THE CHARACTERISTICS OF AN EFFECTIVE PHYSICAL EDUCATION PROGRAM AT THE ELEMENTARY-LEVEL WITH ELEMENTARY CLASSROOM TEACHERS AS THE STUDENTS’ PRIMARY PHYSICAL EDUCATION PROVIDER

By

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**Abstract**

The purpose of this review of literature was mainly centered on the understanding what effective physical education is and can the general classroom teacher deliver the product effectively. This review attempted to identify meaningful components of physical education curriculum delivery and discover if non-specialist could administer the program. The literature review included studies looking examining the effects of exercise of academic achievement, motor skill development and its relationship to adult fitness levels, the effectiveness of physical education in-service programs on the elementary classroom teacher and identified characteristics of exceptional physical education teachers. Physical education has significance in the elementary level of study since it is the foundation stage of education. The reviews suggest that a strong foundation in vigorous fitness activities and motor skill development provide benefits on academic testing and adult fitness levels respectively. Also, using positive feedback aids in developing an intrinsic interest in physical activity. To become a quality physical education instructor, the elementary classroom teacher should understand the purposes of fitness and motor skill based curricula, receive proper training in lesson delivery and use positive, proven methods to teach physical education.
Chapter I: Introduction

Statement of Problem

Decreases in school funding, rising costs of insurance, and an emphasis on standardized test scores have led to some difficult decisions being made in school districts around the nation. It is becoming evident that in order to control costs, many school districts are turning to generalist trained teachers to teach elementary Physical Education, Art, and Music in order to save money. Right or wrong, standardized tests scores are the main standard by which a school’s effectiveness is being judged, and the subjects of Physical Education, Art and Music are not an area being directly tested. Recent legislation that will likely tie federal and state aid to schools based on standardized test performance will further the belief that more time, resources, and energy need to be spent on “academic” subjects. Teachers not specifically trained in Physical Education, Art and Music are being required to teach a subject they may not have taught for many years, if at all, and have received as little as three teacher preparation credits of training in. The combination of these factors may contribute to lacking the experience, expertise, and knowledge of what physical education is and the skills to deliver a high quality lesson to the students.

Research Question(s)

What are the characteristics of an effective PE program at the elementary-level in an era of major budgetary constraints and increasing attention on the core subjects, and can elementary classroom teachers succeed as the students’ primary physical education provider?
**Definition of Terms**

**Physical Education** - an integral part of total education process, is a field of endeavor which has as its aim the development of physically, mentally, and emotionally/socially fit citizens through the medium of physical activities which have been selected with a view to realizing these outcomes.

**Generalist Trained Teachers** - a teacher whose knowledge, aptitudes, and skills are applied to a field as a whole or to a variety of different fields (opposed to specialist).

**Specialist Teachers** - a teacher whose knowledge, aptitudes, and skills are applied to a specific field of instruction.

**Elementary level** - instruction usually covering the first three or four years of education and sometimes kindergarten. For the purpose of this study, grades kindergarten through fifth.

**Abbreviations**

PE – Physical Education

AAHPERD – American Association of Health, Physical Education, Recreation and Dance

PCPFS – Presidential Council on Physical Fitness and Sport

AHA – American Health Association

AMA – American Medical Association

PCYF – President’s Council on Youth Fitness

3DPAR - Three Day Physical Activity Recall

MVPA - Moderate and vigorous activity
**Goals of Physical Education**

At the most simply stated level, Physical Education (PE) involves training in physical development and fitness. It has been a standard subject in the elementary level of study. In the advent of the 20\textsuperscript{th} century, PE has emerged as a prominent area of study and has developed into a core part of school curriculum in many K-12 schools, colleges and universities, where PE is offered as a degree program. PE degree curriculum involves training in areas of sport, gymnastics, physical exercises, nutrition, physiology and human development. Various Asian techniques such as judo, karate and other martial arts have been introduced into the PE manual. In some education systems, PE is used to equip students with self defense tactics.

