was classified as overweight according to their BMI rating, and in the spring 2010 semester 27.1 percent of the male students were classified as overweight by their BMI (Table 10).

The obese BMI trend was not as consistent as the healthy and overweight BMI categories. The obese BMI category indicated that two of the three years of this study demonstrated a larger percentage of male students classified as overweight according to the BMI rating in the spring semester, excluding the fall 2009 and spring 2010 semesters (Table 10).

In the fall 2007 semester 6.6 percent of the male students were classified as obese students. In the spring 2008 semester 11.1 percent of the male students were classified as obese according to their BMI rating (Table 6). In the fall 2008 semester 16.7 percent of the male students were classified as obese according to their BMI rating, and in the spring 2009 semester 25 percent of the male students were classified as obese (Table 8).

The male severely obese BMI trend had a similar trend as the obese trend. After analyzing the data, the three year health results indicated that in two of the three years the fall semester had a smaller percentage number than the spring semester.

In the fall 2007 semester 4.9 percent of the male students were classified as severely obese according to their BMI rating, and in the spring 2008 semester 5.6 percent of the male students were classified as severely obese (Table 6). In the fall 2009 semester 2.2 percent of the male students were classified as severely obese students according to their BMI rating, and in the spring 2010 semester 6.3 percent of the male students were classified as severely obese (Table 10).

After analyzing the health data from the three year study, the researcher found that the noticeable trend was that two of the three years showed that there were zero of male students who were classified as being morbidly obese students.

The trend in BMI for female students seemed to show that in five of the six semesters that BMI was assessed, the female students had an average of at least 50 percent classified as healthy according to their measurements (Table 5, Table 7, and Table 9). In the fall 2007 semester 61.5 percent of the females met the healthy BMI classification (Table 5). In the spring 2008 semester 60 percent of the females met the healthy BMI classification (Table 5). Comparing the fall 2007 semester against the spring 2008 semester, the results showed a 1.5 percent decrease in the number of female students who were classified as healthy according to their BMI rating.

The trend for overweight female students seemed to follow a pattern that demonstrated that during five of the six semesters during the research period the average percentage of the female students who were classified as overweight according to their BMI rating was about 20 to 24.6 percent (Table 5, Table 7, and Table 9).

In the fall 2007 semester 20 percent of the female students were classified as being overweight (Table 5). In the spring 2008 semester 24.6 percent of the female students were classified as overweight (Table 5). Comparing the fall 2007 semester against the spring 2008 semester the results showed a 4.6 percent increase in the number of female students who were classified as overweight during the spring 2008 semester according to their BMI rating.

In the fall of 2008 Semester 30 percent of the female students were classified as overweight (Table 7). In the spring 2009 Semester 22.2 percent of the female students

were classified as overweight (Table 7). Comparing the fall 2008 semester against the spring 2009 semester the results indicated a 7.8 percent decrease in the number of female students who were classified as overweight during the spring 2009 semester according to their BMI rating.

In the fall of 2009 semester 21.3 percent of the female students were classified as overweight (Table 9). In the spring 2010 semester 21.4 percent of the female students were classified as overweight (Table 9). Comparing the fall 2009 semester against the spring 2010 semester the results indicated a 0.1 percent increase in the number of female students who were classified as overweight during the spring 2010 semester according to their BMI rating.

The trend for obesity in female students at the Study Site High School seemed to follow a pattern that indicated that during two of the three spring semesters that this research study was conducted the female students obese classification was higher than the fall semester (Table 5, Table 7, and Table 9).

The trend for female severely obesity seemed to demonstrate that in four of the six semesters this research study was conducted only one female student per semester was classified as severely obese according to their BMI rating (Table 5 and Table 7).

The trend for female morbid obesity seemed to show that in four of the six semesters this research study was conducted about seven female students per semester were classified as being morbidly obese students according to their BMI rating (Table 5 and Table 9).

In the fall 2007 semester 10.8 percent of the female students was classified as being morbidly obese students (Table 5). In the spring of 2008 12.3 percent of the female students were classified as being morbidly obese students (Table 5).

Comparing the fall 2007 against the spring 2008 semester the results showed a 1.5 percent increase in the number of female students during the spring 2008 semester who were classified as being morbidly obese students according to their BMI rating.

In the fall 2008 semester 10 percent of the female students was classified as being morbidly obese (Table 7). In the spring 2009 semester 22.2 percent of the female students was classified as being morbidly obese (Table 7).

Comparing the fall 2008 semester against the spring 2009 semester the results showed that a 12.2 percent increase in the number of female students were classified as being morbidly obese students during the spring 2009 semester according to their BMI rating.

In the fall 2009 Semester 7.9 percent of the female students was classified as being morbidly obese (Table 9). In the spring 2010 semester 7.1 percent of the female students were classified as being morbidly obese (Table 9).

Comparing the fall 2009 semester against the spring 2010 semester the results showed a 0.8 percent decrease in the number of female students who were classified as being morbidly obese students during the spring 2010 semester according to their BMI rating.

Physical Education Resource Survey

The Supervisor of Health, Physical Education, Recreation, and Dance for the Study School District felt that a Physical Education Resource Survey was appropriate and

could provide beneficial results for the school and District administrators as a learning tool. This survey was an evaluation tool to help the Study School District gain insight into how the districts' secondary PE, health and dance teachers view and establish their classroom policies and procedures through use of school facilities, school policies, school staff, school resources, and how the PE educators view the various aspects of their profession and working environment in general.

A Seven point Likert Scale was used as the survey evaluation tool. The survey consisted of 26 questions (Appendix C). The questions were grouped into four distinct categories which are classroom policies and procedures (question 1.1 through 1.5); school resources and professional staff development, (questions two through ten); and school policies, procedures, and professional viewpoints concerning physical education (questions eleven through 20). The last two questions dealt with how much class time was dedicated to PE and with rating the quality of the Study School District PE program. The Personal Comment question could be viewed as optional. Table 11 gives a summary of responses to questions 1.1 through 1.5.

Table 11.
Frequency of response to survey questions 1.1 through 1.5.

Response	1	2	3	4	5	6	7	NC
Question #								
1.1	0	0	0	1	0	3	14	0
1.2	0	1	0	3	3	5	6	0
1.3	0	0	0	0	0	2	16	0
1.4	0	0	3	1	4	3	7	0
1.5	0	0	0	0	1	4	13	0

Note: Likert Scale: 1=strongly disagree; 2=disagree; 3=somewhat disagree; 4=neutral; 5=somewhat agree; 6=agree; 7=strongly agree. NC = no comment.

Question 1.1 dealt with the PE teachers' enforcing a dress code strategy for his or her classroom. One response was neutral, three responses agreed, and 14 responses strongly agreed.

Question 1.2 was concerned with PE teachers who used strategies to encourage students to use correct form when executing exercise activities. The survey responses indicated that three teachers somewhat agreed with implementation of this strategy, five teachers agreed with this strategy, and six teachers would encourage students to perform and display correct form when executing calisthenics.

Question 1.3 was concerned with the PE teacher who may use or encourage the students to participate in activities by assigning participation points for classroom activities. The survey showed that two teachers agreed that assigning participation points for activities was a worthwhile strategy. Sixteen teachers strongly agreed that assigning participation points was a worthwhile strategy to have as a part of a PE classroom policy and procedure.

Question 1.4 was concerned with the strategy of assessing the correctness of student's form and technique while performing classroom sports activities. Analysis of the survey responses indicated that three teachers somewhat agreed that this strategy was appropriate, one teacher was neutral, four teachers somewhat agreed with this strategy, three teachers agreed with this strategy, and seven teachers strongly agreed with grading students for form and technique skills during classroom sports activities.

Question 1.5 was concerned with the teacher grading the student on his or her knowledge of the various sports and activities covered during the PE class period. The survey showed that one teacher somewhat agreed to the strategy of assessing students on

their knowledge of rules of various classroom sports and activities. There were four teachers who agreed that this strategy would be worthwhile to use in a classroom setting and thirteen teachers strongly agreed that grading the student's knowledge of rules for various sporting activities is an important strategy to incorporate into a PE classroom curriculum.

Table 12.
Frequency of response to survey questions 2 through 7.

Response	1	2	3	4	5	6	7	NC
Question #								
2	0	5	0	2	5	1	5	0
3	4	2	2	4	4	1	1	0
4	6	4	3	2	2	0	0	1
5	5	0	5	1	4	1	2	0
6	3	3	1	3	2	4	1	1
7	1	0	0	2	0	4	11	0

Note: Likert Scale: 1=strongly disagree; 2=disagree; 3=somewhat disagree; 4=neutral; 5=somewhat agree; 6=agree; 7=strongly agree. NC = no comment.

Question two was concerned with how the PE teacher views his or her school's physical education program's ability to meet the state standards for physical fitness test indicators. The survey showed that five PE teachers disagreed that their PE program generally met the state standards for physical fitness test indicators. There were two PE teachers who were neutral, five P.E teachers somewhat agreed, one PE teacher agreed, and five PE teachers strongly agreed that their schools' PE programs generally meet the state standards for the physical fitness test indicators.

Question three was concerned with the PE teacher's overview of the adequacy and availability of physical resources for their physical education program. The survey showed that four teachers strongly disagreed that their school had adequate resources as well as the availability of them. Two teachers disagreed that their school had adequate

physical resources available for PE, four teachers were neutral, four teachers somewhat agreed that their school had adequate physical resources available to their PE program, one teacher agreed that the PE program had adequate physical resources available to their PE program, and one teacher strongly agreed that his or her school had adequate physical resources available for their PE program.

Question four was concerned with the teacher's overview of his or her school having adequate financial resources available to their PE program. The survey showed that six PE teachers strongly disagreed that their school had adequate financial resources available to their PE program, four teachers disagreed that their school had adequate financial resources, three teachers somewhat disagreed that their school had provided adequate financial support for their PE program, two PE teachers were neutral, two PE teachers somewhat agreed that their school had provided adequate financial resources made available to their PE program, and one teacher had no comment about the adequacy of financial resources made available to the PE program.

Question five was concerned with the PE teacher's overview about his or her schools adequate facility and staff resources available for their PE program. The survey showed that five PE teachers strongly disagreed that their school had adequate facility and staff resources made available for their PE programs. Five PE teachers somewhat disagree that their school has adequate staff and faculty resources available for their PE program, one PE teacher was neutral, four PE teachers somewhat agreed that their school had adequate faculty and staff resources available for their PE program.

Question six was concerned with the school having adequate varsity sports programs and resources available for its PE programs.

The survey showed that three PE teachers strongly disagreed that their school had an adequate varsity sports program and available resources. Three PE teachers disagreed that their school had an adequate varsity sports program and available resources. Three PE teachers disagreed that their school had an adequate varsity sports program, an available resource, one PE teacher somewhat disagreed, three PE teachers were neutral, two PE teachers somewhat agreed that their school had adequate varsity sports programs and resources available. Four teachers agreed that their schools had adequate varsity sports programs and resources available for their PE programs, and one teacher had no comment.

Question seven was concerned with how the PE teacher perceives the overall effort of the school's physical education program when compared to the mandated state expectations for physical education.

Table 13.
Frequency of response to survey questions 8 through 15.

Response	1	2	3	4	5	6	7	NC
Question #								
8	0	0	0	0	1	2	15	0
9	0	2	0	1	2	4	9	0
10	0	1	0	1	4	3	8	1
11	0	0	0	0	0	2	15	1
12	0	0	0	0	0	3	14	1
13	0	0	0	0	2	3	12	1
14	0	0	0	0	2	2	13	1
15	1	2	0	3	5	3	3	1

Note: Likert Scale: 1=strongly disagree; 2=disagree; 3=somewhat disagree; 4=neutral; 5=somewhat agree; 6=agree; 7=strongly agree. NC = no comment.

