

The Effects of Frequency of Instruction on Concept Knowledge in Physical Education

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## **Abstract**

The purpose of this study was to determine what effect the frequency of instruction has on students' understanding of concepts and terminology in the physical education classroom, and whether frequency will affect student performance on standardized grade level assessments. The measurement tools used in the study were the Cooper Institute Fitnessgram assessment and a researcher-created grade level benchmark assessment. This was a causal-comparatives study. The study showed that increased frequency of instruction does affect student's cognitive knowledge in the physical education classroom. Research in this area of instruction should continue to reinforce the importance of physical education and show the important effects of frequency of instruction in county school systems. Future studies should be done for a longer duration and performed with a larger sample size from diverse demographic areas.

# **CHAPTER I**

## **INTRODUCTION**

At the turn of the 21<sup>st</sup> century, the concept of physical education took shape in America. Physical Education enabled students to enjoy learning about basic fundamental movements and important health related concepts through active learning. Physical Education is governed by Shape America, formerly American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD), and is the leading organization in the development of healthy active learners. Of the fifty states in America, thirty-seven states have developed state curricula based on the national standards of the governing body. Each state modifies the national standards to meet the needs of their youths' population. The state of Maryland requires that all students have physical education during a week of instruction, but doesn't have any time requirements for instruction. Each county in the state of Maryland is responsible for providing quality physical education to the students. The scheduling methods used take different approaches to meet the state mandated curriculum for physical education. Physical education, apart from guiding children to acquire psychomotor and affective skills, aims to enhance their cognitive skills as well (Lidz, 1987).

Over the past decade, the concerns about childhood obesity have prompted growing attention to physical education. Despite current U.S. guidelines recommending that children and adolescents engage in one hour of physical activity each day, Sanchez-Vasnaugh, Sanchez & Rosas (2012) found that most students don't receive the recommended amount of time. Receiving quality physical education is key to educating the whole student at the elementary level. Students who receive quality physical education each week develop fundamental skills that lead to a lifetime of physical fitness.

Most children receive less physical education and outdoor activity time during the school day compared to their parent's generation of twenty years ago. Students are spending less time experiencing the world and more time digitally connected to social media and smart technology based learning. With less time spent being active, and more time spent indoors, childhood obesity rates have been on the rise over the past decade. This has led to many health issues in children.

Despite the research about the importance of physical activity on young learners' development, many school systems have begun reducing the frequency of physical education. With the adoption of Common Core standards, local school officials are looking at ways to increase reading, writing and math instruction during the day. Since state standardized tests are linked to the core subjects, reading, writing and math have become the primary focus of instruction at the elementary level. This has led to scheduling changes at the elementary level to support instruction of the core subjects. Since physical education is not listed as a core subject, the frequency of time can be manipulated to meet the needs of the elementary school schedule. But what effect does frequency of instruction have on the students' understanding of concepts and terminology in the elementary physical education classroom? Will the students have the knowledge needed to be successful in order to live a healthy active lifestyle?

### **Statement of the Problem**

The researcher will conduct a causal-comparative study with established groups at two elementary schools that are located in Anne Arundel County, Maryland. Each school teaches the current county curriculum aligned to Maryland State Curriculum and AAHPERD National Standards. Each class is taught for one hour a week, but the time and length of the classes is different due to scheduling issues at each school. The results from this study will be used to

determine how frequency of instruction affects students' understanding of concepts and terminology in the physical education classroom, and how it may affect student's performance on standardized grade level assessments.

### **Hypothesis**

The null hypothesis in this study is that the achievement level of fourth grade physical education students who are instructed twice a week for two thirty-minute periods is not significantly different than the level of achievement of those who receive physical education once a week for one hour. The demographic information investigated in this study will include the two schools of enrollment, the number of students per class, and Fitnessgram testing and benchmark grade level assessments.

### **Operational Definitions**

***Physical Fitness*** is defined by this study as the general state of health and well-being of student in their early childhood development. Physical fitness is generally achieved through proper exercise, enjoyable experiences with the topics of basic movements, exercise physiology and nutrition.