PE has emerged as a fundamental part of every school curriculum. It is a subject in every school timetable that a high percentage of students yearn to conditions should be met. First is that adequate time is allocated for instruction; second is lesson are delivered by qualified instructors; third is having proper equipment and other resources and last is adequate content (Kane, 1974).

Understanding the definition of PE is necessary in order to appreciate the role, goals and objectives of PE in the growing world. The definition of PE is conventional all over the world and also in terms of goals. Consequently knowing the definitions of PE and understanding the characteristics of what effective PE looks like is fundamental to enable the instructors and learners to understand and appreciate PE. PE provides learners with lifetime instructions which are challenging, but enable them to advance the confidence, skills and fitness that are necessary in daily living.
The definition of PE is not necessary to comprehend its functions. PE has central meaning in the concepts of physical, cognitive and social/emotional skills. The manner in which the objectives of PE instruction may vary depending on the needs of an institution and time allotted. But the main objective of most schools is to equip learners with the skills, capabilities, knowledge and values that will instill in them the interest in maintaining a healthy living. Consequently, several schools need PE to achieve the objective of body fat loss. Other physical activities are required to develop motor skills and promote the physical fitness as well as to comprehend the rules, concepts and strategies (Shimon, 2011).

PE makes the students learn on working as an individual or as part of a team. PE is usually the same in different countries in the world due to its goals in promoting discipline. Activities like judo, karate and other martial arts are in some countries PE curriculum to teach students self-defense. This in the end aids in the student’s fitness and teamwork which are necessary for development to their adulthood.

Students will be able to be more interested with the program of PE through knowing its definition and importance, but also its benefits. PE plays a significant role in enlightening the students and providing the students the understanding how PE is important in life. An effective PE program provides students with lessons that are quite challenging and individualistic. They help advance the confidence, skills, motivation and knowledge necessary in the students’ lives (Hopple, 2005). Another value of PE for students is that it offers health benefits from the wide variety of activities introduced. PE, if properly done, can help prevent obesity, juvenile diabetes and numerous other diseases. It also improves ones self-esteem and mental health.
Various scholars have defined PE differently but all definitions stress three important facts, that PE involves psychomotor skills, it involves a social/emotional/cognitive aspect and it takes place in an educational establishment. PE is therefore defined as a formal area of educational study that mainly concerns bodily movements and which takes place in an institution of learning. PE may also be defined as any formal training and organized instructions that contribute to physical development of an individual.

The American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD) which was founded in 1985 is concerned with advancing the area of PE to increase the public knowledge and appreciation of it as a critical area (Rink, 1993).

Today, many states require PE teachers to be certified. PE curricula are modeled to expose students to several opportunities from skills, drills and exercises up to weight training, gymnastics and aquatics. Students are introduced to PE by exposing them to a wide scale of opportunities and also give them a chance to experience the use of pedometers, heart rate monitors and drills. Elementary students are exposed to sports to prepare them for extracurricular activities.

The historical background of PE has always been shown in a certain pattern of military, social, and political influence. After the Civil War, virtually all learning institutions adopted PE schedules in schools and the government began passing legislation that made mandatory the inclusion of PE in all government funded institutions. It was not until the 19th century that saw a developed system of PE which was internationally adopted. It began in Europe with Sweden and Germany building the first indoor gymnasium. In Finland, PE was first aimed at achieving rehabilitation. This began the attraction of scholars in the field who began research on the physiology and
anatomy of the rehabilitation. The above developments led to Denmark becoming the first country to include PE in the curriculum of its schools (Bongiovanni, 2009).
Chapter II: Literature review

Sallis, McKenzie, Kolody, Lewis, Marshall, and Rosengard (1999) analyzed the effects of a two-year health-related school physical education program on standardized academic achievement scores. The subjects assessed were 759 children in a single school district in southern California. Out of the 12 public elementary schools in the district that volunteered for the project, seven were randomly selected for the study. The minority ethnic population of the selected schools was in a range from 10 -19%, on average with the surrounding community. Academic achievement was measured by analyzing the scores of the students on the Metropolitan Achievement Test (MAT) before and after the program. The MAT tests are used to provide standardized scores for reading, mathematics, language and a conglomeration of knowledge known as Basic Battery. Schools were randomly assigned to condition: (a) Specialists taught the Sports, Play and Active Recreation of Kids curriculum (SPARK); (b) classroom teachers were trained to implement the curriculum; and (c) controls continued their usual programs. Sallis et al. found that test scores were significantly higher than the national average at the onset of the program by analyzing second grade MAT scores. While all achievement test scores declined over the course of the study, there were noticeable differences in the experimental groups.