The survey showed that two PE teachers were neutral when asked if their school's goal was to exceed the state standards for PE. Four PE teachers agreed that their school's

goal was to exceed the state standards for PE, and eleven PE teachers strongly agreed that their school's goal was to exceed the standards for their PE program.

Question eight was concerned with the PE teacher's overview of the attributes and qualities of a highly qualified physical education teacher, and how he or she perceives their physical education program.

According to the PE Resource Survey, one teacher somewhat agreed that the school's PE teachers were highly qualified. Two PE teachers agreed that their school had highly qualified PE teachers, and 15 PE teachers said that their schools had highly qualified PE teachers instructing in their physical education program.

Question nine was concerned with how the PE teacher's position or belief in the importance of physical education in their school.

According to the PE Resource Survey two PE teachers disagree that their school believed in the importance of physical education. One PE teacher was neutral on how he or she viewed the school's belief concerning the importance of physical education. Two PE teachers somewhat agreed that their school believed in the importance of physical education. Four PE teachers agree that their school believe in the importance of physical education, and nine PE teachers strongly agree that their school believe in the importance of physical education.

Question ten was concerned with how the PE teacher perceived the school's belief concerning the importance of physical fitness.

The resource survey showed that one PE teacher felt that his or her school believed that physical fitness was important. One PE teacher felt that his or her school's overall belief was neutral. Four PE teachers somewhat agreed that their school believed

in the importance of physical fitness. Three PE teachers felt that their school believed in the importance of physical fitness. Eight PE teachers strongly agreed that their school believed in the importance of physical fitness, and one PE teacher did not comment on how his or her school felt about the importance of physical fitness.

Question eleven was concerned with PE being important for all high school students.

The resource survey showed that two PE teachers agreed that PE was important for all high school students, Fifteen PE teachers believed that PE was important for all high school students, and one PE teacher did not have a comment concerning the importance of PE for all high school students.

Resource question number twelve was concerned with whether or not PE should be mandatory for all high school students.

The resource survey showed that three PE teachers agreed that PE should be mandatory for all high school students. Fourteen PE teachers strongly agreed that PE should be mandatory for all high school students, and one PE teacher did not make a comment concerning should PE be mandatory for all high school students.

Question thirteen was concerned with the question: Is PE as important as English and Math in high school?

The resource survey showed that two PE teachers somewhat agreed that PE is as important as English and Math in high school. Three PE teachers agreed that PE is as important as English and Math in high school. Twelve PE teachers strongly agreed that PE is as important as English and math in high school, and one PE teacher did not make a comment on PE's importance as English and Math in high school.

Question fourteen was concerned with whether or not PE should be a core subject in high school.

The resource survey showed that two PE teachers somewhat agreed that PE should be a core subject in high schools. Two PE teachers agreed that PE should be a core subject in high school. Thirteen PE teachers strongly agreed that PE should be a core subject in high schools, and one PE teacher did not comment on the question of should PE be a core subject in high schools.

Question fifteen was concerned with the perception of PE being a priority at the high school.

The resource survey showed that one PE teacher strongly disagreed that PE was a priority at their high school. Two PE teachers disagreed that PE is a priority at their high school, and three PE teachers were neutral when asked if PE was a priority at their high school. Five PE teachers somewhat agreed that PE was a priority at their high school, and three PE teachers agreed that PE was a priority at their high school. Three PE teachers strongly agreed that PE was a priority at their high school, and one PE teacher did not comment on if PE is a priority at his or her high school.

Table 14.
Frequency of response to survey questions.

Response	1	2	3	4	5	6	7	NC
Question #								
16	0	0	0	1	1	5	10	1
17	0	0	0	0	2	4	11	1
18	0	0	0	0	1	6	10	1
19	0	0	0	0	0	5	12	1
20.1	0	0	0	0	1	4	12	1

Note: Likert Scale: 1=strongly disagree; 2=disagree; 3=somewhat disagree; 4=neutral; 5=somewhat agree; 6=agree; 7=strongly agree. NC = no comment.

Question sixteen was concerned with whether or not PE in high school promotes life-time health.

The resources survey showed that one PE teacher was neutral in his or her opinion concerning whether PE in high school promotes life-time health. One PE teacher somewhat agreed that high school PE promotes life-time health, and five PE teachers agreed that PE in high school promotes life-time health. Ten PE teachers strongly agreed that PE in high school promotes life-time health.

Question seventeen was concerned with whether or not PE in high school promotes life-time fitness activities.

The resource survey showed that two PE teachers somewhat agreed that PE in high school promotes life-time fitness activities, and four PE teachers agreed that PE in high school promotes life-time fitness activities. Eleven teachers strongly agreed that PE in high school promotes life-time fitness activities, and one teacher did not comment on the statement concerning PE in high school promotes life-time fitness activities.

Question eighteen was concerned with PE and sports opportunities' impact on lifestyle choices.

The resource survey showed that one PE teacher somewhat agreed that PE and sports opportunities impact lifestyle choices and six PE teachers agree that PE and sports opportunities impact lifestyle choices. Ten PE teachers strongly agreed that PE and sports opportunities impact lifestyle choices, and one PE teacher did not comment.

Question nineteen was concerned with whether or not PE and sports participation positively impact self-esteem.

The resource survey showed that five PE teachers agreed that PE and sports participation positively impact self-esteem. Twelve PE teachers strongly agreed that PE and sports participation positively impact self-esteem and one PE teacher did not make a comment.

Question twenty, part one, was concerned with whether or not students who participate in PE do better academically.

The resource survey showed that one PE teacher somewhat agreed that students who participate in PE do better academically, and four PE teachers agreed that students who participate in PE do better academically. Twelve PE teachers strongly agreed that students who participate in PE do better academically, and one PE teacher did not have a comment concerning whether students who participate in PE do better academically.

Question twenty, part two, was concerned with the number of minutes per week the high school students were required to participate in PE. Figure 1 summarizes the

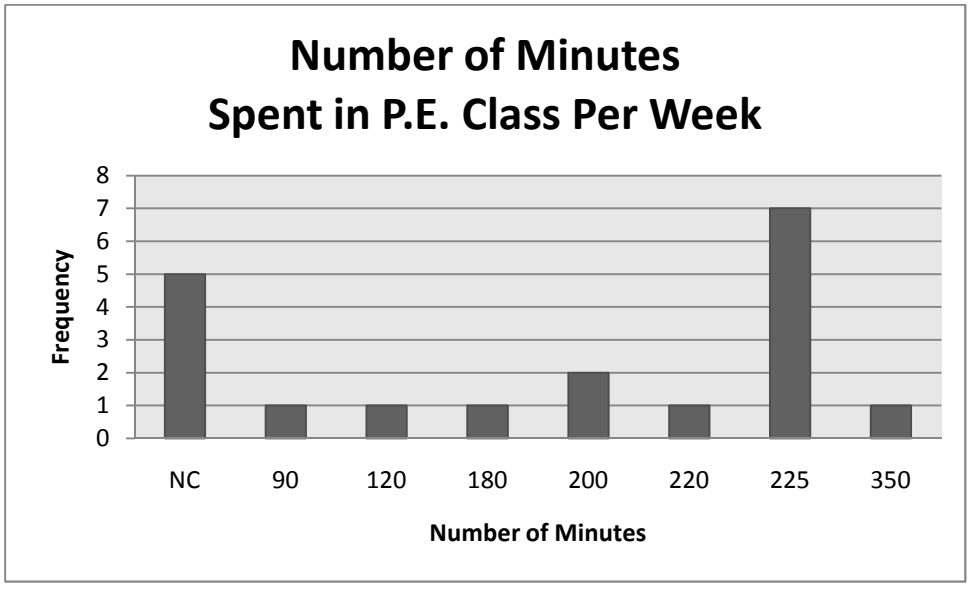


Figure 1. The Number of Minutes of Physical Education per Week.

Table 15.
Frequency of response to survey question 20.3.

Response	1	2	3	4	5	6	7	8	9	10	NC
Question #											
20.3	0	0	2	1	1	3	2	1	1	1	5

Note: Likert Scale: 1=strongly disagree; 2=disagree; 3=somewhat disagree; 4=neutral; 5=somewhat agree; 6=agree; 7=strongly agree. NC = no comment.

Question twenty, part three, was concerned with the PE teacher rating his or her school on a 1-to-10 point scale, with one being poor and 10 being excellent. The participant was asked to respond to the statement: Rate the standard of PE at my school.

The resource survey showed that two teachers rated the PE standard as a three, and one PE teacher rated the PE standard as four. One PE teacher rated the standard of PE at their school as a five, and three PE teachers rated the standard of PE at their school a six.

Two PE teachers rated the standard of PE at their school as a seven, and one PE teacher rated the standard of PE at their school as an eight. One PE teacher rated the standard of PE at the school as a nine, and one PE teacher rated the standard of PE at his or her school as a 10.

Five PE teachers did not comment on rating the standard of PE at their schools. None of the participants in resource survey offered a comment in the Personal Comments section of the survey.

Teacher Interviews

The study district's five interviewees were chosen on a first response, voluntary basis. The health teacher is referred to as Coach A in this study. There were three PE teachers referred to as Coach B, Coach C, and Coach D. The fifth interviewee was an athletic director referred to as Coach E. There were eight questions that the researcher

sent to PE and health teachers in the study district prior to setting up interviews (See Appendix A). The first three PE teachers, health teacher, and athletic director who responded to the interview process were used in this study.

The three PE teachers responded to most of the questions with similar responses. However, there were some distinct differences in how some strategies were used, which may be due to the unique situations present at each of the school sites. In many situations the health teacher and the athletic director responded to the interview questions with answers which seem to be viewed from a different perspectives than those of the PE teachers.

Interview Question #1 asked "What strategies are you using, or have you observed others using, that promote success for students in meeting the state physical fitness indicators?"

Coach A's response to question number one was that he had observed modeling being used in some classrooms, and based upon the pre-evaluation status and gender of the student a more specific plan for improving and maintaining their fitness level. *Coach B's* response to question number one was that he incorporated various activities to help promote student improvement for specific fitness indicators. *Coach C's* responses to question number one was that he practiced specific activities which would enhance the various skills which would enable students to be successful for the PFAT indicators. *Coach D's* responses to question one was that he practiced and designated specific activities which would enhance various skills which would help students to be successful for the PFAT indicators. *Coach E's* response to question one was that he has observed

PE teachers who implemented activities whose purpose was to help to increase student success rate for the PFAT indicators.

Interview Question #2 asked "How, and to what degree are recommendations from the Missouri Physical Education Fitness Assessment Manual (MPEFAM) implemented within the physical education and health classrooms in your building, and/or throughout the district?"

Coach A's response to question number two was that the student's success rate was usually based on the availability of equipment and resources the student had at their disposal. The (MPEFAM) did not mention how to implemented or provide a plan or strategy for improving student performance for the fitness indicators.

Coach B's response to question number two was that the (MPFAM) recommendations were for how to perform each fitness indicator, but did not mention how to prepare or how to improve student performance level for each indicator. These results were assumed recommendations by the (MPFAM); they were really teacher recommendations and are student and school specific in nature.

Coach C's response to question number two was that the students were all adequately prepared by the teacher who may or may not be aware of any recommendations that may be mentioned in the (MPFAM).