***Frequency of Classroom Instruction*** is defined by this study as the amount of time students receive instruction in the physical education classroom during one week of schooling. One group of subjects in the study will be taught once a week for an hour long physical education period. Another group in the study will be taught twice a week in two thirty-minute sessions.

***Fitnessgram*** is defined by this study as the testing program that provides individualized feedback of child's personal levels of health related fitness components. Fitnessgram is used to increase students understanding of personal fitness data. The four fitness modules used during

Fitnessgram Testing will be the Pacer Test, Curl-up Test, Push-up Test and the Back Saver Sit and Reach Test. All testing data will be entered into the computerized reporting system that allows for direct feedback of student performance data. Fitnessgram/ Activitygram were developed by the Cooper Institute to monitor and promote physical activity and healthy living. Human Kinetics publication is the publisher and web-based management program for data entry.

***Benchmark Grade Level Assessments*** is defined by this study as age appropriate cognitive assessments that focus on students' understanding of knowledge performed in the physical education classroom. The assessments are teacher created assessments with questions supplied by an item bank located in Achievement Series in Anne Arundel County. Each assessment is twenty questions focusing on the standards covered in the Anne Arundel Physical Education Curriculum and linked to the Maryland State Curriculum.

## **CHAPTER II**

### **REVIEW OF THE LITERATURE**

This literature review seeks to explore the impact of time on student attainment of content knowledge in the physical education classroom. Section one provides an overview of the purpose and importance of quality physical education. Section two explores the affect of active learning time in physical education. Section three explores standardized testing in the gymnasium. Section four discusses the current types of physical fitness assessments, and in section five, a summary is provided.

#### **Purpose and Importance of Quality Physical Education**

Quality physical education was established as a part of many schools' curricula throughout the United States during the 1920's. During times of world wars, the sports and game aspects of physical education transitioned to physical fitness achievement for soldier readiness. But it wasn't until 1953, when the Kraus- Hirschland (1953) study that U.S. student were far less fit then their European counterparts that transformation occurred. As a result of this study, the President's Council on Physical Fitness was established to help improve physical fitness scores for school age children. Today, Shape America continues the job of educating children at the elementary level with guidelines from the National Association of Sport and Physical Education (NASPE). The national standards set grade level benchmarks for students' achievement in pre-K through 12th grade using five national standards with indicators and objectives that focus on educating a physically literate learner. Each state adopts the national standards and modifies standards to meet their states' individual needs. The State of Maryland currently is using the old six standards from NASPE, since the latest current standards were only adopted six months ago.

These six standards guide instruction throughout the state of Maryland and educate students about physical literacy.

In the State of Maryland, the role of the Physical Educator is that of a licensed individual who that holds a four-year degree in the study of kinesiology. The physical educator is the content expert in the school building on childhood motor development and physical fitness achievement. They understand basic fundamental movements and design activities that are developmentally appropriate for student achievement in order to meet age appropriate milestones. The physical educators help in the development of social and emotional skills through participation in cooperative small group games and team building activities. A qualified physical education teacher is the key to building and supporting a quality physical education program.

A quality physical education instructional program helps to develop fundamental movement skills and to explain physical fitness concepts to physically literate learners. The curriculum should support childhood development and sequence skills that are developmentally appropriate. Students should be physically active for eighty percent of the physical education class, with only twenty percent of time used for general instruction and explanation. A quality physical education program will integrate classroom learning into the gymnasium and extend physical movement throughout the school day into classroom instruction. Hruska & Clancy (2008) found incorporating movement with information from other academic areas can be particularly beneficial for students who prefer a learning style other than the linguistic or mathematical-logistical learning style usually emphasized in schools.

Students should be physically active for 60 minutes each day, which can be difficult with current scheduling issues at the elementary level. To properly educate students we need to

establish the best frequency of time for instruction. “Quality physical education is about true instruction and using assessment of that instruction to help drive the program forward” (Castelli & Hillman, 2007). With proper planning and frequency, all students will learn key concepts from the elementary curriculum and become physically literate learners.