The Trained Teacher group scored higher than the Control on Language, Reading and Basic Battery. The Specialist group scored higher than the on Control on Reading, but lower on Language. These academic achievement scores greater than the state averages all occurred despite devoting twice as many minutes per week to physical education as Controls.
Sallis et al. (1999) concluded that this indicates the health-related physical education program did not interfere with academic achievement. Academic achievement on the MAT tests actually declined over the course of the study as the subjects progressed in grade level, but the rate of decline was lower than the Control group. This relates to my specific research question by concluding that health-related physical education may have favorable effects on the student’s academic achievement. An effective physical education program will utilize these findings.

Coe, Pivarnik, Womack, Reeves, and Malina (2006) sought to determine if any relationship existed between physical education class enrollment and physical activity level on academic success. The participants in this study were 214 out of 622 sixth grade students from a single school in western Michigan. All students had the opportunity to participate. Out of 622 sixth grade students, 229 returned the required parent consent forms, but complete data were only collected on 214 participants. They were randomly assigned to physical education classes during the school year. Moderate and vigorous activity (MVPA) was calculated using self-reported levels of 1 (no activity), 2 (some activity) or 3 (meeting Healthy People 2010 guidelines, 30 minutes a day of moderate activity five days a week, 20 minutes of vigorous activity three days a week). Academic achievement was assessed using scores from the core classes of mathematics, science, English and world studies. Terra Nova test scores which are formulated from standardized test assessment in reading or language arts, mathematics, science and social studies were also used to determine level of academic achievement.
Moderate and vigorous physical activity outside of school was determined using the Three Day Physical Activity Recall (3DPAR). This tool is designed to capture habitual physical activity of adolescents.

Self-reported information from adolescents may question the validity of the study. Although there is no single objective physical activity assessment instrument that is appropriate for all situations, the 3DPAR has been proven to have “acceptable reliability” in providing information on intensity and length of physical activities during various time periods of the day. Consequently, this information may be accurate enough to reveal important trends and relationships in reported physical activity.

Coe et al. (2006) suggested that the lack of data on socioeconomic status removes them from ruling it out as being a contributing factor on the differences between vigorous physical activity and academic success on the Terra Nova tests. Coe et al. (2006) determined that the amount of moderate physical activity a student participated in has no effect on academic success and in physical education classes, students averaged only 19 minutes of MVPA. Enrollment in physical education classes was not a determining factor on academic achievement in core classes. However, there is evidence that a strong relationship exists between vigorous physical activity and academic achievement. This is significant because it shows a baseline of how many minutes and at what intensity level of physical activity is needed to correlate to academic achievement. In both semesters of the study:

Students that met or exceeded the Healthy People 2010 standards for vigorous activity (20 minutes a day, 3 days a week) performed better academically compared to students who performed only a small amount of, or no, vigorous
activity. These findings could be interpreted as showing that the vigorous activity levels may meet the threshold of physical activity intensity to positively influence academic performance” (Coe, et al., 2006, p. 1518).

Sibley and Etnier (2003) examined the results of research related to physical activity and cognition in children. The sample size of this analysis was concluded to be an effective size of on average 125 students. This research analyzed data from 44 different studies in total. Research found 118 studies on the topic, but many were deemed inappropriate due to not including comparison groups, analyzing cognitive performance, or having insufficient data. The authors claim there are very few quality studies on the relationship between childhood exercise and learning.