Coach D's response to question number two was that the teachers carried out the required recommendations mentioned in the (MPFAM), but the manner in which to increase or improve upon the skill level of the student was dependent upon the teacher and the needs of the students involved.

Coach E's response to question number two was that most if not all of the PE and health teachers adhered to the (MPFAM) recommendations, but the degree of improvement or success of the students was determined by the teachers strategies that were implemented within the classrooms.

Interview Question #3 asked "What if any additional strategies and/or best practices do you feel should be implemented in the physical education and health classrooms in your building and/or throughout the district? Why?"

Coach A's response to question number three was that more student involvement in the physical aspects of PE classes and removal of the unhealthy drink and food items from the school campus lunchroom and vending machines, and replacing them with healthier choices would be the best additional strategies and/or practices that could be implemented in the school building and throughout the district as well.

Coach B's response to question number three was the suggested removal of unhealthy drink products from the vending machines, mandatory dress code for PE classes, a variety of PE classes to be offered to address cardiovascular fitness promotion, and physical fitness activities to target the obesity concern in our society.

Coach C's response to question number three was that there was a need for the availability the teacher to have access to a variety of outside resources and more field trips during the school year.

Coach D's response to question number three was that more emphasis should be placed on team sports, skill building strategies and activities which would enhance skills that are necessary for team sports.

Coach E's response to question number three was that no additional strategies were needed, but if any were needed the teacher was highly qualified and whatever best practice was necessary would be implemented where required.

Interview Question #4 asked "How is the district supporting the achievement of students in meeting the physical fitness indicators recommended by the (MPEFAM)?"

Coach A's response to question number four was that the district supported student achievement for meeting the (PFAT) by sponsoring workshops and professional development seminars.

Coach B's response to question number four was that there was no district support which was exemplified by schools having an inadequate amount of supplies and equipment throughout the district.

Coach C's response to question number four was that the district demonstrated its support by requiring all students throughout the district to be tested.

Coach D's response to question number four was that there were no district- wide incentives for students who met or exceeded the (PFAT) indicator requirements.

Coach E's response to question number four was that the district had shown its support for students to meet the (PFAT) indicators by hiring highly qualified teachers and by offering professional development opportunities whenever possible.

Interview Question #5 asked "What are the strengths in support provided by the district, if any?"

Coach A's response to question number five was that there was an unofficial district-wide PE and health curriculum that existed throughout the district between many of the high schools.

Coach B's response to question number five was that the strengths in support were provided by the bond between the teachers within the district rather than the district itself.

Coach C's response to question number five was that the district allowed outside sources to engage student involvement and the food service supported nutritional food items offered in the lunch program.

Coach D's response to question number five was that there were no noticeable strengths and an example was that there was not a PE supervisor serving the district for the 20010-2011 school year.

Coach E's response to question number five was that the district hired highly qualified teachers and providing professional development, and these were strengths provided by the district.

Interview Question #6 asked "What are the weaknesses in support provided by the district, if any?"

Coach A's response to question number six was that a weakness was shown by the district when high school students were required to only take one school year of PE for their four year high school term.

Coach B's response to question number six was that a weakness was shown in student support by the district when the lack of supplies and equipment went unaddressed from year-to-year.

Coach C's response to question number six was that there were two areas of weakness shown in district support by the lack of outside sources being used and a need

for a better organized cafeteria wellness program being implemented throughout the district.

Coach D's response to question number six was that a weakness in district support was demonstrated by the lack of hiring a PE supervisor, implementing a better professional development workshop schedule, and a no provision for a first year teacher mentoring program.

Coach E's response to question number six was that there were no serious weaknesses, but some concerns were noticeable, such as more professional development opportunities, provisions for more supplies, better equipment allocation, and smaller class sizes where needed.

Interview Question #7 asked "Are current strategies in the physical education and health classrooms in your building, and /or throughout the district having an effect on the current and future lifestyles of students enrolled in the district? If so, how?"

Coach A's response to question number seven was that Yes, introduction of a variety of activities, health concepts, and healthy lifestyle choices were some of the indications of how PE and health classrooms are impacting district students current and future lifestyles.

Coach B's response to question number seven was that students were not being significantly affected by the current PE and health classroom strategies, due to the lack of the district providing life-long activities offered by the schools throughout the district.

Coach C's response to question number seven was that the current strategies were having some effect on the current and future lifestyles of district students as shown by feedback from health classroom projects and PE classroom activities and (PFAT) results.

Coach D's response to question number seven was that because students were being exposed to many worthwhile health concepts and physical activities in PE classes, it may be difficult to determine their effectiveness at the present time [time of this study], but the current and future lifestyles of the students are being shaped and molded for a healthier tomorrow.

Coach E's response to question number seven was that Yes, it could be assumed that current strategies implemented in the PE and health classrooms would be effective because of there were no noticeable significant health risk problems or trends which indicated that the students within the district were following the national trends of adolescent health problems as indicated by some surveys.

Interview Question #8 included the following:

What are the district's most prominent health concerns for teenagers enrolled in physical education and health classes? Do current classroom strategies promote an improvement of these health issues among the students? If so, which strategies and how?

Coach A's response to question number eight was that the most prominent health concerns were safety and the development of an interest in physical activity.
Coach A seemed to believe that in PE and health classes, the students' adherence to class policies that provided students with security and safety from hazardous situations and personal outside threats, almost always guarantee an environment which is conducive to promote improvement in the safety issue. Students and teachers must adhere to maintaining a safe place to learn and in which to participate. After the student feels safe and secure developing an interest and the desire to participate in physical activities may

become greater. Then, once the student has developed an interest in physical activities, finding the physical activity that will satisfy that interest becomes the priority.

Coach B's response to question number eight was the district's most prominent health concerns for teenagers enrolled in PE and health classes was the lack of knowledge and understanding of the importance of the cardiovascular system which should be taught in the health class. The lack of physical activities aimed specifically for further developing the cardiovascular endurance system of the body was the specific concern.

The strategies needed to address this cardiovascular endurance deficiency could be satisfied by incorporating the knowledge concepts in health class lectures and projects, and applying more rigorous physical activities in the PE classroom activities.

Coach C's response to question number eight was that whatever the district's most prominent health concern concepts may be were being brought to the teenage student's attention throughout the district in the health classes. The PE classes were providing the students with specific drills and activities designed to help build up and improve the current health issue confronting the students in the district. The strategies used are classroom lectures, hand-on classroom activities, class projects, and applying physical activity drills and activities during class skill acquisition practice address concerns.

Coach D's response to question number eight was that the most prominent health concerns for teenagers enrolled in PE and health classes were drug use, alcohol consumption, sexually transmitted diseases (STDs), obesity, and health-related disorders such as diabetes and asthma. Yes, Coach D felt that each one of these health concerns

were addressed in the health classroom through concepts that were discussed, hands-on projects assigned in class and assessments over the various topics.

The PE classes employ its strategies to promote and improve these health concerns by providing regular physical activities and drills that help provide the student with physical activities which are designed to help treat or eliminate the symptoms associated with many of the health issues among the students in the district.

Coach E's response to question number eight was that the district's most prominent health concerns for teenagers enrolled in PE and health classes were proper nutrition, proper eating habits, alcohol consumption, the use of legal and illegal drugs, tobacco use, and any risk-taking activities that are harmful to the student's health.

Yes, Coach E felt that current classroom strategies being used were promoting an improvement of these health issues among students. The strategies he had observed that were used and effective in the PE health classes were the results from the ATLAS and ATHENA Programs. The ATLAS Program targeted the male student and the ATHENA Program targeted the female student (Goldberg & Elliott, n.d.a; Goldberg & Elliott, n.d.b). For more information visit the websites for ATLAS and ATHENA (www.atlasprogram.com and www.athenaprogram.com).

Summary

One goal of this study was to analyze measurements of four Physical Fitness Assessment Components (mile run-aerobic capacity, set-ups abdominal strength, push-ups-upper body strength, and sit-and-reach-flexibility) for students in the Study Site High School to assess student achievement on the PFAT. The results were presented in chapter four, and conclusions will be discussed in chapter five.

According to the results of this study, district personnel perception survey responses and district personnel interview responses, student results in the area of physical education are ultimately determined by numerous factors that are beyond the student's control. Many of these factors affect the students' abilities to successfully pass or meet the Healthy Fitness Range on fitness and health indicators.

This chapter provided a thorough and detailed overview of the male and female performance achievements and lack thereof for each of four fitness indicators and five health indicators linked to Body Mass Index, as well as detailed descriptions of survey and interview responses. Chapter five will include discussion of conclusions related to the study research questions, a summary of where student achievement in the Study School District stands in the area of Physical Education, and recommendations concerning strengths and weaknesses.

Chapter V: Discussion, Conclusions, and Recommendations

The purpose of this study was to identify which Missouri Physical Education Fitness Assessment strategies were implemented by high schools in the Study School District to meet state physical fitness standards and to identify physical fitness personnel perceptions of district-provided support for physical education programs and their possible benefits to students involved.

A Physical Education Resource Survey was created as a tool to demonstrate how the PE and health teachers' curricula program is perceived by the PE teachers, the health teachers, other district teachers, and the district administrators. By gaining perceptions of current conditions and the scope of Study School District support for physical education programs, recommendations to strengthen and maintain effective implementation of the program can be made.

The PE Resource Survey also demonstrated and identified, to some degree, how PE and health teachers implement best teaching practices and strategies. PE teachers select strategies that they perceive to be appropriate and necessary in regards to helping their students develop PE skills and health concepts to promote lifelong physical and health decision-making skills. The PE Resources Survey demonstrated which items the PE and health teachers felt were strengths and weaknesses in district support for the PE program. Another reason for the use of the PE resource Survey was to demonstrate how the district PE and health teachers view the benefits and effectiveness of the current PE and health programs for currently enrolled students in Study School District.

Next, since the PE Resource Survey will be administered yearly, it will provide a tool to monitor and measure the time the district PE and health programs actually allocate

for the students to become successful in meeting the state physical fitness indicators and health standards. Finally, the PE Resource Survey was used as a tool to measure perceptions of PE and health teachers in the district concerning the degree to which PE programs were effective. Participants rated the PE programs at their schools on a one-to-ten scale; one represented a poor rating and ten represented an excellent rating.

This chapter provides the reader with analyzed results from the interviews conducted in Study School District and a comparison of information provided in responses. The interview questions were district specific, but the strategies implemented in the Study District could be applicable to any urban, and possibly some suburban, school districts. The interviewees consisted of teachers from the research Study School District. The interviewees included three PE teachers, one health teacher, one athletic director who also taught in the classroom and one whose assigned duties combined PE, health, and direction of athletics at the building level.

Interview Question Comparisons

The PE Resource Survey demonstrated and identified, to some degree, how each participant in the study perceived the use of best practices, knowledge of standards, existence of external resources, and district support provided through quality personnel, facility usage, and professional development. Interview questions offered an opportunity for personnel to expand on the original views expressed in the Resource Survey. The three PE teachers responded to most of the questions with similar responses. However, there were some distinct differences in descriptions of how some classroom strategies were used, which may be due to the unique situations present at each of the school sites.

In many situations the health teacher and the athletic director responded to the interview questions with answers which seemed to indicate that they held different perspectives than those of the PE teachers. A summary of each person's responses to interview questions was discussed in chapter four with additional summary in Appendix B. Comparison between responses is summarized in this discussion.

In response to the first interview question regarding strategies used by the PE teachers, all five interviewees responded that they either practiced or observed specific strategies and best practices in the physical fitness classrooms that were designed to increase student success for the PFAT indicators.