The data found by four large scale projects (the Vanves project, the Trois Rivieres study, the South Australia study and Project SPARK) analyzed the impact on academic success by decreasing core curricular time and increasing physical education. In three of the four studies academic performance actually increased versus the control groups and in the fourth (the Australia study), academic performance was neither increased nor decreased.

The study showed that low quality research project often yielded the most positive results for a direct relationship between increased physical activity and elevated academic success. The positive results were ruled as correlative in nature.

As a result of the statistical review of the literature, the authors maintained there is a “significant positive relationship between physical activity and cognitive functioning in children.” This impacts my research question by reinforcing my assertion that an
effective physical education program requires levels of physical activity that will aid in cognitive learning.

Castelli, Hillman, Buck and Erwin (2007) researched the relationship between aerobic capacity and body mass index (BMI) to academic achievement. The study examined 259 third- and fifth-grade students from a public school in Illinois. Each student completed the Fitnessgram battery of fitness tests that included the Progressive Aerobic Cardiovascular Endurance Run (PACER), push-ups, sit-ups, flexibility and body mass index. For the academic testing section of the study, the student’s score on the Illinois Standards Achievement Test (ISAT). The ISAT measures student achievement based on multiple choice and extended response answers in the core subjects of mathematics and reading.

Originally 582 students enrolled in the study. A total of 323 students were removed from the study due to having an individual education plan (IEP) as a result of a disability, did not complete the ISAT test, moved, or did not complete all Fitness-gram tests. The high dropout rate of students that completed this study may skew the data, showing more of a correlation to socioeconomic status and its effects on academic achievement.

The study found aerobic endurance was positively associated with higher scores on the ISAT and unhealthy BMI was negatively associated reading and mathematic proficiency, the researchers used the Bruininks-Oseretsky Test of Motor Proficiency (BOTMP). The tool has eight sub-tests to measure gross motor skill development and ability.

As opposed to most studies lacking in sample size being the primary concern, the main concern of this study is the exclusion of subjects based on BMI scores. Date
collected from these potential subjects would have led to a greater degree of reliability in my opinion.

The study found a positive relationship between motor proficiency and physical activity and a negative one to sedentary time in the achievement. Muscular strength and flexibility tests revealed no correlation to test performance in this study. This study helps focus my research question by narrowing the broad spectrum of physical fitness tests available to a more specific target focusing on aerobic endurance and BMI.

Wrotniak, Epstein, Dorn, Jones and Kondilis (2006) attempted to examine the relationship between motor skill proficiency and physical activity in eight, nine and ten year old children. It gathered data from 65 children living in New York. They were selected through recruitment letter sent to their parents, schools and newspaper ads. All subjects were free of diagnosed and had no physical impairments. Children with a BMI in the 95th percentile were removed from the study for safety reasons.

The research methods included using the Children’s Self-Perceptions of Adequacy in and Prediction for Physical Activity (CSAPPA). This tool is a 20 item survey of the subjects self precipitations of their ability in performing and willingness to participate in physical activities. Students were also taught how to use an accelerometer during their waking hours and documented sleep time. Once a week, the average number of daily activity counts was recorded to asses their physical activity. Students in the highest bracket of motor proficiency were the most active and spent significantly more time in MVPA than students scoring low in the BOTMP.

This study is useful in my research because to the evidence of a positive connection to motor skill development and fitness levels. This interpreted information guides the need
to allocate quantitative and qualitative time for motor skill instruction in physical education classes.

Langendorfer, Roberton, and Stodden (2009) examined the relationship between physical ability in motor skills and fitness levels in young adults. The participants in this study were 79 men and 109 women aged 18-25 attending Bowling Green University. All subjects were recruited and volunteered for the study. Although physical activity levels were not assessed in this study, the information seems to indicate motor skill competency leads to increase fitness levels.

The exclusive use of students enrolled in college may skew the data this study produces. Enrollment in a university could limit the amount low socioeconomic participants in the study, not giving a representative sample of the national school-aged population. The subjects were evaluated based on their scores in six-fitness tests (12-min run/walk, body fat percentage, curl-ups, grip strength, flexibility and maximum leg press strength) and three fundamental motor skills (FMS) of throwing, kicking and jumping. The researchers compared health data gathered from the participants with reliable and validated fitness measurement equipment and associations to the maximum distances the subjects threw, kicked and jumped.