How, and to what degree are recommendations from the Missouri Physical Education Fitness Assessment Manual (MPEFAM) implemented within the physical education and health classrooms in your building, and/or throughout the district?

Question number two included a difference in perception regarding the implementation of recommendations from the Missouri Physical Education Fitness Assessment Manual (MPEFAM) when responses were compared. Not all interviewees felt the MPEFAM was useful in its recommendations for student success on the PFAT. Comments regarding student success included the following items as important contributors: availability of equipment and resources, the recommendations in the MPFEAM, and complete reliability on the teacher's strategies. They stated that the manual should include a plan or strategy for improvement and specific suggestions as to how to promote individual student improvement.

A variety of suggestions were offered in response to question number three regarding additional strategies and/or best practices in place in the physical education and

health classrooms throughout the district. These suggestions included a) student involvement in the physical aspects of PE classes, b) removal of the unhealthy drink and food items from the school campus lunchroom and vending machines, c) a formalized mandatory dress code for PE classes, d) a variety of PE classes offered to address cardiovascular fitness, e) teacher access to a variety of outside resources with more field trip availability, f) an added emphasis on team sports, skill building strategies and activities, and g) attention to the need for highly qualified teachers utilizing best practice techniques.

Question number four offered a mixed perception of district support for meeting the physical fitness indicators recommended by the MPEFAM in the physical education classroom. Some interviewees felt that the district offered no support and no incentives for individual student improvement in fitness. Some believed that the district offered support through the requirement that all students be tested with the PFAT, the offer of professional development activities and the hiring of highly qualified personnel.

A variety of answers were provided as strengths in support provided by the district in answer to question number five. The perceived strengths provided by the district included: a) the existence of a (unofficial) district-wide PE and health curriculum, b) the bond between the teachers within the district, the involvement of outside sources to engage students, c) the support of the food service through provision of nutritional items, and d) the hiring of highly qualified personnel. One person felt that there were no noticeable strengths. For example, the lack of a PE supervisor serving the district was viewed as a weakness.

Responses to question number six included the following perceived weaknesses in district support a) the requirement of only one school year of PE for the four-year term, b) lack of supplies and equipment from year-to-year, c) lack of the use of outside resources, d) the lack of hiring a PE supervisor, e) a need for better organized cafeteria wellness programming, and f) the need for improved professional development and workshop scheduling, One person felt that there were no visible weaknesses, just areas of concern.

Response to question number seven regarding current strategies in use in the physical education and health classrooms within district buildings offered mixed perception. Several interviewees felt that current strategies were having an effect on current and future lifestyles in the district. Some felt they were not. Effects were described as promotion of healthy lifestyle, exposure to activities that promote a healthy lifestyle, and knowledge to promote awareness of healthy lifestyles.

Question number eight asked the following: What are the district's most prominent health concerns for teenagers enrolled in physical education and health classes? Do current classroom strategies promote an improvement of these health issues among the students? If so, which strategies and how? The most prominent health concerns for teenagers were listed as a) safety, b) development of interest in physical activity, c) lack of knowledge and understanding of the cardiovascular system, d) social issues such as are drug use, alcohol consumption, sexually transmitted diseases, obesity, and health-related disorders, and e) proper nutrition, proper eating habits, alcohol consumption, the use of legal and illegal drugs, tobacco use, and any risk-taking activities that are harmful to the student's health.

Comparison of Study Site High School PFAT Performance to State 2007

The Study District did not classify students by grade level. The State, however, did separate out all students by grade level and only required fifth and ninth graders to be reported. The Study District data gathered was a compilation of students in ninth through twelfth grade, or more specifically all students enrolled in PE for 2007-08, 2008-09 and 2009-10. All categories of Physical Fitness measurement for the Study School Site indicated lower performance when compared to the state of Missouri results. Overall fitness expressed by the percent of students reaching HFR in all combined categories for the Study School Site was 61%, compared to the state performance level of 65%.

Conclusions to Research Questions

Research Question # 1: What strategies are physical education teachers who are employed in the Study Site School District implementing to promote success for their students in meeting the state physical fitness indicators?

This research question was addressed by one interview question, which asked: What strategies are you using, or have you observed others using, that promote success for students in meeting the state physical fitness indicators? All five interviewees responded that they either practiced or observed specific strategies and best practices in the physical fitness classrooms that were designed to increase student success for the PFAT indicators.

Research Question # 2: To what degree are identified strategies being used by physical education teachers who are employed in the Study Site School District?

This question was addressed with interview questions number two and three. Question number two included a difference in perception when responses were

compared. Not all interviewees felt the MPFAM was useful in its recommendations for student success on the PFAT. Comments regarding student success included the following items as important contributors: availability of equipment and resources, the recommendations in the MPFAM, and complete reliability on the teacher's strategies. They stated that the manual should include a plan or strategy for improvement and specific suggestions as to how to promote individual student improvement.

A variety of suggestions were offered in response to question number three. These suggestions included a) student involvement in the physical aspects of PE classes, b) removal of the unhealthy drink and food items from the school campus lunchroom and vending machines, c) a formalized mandatory dress code for PE classes, d) a variety of PE classes offered to address cardiovascular fitness, e) teacher access to a variety of outside resources with more field trip availability, f) an added emphasis on team sports, skill building strategies and activities, and g) attention to the need for highly qualified teachers utilizing best practice techniques. Removal of vending machines to promote healthy nutrition is one item from interview results supported in literature review (Chang, 2004).

Research Question # 3: What are the perceived strengths and weaknesses in support provided for physical education in the Study Site School District? This research question was addressed by three interview questions: numbers four, five, and six.

Question number four offered a mixed perception of district support for the physical education classroom. Some interviewees felt that the district offered no support and no incentives for individual student improvement in fitness. Some believed that the district offered support through the requirement that all students be tested with the PFAT,

the offer of professional development activities and the hiring of highly qualified personnel.

A variety of answers were provided for question number five. The perceived strengths provided by the district included: a) the existence of a (unofficial) district-wide PE and health curriculum, b) the bond between the teachers within the district, the involvement of outside sources to engage students, c) the support of the food service through provision of nutritional items, and d) the hiring of highly qualified personnel. One person felt that there were no noticeable strengths. For example, the lack of a PE supervisor serving the district was viewed as a weakness.

Perceived weaknesses included the following: a) the requirement of only one school year of PE for the four-year term, b) lack of supplies and equipment from year-to-year, c) lack of the use of outside resources, d) the lack of hiring a PE supervisor, e) a need for better organized cafeteria wellness programming, and f) the need for improved professional development and workshop scheduling, One person felt that there were no visible weaknesses, just areas of concern.

Research Question # 4. What are the perceived benefits of current physical education programs for students in the Study Site School District? This question was addressed by the two interview questions.

Response to this question offered mixed perception. Several interviewees felt that current strategies were having an effect on current and future lifestyles in the district. Some felt they were not. Effects were described as promotion of healthy lifestyle, exposure to activities that promote a healthy lifestyle, and knowledge to promote awareness of healthy lifestyles.

The most prominent health concerns for teenagers were listed as the following: a) safety, b) development of interest in physical activity, c) lack of knowledge and understanding of the cardiovascular system, d) social issues such as are drug use, alcohol consumption, sexually transmitted diseases, obesity, and health-related disorders, and e) proper nutrition, proper eating habits, alcohol consumption, the use of legal and illegal drugs, tobacco use, and any risk-taking activities that are harmful to the student's health.

Recommendations to Study School District

Without a district physical education supervisor, PE teachers lack direction and support. Budgeting and funding does not receive the same scrutiny and lobbying capacity without leadership at the district level. In this district and many similar size districts, all core content areas have a supervisor who coordinates funding, facility, and faculty issues at the building level as well as the district level. All PE, health teachers, and coaches surveyed and interviewed felt PE deserved more recognition as a viable subject for students' academic growth and physical well-being. It is recommended that the district implement the home-connect so that PE teachers can have greater communication with parents and guardians. PE teachers could offer supplemental opportunities and health information to parents and students so that students could keep up with the PE program and class work when they were unable to attend class. The home-connect would allow parents more opportunities to support the PE teacher and understand the daily grading system and status of the student in the class.

Recommendations for Future Research

Little or complete lack of physical education classes throughout childhood is causing adolescents to become fat (Plowman et al., 2007, p.1). Obesity is one health issue

that has received considerable attention; however, no study has addressed how obesity is linked to certain other disorders and how much benefit physical education plays in children's lives to control or manage such disorders. It is recommended that this study could be a springboard for future research in management of childhood disorders like obesity, asthma, and diabetes. It would have been interesting for this current study to have surveyed students to see how healthy their eating habits were and what influence these habits had on the student's general health and performance level.

Comparing an urban vs. suburban school district would have accentuated the socio-economic issues which impair an urban physical education program. Having a larger survey and interview sampling would have made this a more comprehensive study. It is recommended that future researchers survey more health teachers and incorporate more health-related topics linked to physical activities and a healthier lifestyle. It is also recommended that researchers examine health issues that stem from a lack of physical activity, in particular lack of exercise. Student surveys may be given to PE students with questions that depicts the students' frequent food choices. Also, a survey could be administered to the student concerned with ideas or suggestions which will encourage students who do not normally participate to become active and participate in the PE program.

Summary

PE teachers wanted more practice time and skill development to enhance student performance on the fitness indicators, like weight lifting to increase the upper body strength of students. Teachers wanted to incorporate more activities like running in order to increase the cardio-vascular system. Teachers also wanted to increase the number of

activities that promoted life-long skills which the student could use long after they had finished their high school years, but this was difficult due to lack of facilities.

Teachers strongly agreed that use of the same curriculum and effective teaching practices made a cohesive PE program in Study School District, along with use of the same classroom strategies. However, resources were limited. Teachers felt that they were adequately prepared and classroom management concerns were minimal. Not enough professional development was offered in the district, according to teachers who were surveyed and interviewed. Teachers also felt that the district treated the PE department as second-class lions.

PFAT results indicated that the cardio-vascular systems of students at the Study School Site were underdeveloped for both males and females. Cardio-vascular systems were assessed by the mile-run. In the mile-run, students were well below the health fitness range with a mean for all three years of 18.5%. Only half of the students scored in the healthy fitness range on the sit-ups showing abdominal strength and a mean of 50%. Push-ups show upper body strength and showed a mean of 46%. Finally for flexibility students did the sit and reach and 43% met the healthy fitness range.

PFAT Health indicator results also indicated that the three year study showed the health status of the Study Site School were summarized as thus: The male Healthy BMI indicator showed that, for the three year study period, the Study School male students revealed that 61 percent who were tested also met the Healthy BMI rating. The female results for the Healthy BMI rating equaled 56.5 percent for the same time three year time period. Both the male and female percentages combined were 58.8 percent of the students classified as Healthy according, to their BMI.

The total numbers of students for both the male and female equaled 21.5 percent of the students classified as overweight, 11.9 classified as Obese, 6.9 percent as severely obese, and 5.9 as morbidly obese. The results of this study indicate that the Study School District must continue take physical education and physical activity for its students seriously. A combination of close scrutiny of nutrition within the district, reorganization of the use of available facilities, continued cohesive teamwork among physical fitness educators, and continued study of student progress are all recommended.

References

American Alliance for Health, Physical Education, Recreation, and Dance (AAHPERD). (2002). In *Education encyclopedia*. Retrieved from http://www.answers.com/topic/american-alliance-for-health-physical-education-recreation-

American Diabetes Association. (2008, November). *Am I at risk for Type 2 Diabetes?* United States, National Institute of Diabetes and Digestive and Kidney Diseases. United States Department of Health and Human Services. Retrieved from http://diabetes.niddk.nih.gov/dm/pubs/riskfortype2/index.htm

Armour, Nancy. (2007). Obesity rates climbed in 31 states in U.S. *Msn*, 1-4. Associated Press. Retrieved from http://www.msnbc.msn.com/id/20461564/ns/health-diet_and_nutrition/

Ballard, K, Caldwell, D., Dunn, C., Hardison, A., Newkirk, J., Sanderson, M. (2010). *Is it physical education or physical activity?* American Alliance for Health, Physical Education, Recreation and Dance. Retrieved from http://mountainpeakschool.com/ pdfs/PE%20Article%20from%20NASPE.pdf

Bihr, M. (2001). *Missouri assessment program*. Jefferson City, MO: Missouri Department of Elementary and Secondary Education.

BJC School Outreach and Youth Development. (2009). *Breaking down BMI*. [Pamphlet]. St. Louis, MO: BJC Health Care.

Bronson, M. H., & Merki, D. (2007). *Glencoe Health teacher wraparound edition*. Woodlands Hills, CA: McGraw-Hill Companies.

Carnegie Council on Adolescent Development. (2000). *Turning points: preparing American youth for the 21st century.* New York: Teachers College Press.

Cawley, J., Meyerhoefer, C., & Newhouse, D. (2006). Not your father's PE: obesity, exercise, and the role of schools. *Education next*. Retrieved from http://www.mindfully.org/Health/2006/Obesity-Exercise-Schools20sep06.htm

Chang, A. (2004). Schools across U.S. target vending machines in obesity controversy. *Organic Consumers Association*, 1-2. Retrieved from http://www.organicconsumers.org/school/obesity031904.cfm

Center for Disease Control and Prevention (CDC). (2008). *Contributing factors.* Retrieved from http://www.cdc.gov/obesity/childhood/causes.html

Costa, D. G. (2008, December). *Policy options for addressing childhood obesity in Missouri* (Rep. No. 24). Retrieved from University of Missouri website: http://www.truman.missouri.edu/ipp

Draper, B. (2008). Mo. obesity rate rises for third straight year. *Columbia Missourian*, 1-6. Retrieved from http://www.columbiamissourian.com/stories

Fierro, M. P. (2002). The obesity epidemic- how states can trim the "fat". *NGA Center for Best Practices*, 1-10. Retrieved from http://www.nga.org/cda/files/OBESITYIB.pdf

Friedman, Stine, & Whalen. (2004). *Lifetime health.* Chicago, IL: Holt, Reinhart, & Winston.

Gay, K. (2006). *Am I fat? The obesity issue for teens issues in focus today*. Berkeley Heights, NJ: Enslow.

General diabetes facts. (2008, November). Retrieved from http://www.jdrf.org

Giarrusso, T. W. (2010, February). Michelle Obama criticized for obesity comments: Was she really out of line? [Web log post]. Retrieved from http://blogs.ajc.com/momania/

Goldberg, L. & Elliot, D., (n.d.a). *The ATLAS program*. Retrieved from Oregon Health & Science University Center for Health Promotion Research: www.atlasprogram.com

Goldberg, L. & Elliot, D., (n.d.b). *The ATHENA program*. Retrieved from Oregon Health & Science University Center for Health Promotion Research: www.athena program.com

Grechus, Marilyn. (2010). *Innovative tools for health education: Making inexpensive props, visuals, and manipulatives.* Champaign, IL: Human Kinetics.

Healthy People 2010: Understanding and improving health. 2nd ed. U.S. Department of Health and Human Services. Retrieved from http://www.healthypeople.gov/2020/default.aspx

Healthy youth! Asthma. (2009, August 14). Retrieved from http://www.cdc.gov/HealthyYouth/asthma

Helaine, A. (2010). *History of physical education in America.* Retrieved from http://www.ehow.com/about_6461108_history-physical-eucation-america.html

Hermes, A. (2010). *History of physical education in American schools.* Retrieved from http://www.ehow.com/about _6617533_history-physical-education-american-schools.html

History of the President's Council of Physical Fitness and Sports 1956 – 2006 (PCPFS). (2010). President's Council of Physical Fitness and Sports. Retrieved from http://www.fitness.gov/50thanniversary/toolkit-firstfiftyyears.htm

King, D.K. (2000). *Missouri physical fitness assessment manual* [Brochure]. Retrieved from http://dese.mo.gov/schooldata/school_data.html

Linhardt, B. (2009, May). Letter: Missouri schools need physical education to combat childhood obesity. [Editorial]. *Columbia Missourian, pp. 1-5.* Retrieved from http://www.columbiamissourian.com/stories/2009/05/08/letter-missouri-schools-need-physical-education

Missouri Department of Elementary and Secondary Education (DESE). (1996). Show Me Standards. Retrieved from http://www.dese.mo.gov/standards/

Missouri Department of Elementary and Secondary Education (DESE). (2007). Grade level expectations. Physical education. Retrieved from http://dese.mo.gov/divimprove/curriculum/GLE/PEgle.html

Missouri Department of Elementary and Secondary Education (DESE). (2008). Missouri physical fitness data. Retrieved from http://www.dese.mo.gov/divimprove/curriculum/hp/documents/PFData2003-2010.pdf

Missouri Department of Elementary and Secondary Education (DESE). (2009). Study School District student demographic data. Retrieved from http://dese.mo.gov/planning/profile/building/demo1151151730.html

Monti, B. (2004). Appropriate practices for high school physical education. *National Association for Sport and Physical Education*. Retrieved from naspeinfo@aahperd.org

Morrow, J. R., Jackson, A. W., & Payne, G. V. (1999, September). *Physical activity promotion and school physical education*. United States, Department of Health and Human Services. President's Council on Physical Fitness and Sports. Retrieved from http://www.fitness.gov/digest_sep1999.htm

Morrow, J. R., Zhu, W., Franks, B. D., Meredith, M. D., & Spain, C. (2009). 1958-2008: 50 years of youth fitness tests in the United States. *Research quarterly for exercise and sport*, *80*(1), 1-11. Retrieved from http://www. aahperd.org/ rc/publications/rqes/Indexes.cfm

Napper-Owen, G., Marston, R. Volkinburg, P. Afeman, H. & Brewer, J. (2008). What constitutes a highly qualified physical education teacher*? Journal of physical education, recreation, and dance*. *79*(8).

National Association for Sport and Physical Education (NASPE). (2007). Retrieved from http://www.aahperd.org/naspe/

Obesity and overweight for professionals: Causes and consequences. (2009). Division of Nutrition, Physical Activity and Obesity. National Center for Chronic Disease Prevention and health promotion. Retrieved from http://www.cdc.gov/obesity/ causes/index.html

Pangrazi, R. P., & Darst, P. W. (1991). *Dynamic physical education for secondary School students* (Second ed.). New York, NY: Macmillan.

Patrick, K., Norman, C.J., Calfas, K.J., Sallis, J.F., Zabinski, M.F., Rupp, J., and Cella, J. (2004). *Diet, physical activity, and sedentary behaviors as risk factors for overweight in adolescence*. Retrieved from http://bases.bireme.br/cgi-

bin/wxislind.exe/iah/online/?IsisScript=iah/iah.xis&src=google&base=ADOLEC&lang=p&nextAction=lnk&exprSearch=15066880&indexSearch=ID

Plowman, S.A., Sterling, C.L., Corbin, C.B., Meredith, M.D., Welk, G.J., and Morrow, J.R. (2006). Enlivening the curriculum of health-related fitness. *Educational insights*, *13*(4).

Rural, suburban & urban, background information & activities. (1999-2009). Retrieved from http://www.brainpopjr.com/socialstudies/communities/ruralsuburbanand urban/grownups.weml

Shape of the nation (1020). American Alliance for Health, Physical Education, Recreation and Dance. Retrieved from http://www.aahperd.org/ naspe/ShapeOfTheNation/template.cfm?template=appendixB.html

Six critical health behaviors. (2009, August). Retrieved from http://www.cdc.gov/ Healthy Youth/healthtopics/index.htm

Study School District. (2004a). District history. Retrieved from Study District Website.

Study School District. (2004b). District physical fitness chart.

Trost, S. (2009). *Physical education, physical activity and academic performance.* Oregon State University Department of Nutrition and Exercise Sciences.

U.S. Department of Health and Human Services (USHHS). (1997). *Morbidity and mortality weekly report.* (No. RR-6). Public Health Services, Centers for Disease Control and Prevention.

U.S. Department of Health and Human Services (USHHS). (2007, September). *Obesity, physical activity, and weight-control glossary*. National Institutes of Health. Retrieved from http://win.niddk.nih.gov/publications/glossary/AthruZ.htm

U. S. Department of Health and Human Services (USHHS). (2008). *2008 Physical activity guidelines for Americans*. Retrieved from www.health.gov/paguidelines

Vitae

Tyrone D. Smith earned a Bachelor of Science in Recreation with a Minor in History from Southwest Missouri State Missouri University and a Bachelor of Science in Physical Education from Southern Illinois University at Edwardsville, IL. He earned his Master of Science Degree in Education from Southern Illinois University at Edwardsville, IL.

Mr. Smith is certified in the State of Illinois to teach Physical Education, Upper Elementary and Junior High Language, Self Contained General Education for Kindergarten through Grade 9, and Social Science. He holds an Administrative I, Grade K – 12 Certificate for the State of Missouri and a Type 75 General Administrative Certificate Endorsement in the State of Illinois.

Mr. Smith has coached high school girls' softball, girls' volleyball, girls' basketball, high school boys' track, and high school football. He earned a Doctorate degree in Education Administration from Lindenwood University at the St. Charles, Missouri Campus in 2011.

Appendices

Appendix A

Interview Questions Linked to Study Research Questions

To address RQ # 1:

1) What strategies are you using, or have you observed others using, that promote success for students in meeting the state physical fitness indicators?

To address RQ # 2:

2) How, and to what degree are recommendations from the Missouri Physical Education Fitness Assessment Manual implemented within the physical education and health classrooms in your building, and/or throughout the district?

3) What, if any, additional strategies and/or best practices do you feel should be implemented in the physical education and health classrooms in your building and/or throughout the district? Why?

To address RQ # 3:

4) How is the district supporting the achievement of students in meeting the physical fitness indicators recommended by the Missouri Physical Education Fitness Assessment Manual?

5) What are the strengths in support provided by the district, if any?

6) What are the weaknesses in support provided by the district, if any?

To address RQ # 4:

7) Are current strategies in the physical education and health classrooms, in your building, and/or throughout the district having an effect on the current and future lifestyles of students enrolled in the district? If so, how?

8) What are the district's most prominent health concerns for teenagers enrolled in physical education and health classes? Do current classroom strategies promote an improvement of these health issues among the students? If so, which strategies and how?

Appendix B

Interviews

Response to question #1 was that from what had been observed in many physical education classes the teachers have used modeling to demonstrate the expectations for certain fitness indicators. The Department of Elementary and Secondary Education (DESE) Fitness Standards are also followed which the school district's fitness indicators are developed from. These fitness indicators are gender specific and the requirements are based on the fitness indicator. Pre-evaluation is based upon the student's present fitness level, and then a more specific plan can be developed to better prepare the students for the physical fitness assessment test indicators which is how the State measures the students' physical fitness level **(Coach A).**

Response to question #1: The PE teacher said the strategy he uses to promote student success for the push-up indicator strategy for the state physical fitness test required the student to perform push-ups on a regular basis along with a regular weight lifting routine and any exercise or activities which will build upper body strength.