The research showed a strong connection between motor skill proficiency and physical fitness in subjects aged 18-25. The participants with high levels of motor skill proficiency also exhibited high levels of physical fitness. Sherman, Tran and Alves (2010) aimed at understanding the elementary classroom teacher’s concerns related to the costs (instruction time, preparation time), benefits (to students, teachers and community) and barriers (equipment, facilities, lack of training and support) to teaching physical
education. This was described as essential in understanding how physical education was taught.

The participants in this study were eight purposely selected classroom teachers. The criterion needed to be selected was being a credentialed teacher, completing a six hour Coordinated Approach to Children’s Health (CATCH) training course, committed to implementing the CATCH curriculum and must undergoing professional development interviewing.

The data collected was audio-taped interview responses from the classroom teachers to a series of eight semi-guided questions. The researcher gathered identical or similar for further analysis. The data yielded 23 related themes significant to the classroom teacher’s commitment to effectively instructing physical education.

The very limited number of participants in this study calls into question its validity. The process of verbatim transcription of the interviews adds to its subjectivity, even when allowing for the classroom teachers to challenge and clarify any statements.

Based on the results of this study, the professional development program was successful. Most classroom teachers reported effectively administering developmentally appropriate physical education (DAPE). Five of the eight trained teachers continued to provide DAPE in the next school year even without support from researchers.

This helps answer my research question by providing further evidence that quality in-service training and support. It shows that the majority of the professional development classroom teachers need can be accomplished with in-class support by a physical education specialist during PE time, not incurring the cost of additional time lost elsewhere.
Wangdi (2004) looked specifically at the field of PE and the effectiveness of the specialist, generalist, and teachers trained in a national standard based in-service program. The participants of the study were specialist trained PE teachers, general primary education teachers, and general primary education teachers trained during a national standard based in-service program. The subjects were selected to help answer the specific study question. The researcher developed three sets of questionnaires for each of the different groups. Questions ranged from objective to essay. Generalist trained teachers where to answer in more essay format due to their perceived lack of awareness of PE terminologies. National standard based in-service trained teachers were both essay and objective, along with the specialist trained PE teachers.

The small sample size and inconsistency of survey instruments used might lead to altered data. As earlier stated by Sibley and Etnier (2003), small sample size and the lack of a true experimental design commonly leads to skewed data. This data frequently supports the researcher’s assumptions. Some students in the study were actually friends and former students of the study creator.

The study found the teachers’ Attitude, Knowledge, Skills and Resourcefulness in successfully delivering a standards based health and physical education program. The Specialist teacher scores markedly higher in all categories. The Generalist teacher lacked attitude and was strictly “sports-based” in instruction. The NBIP teacher scores showed the worst of all subjects, showing dramatic deficiencies in Attitude.

Byo (1997) conducted a study on the effectiveness of specialized vs. generalist trained teachers in Music Education at the elementary level. The qualitative study consisted of generalist trained fourth grade teachers and specialist trained music teachers from
throughout the state of Florida. The subjects were surveyed on their opinions to effectively teach the nine national standards for Music Education. The standards include singing, performing on instruments, improvising melodies, variations, and accompaniments, composing and arranging music within specified guidelines, reading and notating music, listening to, analyzing, and describing music, evaluating music and music performances, understanding relationships between music, the other arts, and disciplines outside the arts, and understanding music in relation to history and culture (MENC, 2011).

The two groups of teachers were asked to rate their feasibility of teaching the nine standards by rating their contact time, resources, assistance, ability, training, interest, responsibility and level of assistance.