The mile run indicator strategy consisted of the student jumping rope on a regular basis or doing any exercise or movement activity designed to develop leg muscles and increase the participant's cardiovascular endurance.

The sit and reach indicator strategy used by interviewee #1 consisted of the student performing stretching exercises and activities on a regular basis which are designed to develop leg hamstring and lower back muscles.

The curl-up (sit-up) strategy used consisted of the student performing daily repetitions of curl-ups as well as lifting leg weights which are designed to help develop stronger abdominal muscles.

Health indicators consist of five classifications or categories for the student's BMI. The health indicator strategy used by this PE teacher involved the use of the school health teacher discussing what healthy types of food choices for daily meals are. The PE teacher's role was to discuss various exercises and physical activities which enable the participant to obtain and sustain a healthy body weight and healthy life-style (**Coach B).**

Response to question #1 was that strategies used in order to help promote the success for all students to meet the state's physical fitness indicator is that the students were given multiple activities that were designed to increase strength, flexibility, and cardiovascular endurance. By providing this type of practice the student was enabled to be better prepared and ready to exceed the State's expectations for the various physical fitness assessment indicators (**Coach C).**

Response to question #1: The response was that the interviewee uses his own personal strategy which consists of having a starting point, and using a portion of the class for conditioning exercises that will build strength and endurance for the various fitness indicators. The method used is a gradual building process which will better serve the students for the fitness indicator assessment test **(Coach D).**

Response to question #1 was that teachers try to get students involved and create programs based on student strengths which will enable the students to be successful in their attempt to meet the state physical fitness indicators **(Coach E).**

Response to question #2 was that the district schools are required to follow State standards and based upon the availability of equipment and facilities that each school had

will depend on or require the teachers to improvise, and by doing this they are able to encourage their students to do their best at reaching their highest fitness level **(Coach A).**

Response to Question #2 is that physical education and health teachers in my building and throughout the district always try to implement the recommendations from the Missouri Physical Education Fitness Assessment Manual (MPEFAM). which is demonstrated when the students are required to perform a physical activity, a fitness indicator, or when asked to make a decision concerning healthy food choices or healthy physical activities (**Coach B).**

Response to question #2 was that students are put through different activities which will better prepare them for the State physical fitness assessment test. Also, the students are taught the proper techniques needed to ensure that they are aware and properly prep for each fitness indicator (**Coach C).**

Response to Question #2: The response was that the interviewee did not really see any recommendations were being used or given from the Fitness Assessment Manual to the physical education or health teachers. He said he knows that teachers actually do what is required, but he was not sure about the Fitness Assessment Manual's recommendations that are being followed or implemented (**Coach D).**

Response to question #2 was that because the Missouri Physical Education Fitness Assessment Manuel is a mandated document by the State of Missouri, most if not all of the physical education and health teachers adhere to the recommendations that are proposed, which will enable all of the students to be successful in meeting the state physical fitness indicators and health standards **(Coach E).**

Response to question #3 was that the students need to become more involved in some type of physical activity through physical education classes and become more aware of and identify the health risks that are associated with leading a sedentary or non-active lifestyle, and hopefully this will encourage the student to find at least one activity in which they will like to participate in. Also, it should be an all school inclusive movement in which they remove all non-healthy food and drink items from the lunchroom and vending machines and replace the unhealthy items with the more healthy food and drink items (**Coach A).**

Response to question #3 showed that the interviewee was concerned with the soda machines being taken out of the schools, mandatory dress for PE students, additional PE courses being offered which are focused on developing cardiovascular endurance, weight lifting classes, aerobic, and conditioning classes. The interviewee felt that by offering these types of courses the obesity issue will be addressed **(Coach B).**

Response to question #3 was that one thing that the interviewee would like to see is that the district teachers having access to more outside resources such as , being able to take students on field trips so that they can view various things or subjects from different perspectives. It is believed by the interviewee that students can learn more when they are placed in an environment that they are not use to and are able to see things from a different perspective (**Coach C).**

Response to question #3: The response was that the interviewee would like to see more of an emphasis be placed on team sports rather than individual sports. His philosophy is that individual skill sessions are necessary in order to build up the students' skills for team sport activities. His school offers a class called team sports, however in the basic PE class the main emphasis is on individual skills building, because of the lack of

fundamental skills displayed by most of the students. Skill building strategies are practiced before the students are allowed to engage in any sport activities. He believes that skill building is the key to student success and enjoyment for physical education and health classroom activities **(Coach D).**

Response to question #3 was that the curriculum that is already established is sufficient, and if the teacher feels that the student is in need of additional help, then it will be up to the teacher who is in charge to make modifications and personalize the curriculum, lesson, or activity to meet the students' needs or ability level (**Coach E).**

Response to question #4 was that through district workshops and professional development which help promote physical fitness and that address health related concerns for students **(Coach A).**

Response to question #4 indicated that the interviewee did not feel that the district was meeting the needs of the students which are demonstrated through the district being negligent in supplying the schools with adequate supplies and equipment which would help better serve the students (**Coach B).**

Response to question #4 was that the district mandates that all students partake in the physical fitness assessment once they are in grades that require them to be tested. It is the interviewee's that the district is in great support of the physical fitness assessment (**Coach C).**

Response to question #4: The response was that the district dictates policies that the physical education and health teachers should adhere to and follow the guidelines recommended by the Missouri Physical Education Fitness Assessment Manual, but he had not noticed any district support for students to become successful in meeting the physical fitness indicators. Incentives like fitness patches use be provide for all of the students who met all of the healthy fitness range (HFR). requirements for all of the fitness indicators. Incentives such as the fitness patches are no longer given to the students for meeting a high achievement in a physical fitness assessment test. Also, the availability of being able to see the results of district-wide physical fitness scores from each school is not being shared with the teachers within the district **(Coach D).**

Response to question #4 was that by training the teacher with the Physical Education Fitness Assessment Manual recommendations, district-wide professional development, being highly qualified physical education and health teachers hired by the district; these are all of the necessary important ingredients which demonstrates how the district supports student achievement in meeting the physical fitness indicators**. (Coach E).**

Response to question #5 was that consistency in how the district curriculum is delivered and implemented to students along with extra-curricular activities which promote healthy living are offered at most schools in the district which can deliver healthier lifestyles, which may include team and individual sports, clubs, and activities which are teacher sponsored that students can participate in and become a part of **(Coach A).**

Response to question #5 indicated that the only strength in support provided by the district was not the district, but the support offered by the teachers within the district instead (**Coach B).**

Response to question #5 was that the district does a great job of bringing in outside sources into the district to help support or engage the students on projects that

help benefit the student's health and wellness. The district's food service department promotes good health practices and provides a foundation for sound lifestyle habits through the food service procedures and their nutritional education practices (**Coach C).**

Response to question #5: The response was that the interviewee does not feel that there are no noticeable strengths in district support, an example is the fact that there is no PE supervisor for the district at the present time. The PE supervisor position had been vacant for the entire 2010-2011 school year. This vacancy of the supervisor position had left the Health and PE departments' teachers to follow their own protocol for their curriculum applications (**Coach D).**

Response to question #5 was that the district hired highly qualified physical education and health teachers to implement quality programs which support the district curriculum and follow state guidelines, and by providing district-wide professional development which enables the teachers to become familiar with the latest researched innovations as a group are ways in which the district strengthens and demonstrates its support of the physical education and health profession teachers (**Coach E).**

Response to question #6 was that by only requiring one school year (two semesters). out of the four school years which the student attends high school is somewhat detrimental to the overall focus of the development of a physical fitness lifestyle. It should be recommended that physical education classes become a four year requirement, because then physical education would be more supportive of the federal suggested statement that 60 minutes of physical activity per day is the recommended requirement to be physically fit. By requiring four years of mandatory physical education classes would also support students being able to identify and adopt a variety of activities in which they may become familiar with due to the extended amount of time they will be exposed to different activities. This mandatory requirement will also help address the obesity issue facing society as well as instill lifelong activities in which the student can become familiar with and adopt (**Coach A).**

Response to question #6 indicated that the weaknesses in support provided by the district was; lack of supplies provided, lack of equipment, not caring about students meeting high achievement marks, and not rewarding students for outstanding accomplishment for the Physical Fitness Assessment Test results **(Coach B).**

Response to question #6 was that in the opinion of the interviewee there were not very many weaknesses. However, it was said that the district could get more involved in student health and wellness by bringing in more outside sources whose primary purpose would be to educate the student as well as the teachers in ways of leading a healthier lifestyle. The district should become more involved in providing a health wellness program in the cafeterias throughout the district (**Coach C).**

Response to question #6: The response was that the fact that the PE curriculum does not have a leader to help guide and dictate policy, no one to report, no professional development workshops scheduled, and no professional development or guidance for new first year PE and health teachers are weakness areas that should be addressed at the district level (**Coach D).**

Response to question #6 was that there were no obvious weaknesses; however, there are always some needs for improvement. For example, there is a need for more professional development, provisions for needed up-to-date supplies and equipment, and smaller class sizes where needed (**Coach E).**

Response to question #7 was that Yes, it is believed that sharing information with students concerning a healthy lifestyle goes back to having them to find a healthy activity in which they are interested in pursuing and continuing throughout their lifetime. In the health classes students are being taught about the certain health risks involved in living or developed through leading certain lifestyles, and if students can be deterred from developing lifestyles which include substance abuse and improper eating habits they can hopefully promote healthier lifestyles amongst all of the students **(Coach A).**

Response to question #7 indicated that current strategies and in my building and throughout the district does have an effect on the current and future lifestyles of the students in this district, however there are not very many if any life-long activities being offered in the district's secondary curriculum. The specific courses mentioned were tennis, bowling, golf, walking, aerobics, and skating **(Coach B).**

Response to question #7 was that everything that is instructed in physical education and health classes promotes a healthy and better lifestyle for district students. The physical education students learn the proper techniques and skills needed to accomplish specific tasks for given activities. The health and wellness classes provide the students with information that promote a healthy lifestyle and ways of acquiring a healthier and ideal way of life, through the use of lessons and hands-on projects (**Coach C).**

Response to question #7: The response was that it depends on the individual student's perception of what type of lifestyle he or she will adopt for his or herself. Hopefully what is being taught in the PE and health classrooms are valued and effective and will be carried over to their everyday day life activities. An example being that his students are being exposed to Ultimate Frisbee and most of the students had little or no knowledge or contact with this sport, but after skill building drills, many of the students enjoyed it to a high degree. Now, hopefully many of the students will continue to play and introduce other people to the sport of Ultimate Frisbee. This sport will last them long after they are finished with high school, and will give them another lifelong physical activity they can engage in as a means of staying physically fit and healthy (**Coach D).**

Response to question #7: Yes, current strategies being used in the physical education and health classes throughout the district is and does have an effect on the students, because it had been shown by research that what high school physical education and health students learn in their classes often times mold their attitudes which will develop healthful ways in which they approach their eating and physical fitness routines. These learned concepts tend to impact the present and future lifestyle of the student. For example, when the student is taught or exposed to information concerning legal and illegal drugs, steroids, alcohol, tobacco, and proper nutrition many students are more inclined to make the wiser choices and choose the healthier lifestyle **(Coach E).**

Response to question #8 was that one of things that the schools and the district must offer is a safe environment for active participation if we want the students to develop an interest in physical activity. By giving them a safe environment and allowing them to achieve some success in what they are trying to accomplish will beneficial to everyone involved **(Coach A).**

Yes, some current classroom strategies promote an improvement of health issues among the students. By encouraging and informing students to develop a healthier

lifestyle and providing them with a safe environment in which the student can find and pursue at least one activity they can engage in as a lifelong physical activity.