The results indicated there is a substantial difference in the perception of the possibility of delivering effective lessons covering the nine national standards, with the Music Education specialists rating higher than their counterpart. More specifically, this research yielded results which indicate that certain standards (History & Culture, Singing, and Analyzing Music) are more feasible for both roles to teach than other standards (Playing Instruments, Improvising, and Composing). It also verified that music specialists are considerably more open and willing to the implementation of the nine content standards than the general educators. Music teachers feel most effective implementing the Evaluating, Listening & Analyzing, and Singing standards while generalists feel most effective implementing the History & Culture, Other Subjects, and Singing standards. Both groups indicated an overall lack of time and resources to effectively teach most standards. Music teachers were less dependent on the assistance of classroom teachers.
while classroom teachers agreed that they needed the assistance of music teachers to successfully implement most standards. A lack of time and resources was described as a limiting factor of the ability to effectively teach all standards.

These results relate to the effectiveness of generalist trained teachers in PE as well. Similar university training, teaching time allotment and resource availability are commonly found in elementary PE programs. The obstacles encountered in Music Education that which specialist ME teachers can overcome can most likely draw a direct correlation to performance of a PE specialist in the Physical Education classroom. One can assume minimally trained (in physical education) general classroom teachers also lack the confidence and skills to deliver a program that meets the national or state standards.

Rink and Hall (2008) identified effective teaching characteristics in elementary physical education in relation to the desired positive effects on academic learning time, management, and content delivery skills of the instructor.

The study found that physical education programs are only effective when planned and taught in ways that lead students to adopt a more physically active lifestyle. The main contributing factor that exists for the desired results to be met is an acceptable level of resources (materials, training) and the resolve of physical educators.

Chorney (2009) also examined the characteristics of teachers deemed exceptional physical education instructors and analyzed why they teach the way they do. Four teachers were selected based on recommendations from physical education specialists, university staff, and local district physical education instructors in Alberta, Canada. Data was collected through a series of 90 minute observations and interviews with the subjects.
Questions focused on the teachers’ philosophy toward planning and teaching, transformations they had made over the course of their teaching career, and they used assessment as related to physical education.

The Chorney used Merriam’s series of four phases to analyze the data; gathering raw data, within-case analysis, cross-case analysis and micro-theme analysis. The methods of data gathering from such a small sample size and selected subjects can question the broad-based validity of the study.

The data identified four individual characteristics associated with why perceived effective physical education specialists teach the why they do. They are; relating to students, experiences gained through teaching, self-awareness and passion of physical education.

These themes are mimicked by various philosophical studies when looking at personal characteristics of effective teachers. This study lends credence to the theory that to be a successful teacher, regardless of their field; these factors are paramount for maximal achievement.

The Koka and Hein (2005) study was designed to examine the effects of perceived teacher feedback on student’s intrinsic motivation in physical education. The participants of this study were 638 students aged 14-18 enrolled in a twice a week, 45 minute per lesson physical education class. Questionnaires were administered to measure the students’ general feelings about the subject of physical education. The Perceptions of Teacher’s Feedback (PTF) form analyzed perceived positive specific feedback, perceived positive general feedback and perceived knowledge of performance. The Intrinsic Motivation Inventory (IMI) study was implemented to assess the relationship between the
PTF and intrinsic motivation. The Sports Motivation Scale (SMS) was used to measure intrinsic motivation in physical education classes.

The results of this study found some evidence supporting the notion that perceived teacher feedback has an effect on students. Teachers should use positive general feedback (both verbal and non-verbal) to amplify a student’s intrinsic motivation in physical education classes. Intrinsic motivation is a determiner in physical activity participation.

In Taylor, Blair, Cummings, Wun and Malina (1999) the study aimed at identifying the relationship between physical activity levels during childhood and physical activity levels in adulthood. The subjects of this study were 105 men between the ages of 32-60. They were generally married, well educated, and Caucasian. Their current fitness levels were assessed by measurements of cardiovascular endurance, low-back flexibility, skin fold measurements, and muscular strength. Childhood physical activity patterns were measured through a 34 item questionnaire to estimate types of activity, patterns of activity and psychological factors relating to activity in childhood.

The data collected by this study could be skewed due to the homogenous sample of the participants, with most being college educated, men, middle-aged, and Caucasian. This study could also show the issues with physical education programs from the time frame from which the subjects were adolescents.

The study found relatively no correlation between teen motor skill and participation in team sports to adult fitness levels. However, the study did find that in preteen and teen years, being forced to exercise was inversely related to adult physical activity. The study associated subjects that were encouraged to participate in physical activity were much
more likely to engage in physical activity in adulthood and exhibited higher levels of fitness.

This study is useful in helping answering my question by cautioning against the use of physical activity without education. Although most studies have show the positive effects exercise has on fitness levels and learning, perceived forced exercise can leave a lasting negative effect on adult fitness. The perception of the student can impact their feelings of physical education and exercise, often into adulthood.

The Narath, Skalicky and Viidik (2001) study was conducted to determine the effects of forced versus voluntary exercise on the body composition of male rats. The study was conducted on 128 male rats randomly selected. The animals were broken into four groups; voluntary exercise group with access to running wheels, sedentary group fed the same amount as the running wheel group, the forced exercise group housed in a cage with a horizontal floor that would move at a constant speed for 20 minutes a day, twice a day for five days a week with unlimited access to food and the sedentary control group with unlimited access to food.

The use of rats may question the validity of the study and its application to humans. But because of removing the ethical and legal guidelines surrounding experimentation on subjects, the study was able to determine results clearly. The variable control of food could also draw more conclusions that body composition was more related to caloric consumption than physical activity levels.

The researchers found that the control group and the forced exercise groups both had statistically higher body weight and fat mass. The forced exercise group had the lowest survival rates of the four groups. The sedentary and fed to pair groups exhibited higher
life expectation as compared to the forced exercise group, but the running in wheels

group out performed them all. This data can be interpreted that no exercise is better than
forced exercise.

This study, although on rats, shows the effects of forced exercise on subjects. This
relates to my question by implying the importance again of intrinsic motivation and
positive reinforcement for physical activity in effective elementary physical education

programs.

A Sallis, McKenzie, Alcaraz, Kolody, Faucette, and Hovell, (1997) study looked at

effects of the SPARK curriculum on elementary student fitness levels. The participants
in this study were 955 students enrolled in 12 of the 16 elementary schools in the Poway,
CA school district. The school groups were split into one of three experimental
conditions; physical education specialist led, trained classroom teacher led, and control.
The physical education specialist and trained classroom teacher led physical education
classes received 32 hours of training in SPARK, a PE curriculum program designed to
foster high levels of physical activity, teach motor skills and be fun. All the schools (even
the control schools) in the study had capable facilities were given the equipment
necessary to fully implement the SPARK curriculum. The control groups were merely
asked to continue their existing physical education programs as usual. The seven smallest
schools participated in the study due to economic constraints. The ethnic, gender and
socio-economic background of the students in the study was consistent with the
community at large. The methods the researchers used to measure the physical activity
and fitness in the students included self reported physical activity, accelerometer, fitness
and body measurements, and observation of physical education classes.
Data may be limited by the small number of schools in the experiment, all schools involved coming from one school district and the lack of pre-experiment measurement in certain categories. The study found that students in the physical education specialist led classes spent on average 40 minutes a week active than the control group. The students in the trained teacher led classes spent on average 33 minutes a week more active than the control group. The students in the physical education specialist groups performed measurably better in the fitness assessment as measured by a mile run and sit-up tests. Girls maintained their advantage over the span of a two year post-test. The advantage the boys gained seemed to drop off significantly at the two year post-test.

This data is useful in researching my question because it appears to show that even with proper training and in-service scheduling; the specialist led physical education classes perform significantly better than the trained teacher and control groups.
Chapter III

Results and Analysis Relative to the Problem

Given the academic priorities and budgetary constraints in elementary schools, the classroom teacher will likely become or remain the primary physical education provider in elementary grade levels. Based on the findings of my research, it is imperative that instructors understand what the goals of physical education is, receive proper training in physical education delivery and use proven methods to encourage physical activity.