Finally, by just making the students aware of various health concepts and how they can affect their health status and the deficiencies that will occur if they do not develop a healthy lifestyle to combat these deficiencies. These are just a few avenues that we as teachers and the district can help students develop and realize the importance of developing and living a healthy lifestyle for their present and future well-being.

Response to question #8 indicated that the most prominent health concerns for the district's teenagers enrolled in the physical education and health classes is the lack of adolescent cardiovascular endurance. The current classroom curriculum and strategies are not addressing the health concern for the lack of the students receiving activities which will increase their cardiovascular endurance capacity. Activities which were suggested were rock climbing classes, tennis, skating, conditioning, and swimming classes (**Coach B).**

Response to question #8 was that the main concern for students is the importance of their health and wellness. The district must strive to provide students with as many opportunities to engage in activities which will increase their physical, mental, social, and emotional well-being. The physical education and health classes implements the expected goals of the district by providing hands on activities, structured lectures, and organized projects (**Coach C).**

Response to question #8: The response was that everything that the district asked the PE and health teachers to teach in their curriculums such as stress related health issues, drug use, alcohol consumption, sex related problems, and other health risk problems plaguing our society are all being addressed by PE and health teachers in the classrooms. All of these health concerns will enlighten the students and make them aware of the problems and how to avoid situations which are unhealthy and how to achieve and maintain a healthy lifestyle and remain physically active as a way of life. This is a way to help promote and improve the health concerns the district had for the teenagers throughout the district (**Coach D).**

Response to question #8 was that some of the district's most prominent concerns are; proper nutrition, proper eating habits, use of alcohol, use of legal and illegal drugs, tobacco use, and any activities which are harmful to the student and will decrease his or her chances to becoming a healthy contributor to our society. Yes, there a current classroom strategies and programs which address many of the health issues and concerns of teenage students of today. One program of this nature is known as The Atlas Program. This program is a four week once per week session which is taught during a health class curriculum. There is a pretest and post-test given to each student which focuses on major health risks and solutions that teenage youth are faced with in today's society.

The Atlas Program in the past lessons had informed the students how not to become involved in any weight programs which may involve rapid loss or gaining of weight. Another issue addressed by the Atlas Program was focused on making the student aware of the legal and illegal drugs that are available for weight and strength management, and the permanent harmful side-effects that may occur. This is just one program strategy that is offered that demonstrates the district's effort to improve these health issues among the teenage students.

Finally, by promoting The Atlas Program and finding ways to convince the teenage students to buy into its strategies to create student awareness, establish proper nutritional diets, create personalized regular exercise and physical fitness routines, develop adequate rest and study schedules for each student addresses the district's most prominent health concerns along with some solutions as well **(Coach E).**

Appendix C

Physical Education Resources Survey

Position: _____ Date: _____

School:_____

Response to this survey is voluntary. All information and responses will be held in confidence. Please, do not include information in responses that can be used for identification. By responding to these questions and turning in the survey, you agree that your data may be included in a research study used towards earning an Educational Doctorate from Lindenwood University. For questions contact Tyrone Smith, tysmith2006@sbcglobal.net.

Your answers will help us meet the needs of future teachers. Confidentiality will be honored.
1=strongly disagree; 2=disagree; 3=somewhat disagree; 4=neutral; 5=somewhat agree; 6=agree; 7=strongly agree

Please circle the response that best reflects your opinion!

1. As a PE teacher, I implement the following strategies in my classroom:

Enforced dress code	1	2	3	4	5	6	7
Grading of student's correct form in executing calisthenics	1	2	3	4	5	6	7
Points for participation in activities	1	2	3	4	5	6	7
Grading of student's correct form and technique during sports activities	1	2	3	4	5	6	7
Grading of student's knowledge of rules for various sporting activities	1	2	3	4	5	6	7
2. Our school generally meets state standards for physical fitness.	1	2	3	4	5	6	7
3. Our school has adequate physical resources available for physical education.	1	2	3	4	5	6	7
4. Our school has adequate financial resources available for physical education.	1	2	3	4	5	6	7

5. Our school has adequate faculty/staff resources available for physical education.	1	2	3	4	5	6	7
6. Our school has adequate equipment resources available for physical education.	1	2	3	4	5	6	7
7. Our school has adequate varsity sports programs and resources available.	1	2	3	4	5	6	7
8. Our school's goal is to exceed state standards for physical education.	1	2	3	4	5	6	7
9. Our school has highly qualified teachers instructing within physical education program.	1	2	3	4	5	6	7
10. Our school believes in the importance of physical education.	1	2	3	4	5	6	7
11. Our school believes in the importance of physical fitness.	1	2	3	4	5	6	7
12. P.E. is important for all high school students.	1	2	3	4	5	6	7
13. P.E. should be mandatory for all high school students.	1	2	3	4	5	6	7
14. P.E. is as important as English and Math in high school.	1	2	3	4	5	6	7
15. P.E. should be a core subject in high schools.	1	2	3	4	5	6	7
16. P.E. is a priority at my high school.	1	2	3	4	5	6	7
17. P.E. in high school promotes life-time health.	1	2	3	4	5	6	7
18. P.E. in high school promotes life-time fitness.	1	2	3	4	5	6	7
19. P.E. and sports opportunities impact lifestyle choices.	1	2	3	4	5	6	7
20. P.E. and sports participation positively impact self-esteem.	1	2	3	4	5	6	7
21. Students who participate in P.E. do better academically.	1	2	3	4	5	6	7

Currently at our school, students are required to participate in how many minutes of P.E. per week: _____

On a scale of 1 to 10 with 1 being poor and 10 being excellent, the standard of P.E. at my school is: _____

Personal Comments: _____
_____
_____
_____

Appendix D

Interview Questions with Prompts for Expected Answers

Interview Questions

1. What strategies are you using, or have you observed others using, that promote success for students in meeting the state physical fitness indicators?
   Fitness Indicators: Push-ups (Males – 23 and Females – 12); Mile-Run (Males – 9:00 minutes and Females – 10:00 minutes); (Sit-and-Reach – Males – 30 centimeters and Females – 33 centimeters); Curl-up (Sit-up) (Males 45 in one minute and Females – 36 in one minute); and There are five Health Indicators: Healthy category (15-24 points); Overweight category (25-30 points); Obese category (31-35 points); Severely Obese category (36-40 points); Morbidly Obese category (41+).

   Push-up Indicator

   A strategy I have used and have seen used to help students become successful in meeting the push-up state physical fitness indicator assessment requirement is to provide a weight- lifting unit as a way to help the student develop more upper body strength to enable the student to become stronger, and more able to execute the minimum number of push-ups required for the state physical fitness assessment test.

   Mile-run Indicator

   A strategy I have used and have seen used to help students become successful in meeting the mile-run state physical fitness indicator assessment requirement is to design a unit which require each student to walk preferably power walk for at least a one mile distance with a designated time limit for several class periods, before testing the students in the one-mile run. This activity will help develop the student's confidence which may help the student with the mile-run, as well as to increase their cardio-respiratory system capacity.

   Sit-and Reach Indicator

   A strategy I have used and have seen used to help students become successful in meeting the sit-and-reach state physical fitness indicator requirement assessment is to require the students to perform various stretching calisthenics designed specifically for the back and leg muscles which a necessary for the student to be able to meet the state physical fitness indicator requirement for the sit-and-reach.

   Curl-up (Sit-up) Indicator

   A strategy I have used and have seen used to help students become successful in meeting the curl-up state physical fitness requirement assessment is to require each student to execute a designated number and of repetitions of sit-ups and other activities which will provide the same forward bending motions that are present in performing a sit-up as lead-up activities before assessing the student in the sit-up test.

   Body Mass Index Indicator (BMI)

   The strategy I have used to help students become successful in meeting the state physical fitness assessment indicator for BMI is to encourage and insist on the student to be physically active for at least one hour per day and every day if possible. The health teacher should also play an important role which may consist of providing the student with the proper information and knowledge of how to eat a balanced diet on a regular basis, eating foods in moderation, drinking the proper amount of liquids, getting adequate sleep, and indulging in regular physical activity which constitutes most of the components for a healthy lifestyle.

   Some recommendations are provided in the Missouri Physical Education Fitness Assessment Manual (MPFATM) for applying some of the fitness indicators. Information is given such as; the objective of each test, what equipment is needed to administer the assessment, the proper body technique, and how to administer and score each fitness indicator is provided for the student and stakeholders as well.
2. I feel that my school as do many of the schools in my school district complies with the State of Missouri standards for administering the PFAT. However, the facilities and equipment may vary from school to school, the PE teachers demand for their students is to set a goal and

strive for at least the minimum passing score for each fitness indicator for each one of their students. I strongly believe and feel that every PE and health teacher within my school and school district use their instructional expertise and dedication to motivate and coach each student who participates in the PFAT to pass each fitness indicator with the highest possible achievement score.

3. I feel that more strategies and best practices are needed that focus on ways to get the average high school student to participate and become more involved in physical fitness activities, as well as learning how to identify and apply health concepts and ideas which are designed to help and influence our society to become a more physically healthy and fit people for now and the future generation.

   I believe that most of the health teachers supply their students with many of the up-to-date researched concepts and strategies that will enable the student to recognize and be able to make the best decisions and the wisest choices when their health and well being is at stake. Knowing that many of the high school students are at risk, but knowing that the risk is lessened when they are given options adds importance to the role PE and health teachers' play in the education system. By equipping the high school students in my school and district with ways to become and/or remain healthy should not be an option but a need. The need to be healthy and active must be nurtured in high school and carried over to adulthood.

4. The district supports the schools and provides workshops which are designed to help P.E. and health teachers develop activities which will help promote physical fitness and utilize the equipment and facilities that are available.
   - The district supports the healthy food and snack program, which is designed to help provide a nutritional diet for all students, and will help with the obesity epidemic our high school students are facing today.
   - The district has supported the need for physical and health education by supporting block scheduling which enables the high school student to have 225 minutes of physical education per week.
   - School nurses provide P.E. and health teachers up to date methods and concepts which will educate and benefit the teachers and student and students in health matters.
   - Mandatory Physical Fitness Assessment test for grades five through twelve are built into the PE curriculum throughout my school district...

   The strengths are:
   - The district has shown consistency throughout by requiring all high school students to take the PFAT two times each school year.
   - All students know that the PFAT will be given two times during the school year.
   - All students know what will be assessed and the criteria by which they will be measured against.

5. The strength in district support for student achievement to meet the physical fitness indicators is demonstrated by providing extra-curricular activities which encourage students to excel in physical activities such as football, track and field, soccer, basketball, baseball, tennis, cheer-leading and pom-pom squads.
6. The weakness in district support for students meeting the physical fitness test indicators can be attributed to allowing vendors to provide non-nutritional snacks and food items to be obtained on the school campus. Another weakness may be that the district does not require the student to have any more than one year of physical education credit in order to graduate from high school, and only one semester or a half credit hour is required.
7. I feel that the current strategies in the physical education and health classrooms in my building, and throughout the district will greatly impact the current and future lifestyles of students in my school district, because the PE activities and health concepts and information students are exposed to can be very essential and important to high school student's future development. Health class is an important link in which students are taught about the human body systems, disorders, and ways to take care of their body and how to prevent having diseases. High school students also are taught about proper nutrition, mental and emotional health problems and how to care for and seek help for them, how to promote safe and healthy relationships,

human growth and development, tobacco, alcohol, and other drugs, diseases and disorders, injury prevention, and environmental health issues.

P.E. classes provide structure to the current and future lifestyles of students in my school and school district through physical activities. These physical activities provide enjoyment and skills which will carry over into their adulthood.

Main concerns

1. Obesity
2. Drugs and alcohol use
3. Suicide
4. Asthma
5. Allergies
6. Other health problems
7. Depression
8. STD's

Many classroom strategies address many if not all of the prominent health concerns for teenagers who may be enrolled in physical education and health classes.

The most effective strategy deals with high school students abstaining from alcohol, drugs and sexual intercourse until they are more responsible and accountable for his or her actions... Other strategies and concepts are discussed in the health class offered in the high school curriculum in my district; also there is the school nurse, counselors, and the school social worker who communicate with the students on a regular basis. There are professional speakers from a local medical health facility, who conduct live teleconferences who discuss issues such as diabetes, its causes, symptoms, and treatment.

I would say that the current classroom strategies could possibly be effective, because there are no predominant signs that a significant amount of any health issues that stand out.

8. I feel that the districts most prominent concern health concerns for high school students enrolled in P.E. are:
    - Entitled to enjoy safe and healthy environment.
    - Entitled to be successful
    - Entitled to be exposed to quality concepts and skills learned in the P.E. class which will transition and carry over into their everyday life and use them where-ever and whenever possible.

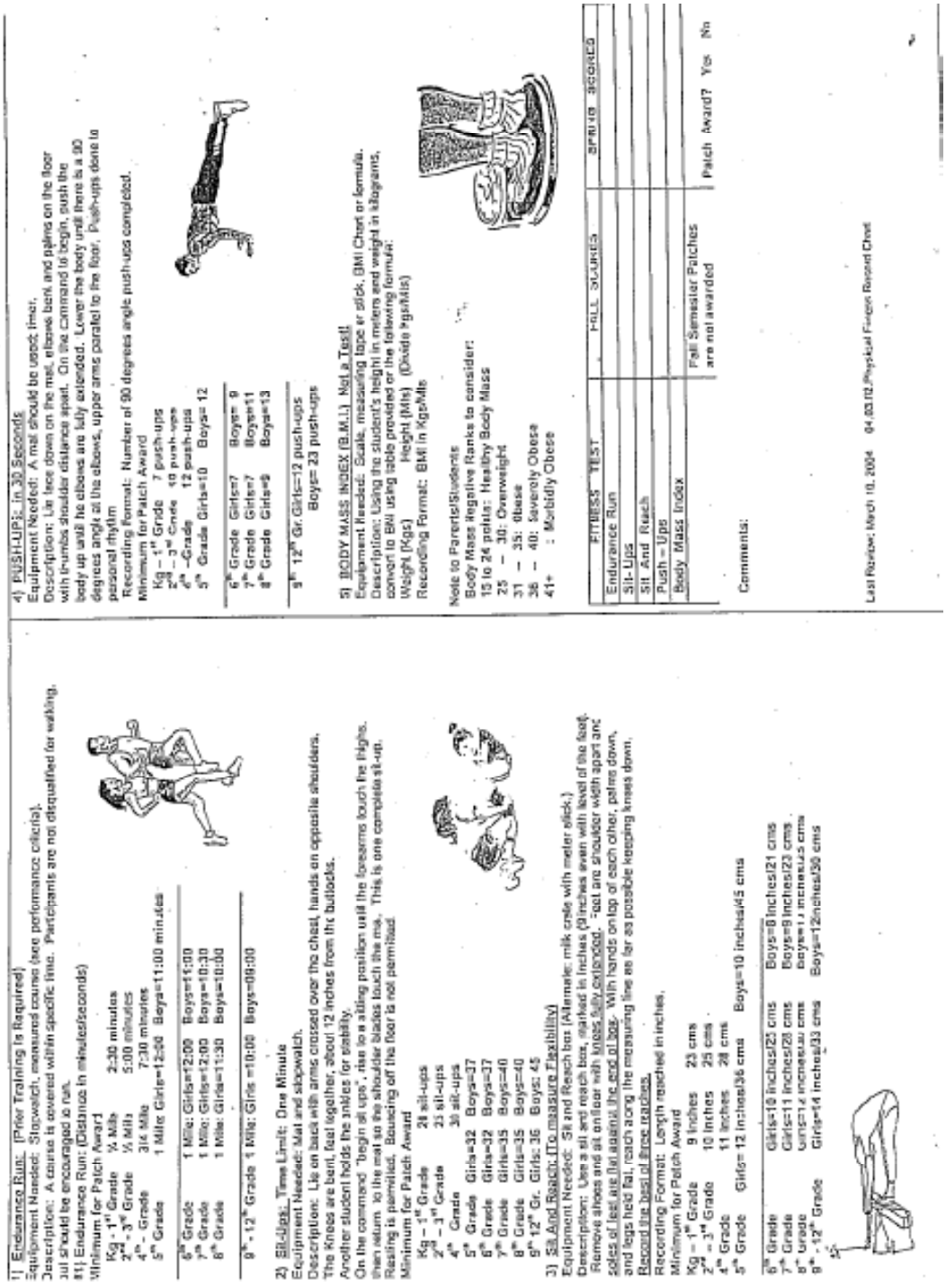
I feel that current classroom strategies actually do promote an improvement in many health issues and concerns among students in my school setting. The strategies that address student safety is demonstrated by classroom conduct policies that are established in most if not all high school PE and health classrooms.

The strategy that addresses student success and accountability is addressed by the student's classroom grades, progress reports, standardized assessments and teacher feedback on progress in the classroom activities.

The application of the concepts and skills are noticeable to an extent through repeated practice. However, many of the concepts and skills will be an ongoing building process which cannot be determined at this time.

Appendix E

Figure A1. **Study School District Fitness Assessment Scoring Rubric**



1) Endurance Run: (Prior Training Is Required)
Equipment Needed: Stopwatch, measured course (see performance criteria).
Description: A course is covered within specific time. Participants are not disqualified for walking, but should be encouraged to run.
1i) Endurance Run: (Distance in minutes/seconds)
Minimum for Patch Award

Kg - 1st Grade	¼ Mile	2:30 minutes
2nd - 3rd Grade	½ Mile	5:00 minutes
4th - Grade	3/4 Mile	7:30 minutes
5th Grade	1 Mile	Girls=12:00 Boys=11:00 minutes

6th Grade	1 Mile: Girls=12:00	Boys=11:00
7th Grade	1 Mile: Girls=12:00	Boys=10:30
8th Grade	1 Mile: Girls=11:30	Boys=10:00
9th - 12th Grade	1 Mile: Girls =10:00	Boys=09:00

2) Sit-Ups: Time Limit: One Minute
Equipment Needed: Mat and stopwatch.
Description: Lie on back with arms crossed over the chest, hands on opposite shoulders. The knees are bent, feet together, about 12 inches from the buttocks.
Another student holds the ankles for stability.
On the command "begin sit ups", rise to a sitting position until the forearms touch the thighs, then return to the mat so the shoulder blades touch the mat. This is one complete sit-up.
Resting is permitted. Bouncing off the floor is not permitted.
Minimum for Patch Award

Kg – 1st Grade	24 sit-ups	
2nd – 3rd Grade	33 sit-ups	
4th Grade	36 sit-ups	
5th Grade	Girls=32	Boys=37
6th Grade	Girls=32	Boys=37
7th Grade	Girls=35	Boys=40
8th Grade	Girls=35	Boys=40
9th 12th Gr.	Girls: 36	Boys: 45

3) Sit And Reach: (To measure Flexibility)
Equipment Needed: Sit and Reach box (Alternate: milk crate with meter stick.)
Description: Use a sit and reach box, marked in inches (9 inches even with level of the feet). Remove shoes and sit on floor with knees fully extended. Feet are shoulder width apart and soles of feet are flat against the end of box. With hands on top of each other, palms down, and legs held flat, reach along the measuring line as far as possible keeping knees down. Record the best of three reaches.
Recording Format: Length reached in inches.
Minimum for Patch Award

Kg – 1st Grade	9 inches	23 cms
2nd – 3rd Grade	10 inches	25 cms
4th Grade	11 inches	28 cms
5th Grade	Girls= 12 inches/36 cms	Boys=10 inches/45 cms

6th Grade	Girls=10 inches/25 cms	Boys=8 inches/21 cms
7th Grade	Girls=11 inches/28 cms	Boys=9 inches/23 cms
8th Grade	Girls=12 inches/30 cms	Boys=10 inches/25 cms
9th - 12th Grade	Girls=14 inches/33 cms	Boys=12inches/30 cms

4) PUSH-UPS: in 30 Seconds
Equipment Needed: A mat should be used if needed.
Description: Lie face down on the mat, elbows bent and palms on the floor with thumbs shoulder distance apart. On the command to begin, push the body up until the elbows are fully extended. Lower the body until there is a 90 degrees angle at the elbows, upper arms parallel to the floor. Push-ups done to personal rhythm
Recording Format: Number of 90 degrees angle push-ups completed.
Minimum for Patch Award

Kg – 1st Grade	7 push-ups
2nd – 3rd Grade	10 push-ups
4th –Grade	12 push-ups
5th Grade Girls=10	Boys= 12

6th Grade	Girls=7	Boys= 9
7th Grade	Girls=7	Boys=11
8th Grade	Girls=8	Boys=13
9th 12th Gr.	Girls=12 push-ups	
	Boys= 23 push-ups	

5) BODY MASS INDEX (B.M.I.) Not a Test!
Equipment Needed: Scale, measuring tape or stick, BMI Chart or formula.
Description: Using the student's height in meters and weight in kilograms, convert to BMI using table provided or the following formula:
Weight (Kgs) Height (Mts) (Divide Kgs/Mts)
Recording Format: BMI in Kgs/Mts

Note to Parents/Students
Body Mass Negative Ranks to consider:
15 to 24 points: Healthy Body Mass
25 – 30: Overweight
31 – 35: Obese
36 – 40: Severely Obese
41+ : Morbidly Obese

FITNESS TEST	FALL SCORES	SPRING SCORES
Endurance Run		
Sit-Ups		
Sit And Reach		
Push – Ups		
Body Mass Index		

Fall Semester Patches are not awarded

Patch Award? Yes No

Comments:

Last Revised: March 10, 2004 04.03.10 Physical Fitness Record Chart

Source: Study School District (2010)

Appendix F

SAINT LOUIS PUBLIC SCHOOLS

KELVIN R. ADAMS, PH.D.
SUPERINTENDENT OF SCHOOLS
CLEOPATRA FIGGURES, ED.D.
DEPUTY SUPERINTENDENT

October 7, 2010

Dear Mr. Tyrone D. Smith,

Your request to undertake the research entitled "A Study to Assess Existing Strategies for Meeting State Physical Fitness Standards within a large Midwestern Urban School District." has been approved. The goals of this research are to provide insight into the varying levels of physical fitness and examine possible causal factors and possible solutions.

If I can provide any further information regarding this recommendation please contact me at c.shannon@slps.org or via telephone at 314 345 2428.

Cordially,

C.L.Shannon, Ph.D.
Director of Research and Evaluation,
Chair, Research Review Committee
Division of Accountability, Research, Evaluation and Assessment
Saint Louis Public Schools