Moderate to vigorous physical activity to promote academic learning

As shown in the studies Sallis, McKenzie, Kolody, Lewis, Marshall, and Rosengard (1999), Coe, Pivarnik, Womack, Reeves, and Malina (2006), Sibley and Etnier (2003), and Castelli, Hillman, Buck and Erwin (2008), MVPA has a direct correlation on standardized testing scores. Those students meeting of exceeding the daily recommended amount of MVPA (20 minutes a day, three days a week), have been shown to out perform their classmates with a more sedentary lifestyle. An effective physical education program will not only include MVPA in class, but also encourage it after-school and at home. With the increased focus on standardized testing to assess the performance of a school, the information found in these studies should be lead administrators and school boards to look more closely at the effect reducing a physical education program might have.

Motor skill development to encourage life-long participation in physical activity

As shown in the studies by Wrotniak, Epstein, Dorn, Jones and Kondilis (2006) and Langendorfer, Roberton, and Stodden (2009), motor skill development in adolescents is directly related to the amount of physical activity they will participate in as young adults.
Students lacking the fundamental motor skills needed to participate in physical activity (like sports and recreational games) often lead a more sedentary lifestyle than their peers. Elementary physical education is the starting point for many children to begin acquiring such skills, before the social aspects of middle school and high school take hold. The focus on MVPA as discussed earlier must not sacrifice instructional time devoted to motor skill acquisition.

Proper trained and/or in-serviced teachers

As found by Sherman, Tran and Alves (2010), Wangdi and Byo(1999), without proper training, many generalist trained elementary classroom teachers are, or at least perceive themselves to be, unprepared to administer an effective physical education program at their grade level. These studies focused on the perceived and real barriers classroom teachers faced when given the duty of teaching in a subject area (PE) in which they received little training in and had low amounts of experience. The studies also found that with proper training, most barriers were successfully eliminated and the teachers were able to deliver a quality product to the students.

Use of effective teaching methods

As found in studies by Rink and Hall (2008), Chorney (2009), Koka and Hein (2005), Taylor, Blair, Cummings, Wun and Malina (1999), Narath, Skalicky and Viidik (2001), the delivery of the physical education lesson may be as important as the content of the lesson itself. These studies found that verbal or non-verbal positive feedback, teacher interaction with students, teacher motivations and lesson delivery often play an important role to whether the students will maintain a healthy attitude and lifestyle or not. High student activity engagement, proper management of the learning environment and
communication between teacher and students are all identified examples of effective teaching methods. When exercise is used as a punishment or forced, its negative effects on the student’s perception of physical education often linger into adulthood.
Chapter IV

Recommendations and Conclusions

Recommendations

School districts should closely look at the positive effects an effective physical education program has on shaping children, both physically and academically. To help meet national, state and local goals, teachers should be teaching a physical education program that includes a variety of moderate to vigorous levels of physical activity and motor skill development time because of their effects on academic performance and continuing fitness levels. Whether the school system’s elementary physical education provider is a physical education specialist or general classroom teacher, quality in-service programs are essential to develop, improve and maintain such programs. Teacher need to continue to use positive and proven effective teaching methods with elementary students given the foundation for later success often begins at the elementary level. To reap the benefits that can be gained from the discipline of physical education properly, school districts should emphasize its importance by giving the subject appropriately trained teachers, resources and class time.

Further Research

Other areas of research in effective physical education programs and its teaching could focus on successful high school physical education programs, the effects of financing on physical education, and the effects of physical activity and social interaction.

If funds and resources available, I would conduct a research project on the effectiveness of increasing university credit requirements on future general elementary
classroom teachers. In most all of the studies I reviewed, it seems the majority of the issues leading to ineffective elementary physical education revolve around lack of education and training in the subject. By increasing both the quality and quantity of courses that elementary education majors must take to become certified, hopefully generalist trained teachers will enter the profession with the ability, understanding and confidence to administer physical education properly. This increased emphasis on the importance of physical education in university elementary education majors could help remove many of the issues encountered throughout this research paper.
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