### **Academic Learning Time**

Physical educators generally operate from the assumption that their programs of physical education (PE) instruction offer important short and long term benefits to the elementary school student (Trudeau & Shepard, 2008). When students come to the physical education classroom, instruction begins with a stated objective for learning and planned activities for the learner to participate in during the instructional time period. The frequency of the class depends on the school’s scheduling created by the administration. The current county curriculum is written for two thirty-minute instructional periods during the week. Most schools use this model for delivering quality instruction, but some choose to modify the time period to make scheduling simpler. Some schools schedule a one-hour a class once a week for instruction and one school uses a two-week rotating schedule of two forty-five minute sessions for instruction. Students at each school receive quality instruction from a certified teacher using the same materials for curriculum instruction. At the elementary level, state mandated requirements for physical education range from thirty minutes a week to 150 minutes per week (AAHPERD, 2001).

National Association of Sport and Physical Education (NASPE) recommends that students be physically active for eighty percent of the physical education class. Academic Learning Time is time dedicated to instruction where the learner is physically moving in the classroom while performing basic fundamental movements. Academic Learning Time seems to be an important factor for the acquisition and retention of skill concepts by elementary students

(Derri, Emmanouilidou, Vassiliadou, Tzetzis, & Kioumourtzoglou, 2008). Specifically, practicing at an appropriate level of difficulty and helping classmates to perform correctly is important for the achievement of concept learning. The role of the educator is to create lessons that will keep students actively moving during twenty-four minutes of the thirty-minute class period. This can be a challenging task with tight school scheduling and lack of transition time between classes for the physical educator. For students to receive quality physical education, enough time needs to be allowed so that students comprehend and apply concepts learned in the physical education classroom.

### **Standardized Testing in Physical Education**

When students are taught learning objectives based on national and state standards, measures of accountability are designed to check for comprehension and understanding. Teachers in the state of Maryland are preparing for the Partnership for Assessment of Readiness for College and Careers (PARCC) assessment, which aligns to the Common Core State Standards. With the development of Student Learning Objectives, accountability is needed in all areas of education. Many school systems use data management programs to track student performance. Physical education had to align with other content areas to develop formative and summative assessments to check for student comprehension of physical fitness concepts. Getting students to attain the performance outcomes of regular physical activity participation, and get to an acceptable level of motor competence, increases the chances that they are going to perform better in a school setting (Castelli et al., 2007). Students are formatively assessed during classroom instruction using skill performance checklists of basic fundamental movements, and through video assessments of skill performance. Summative assessments are paper and pencil

activities traditionally performed during the last few minutes of the instructional period. Sometimes these activities are called exit tickets.

Also, students participate in grade level band assessments throughout the year to track performance and understanding of key concepts of the curriculum. Test questions are designed to align with state physical education content standards, and ask students to apply knowledge learned physically to written cognitive tests. The tests are given within the thirty-minute time block and administered on scantron forms with accommodations given to students with individual educational plans. Data from standardized testing allows the county curriculum to evolve to meet student-learning needs and to help improve quality instruction in the physical education classroom. Keating, Lambdin, Harrison, & Dauenhauer (2010) found Statewide/County-wide assessment also has the potential to strengthen curriculum and instruction in the physical education content area.

### **Physical Fitness Performance Testing**

Since the development of the President's Council on Physical Fitness in the 1950's, students in the physical education classroom have been administered physical assessments to check their levels of fitness. The current fitness assessment program used throughout the United States is Fitnessgram developed by the Cooper Institute. The program is a web-based program that monitors student data on numerous fitness assessments. The program has the ability to track student performance from semester to semester, or can be used for longitudinal tracking. Welk (2008) found that administering physical activity assessments requires additional time and effort in physical education. When administering assessments, it is important to provide detailed instructions to students prior to completing the instrument. The testing monitors student performance on four assessments, which evaluates aerobic capacity, flexibility, body

composition and muscular strength and endurance.

The Pacer is a test for measuring aerobic capacity that is set to music to create a valid, fun alternative to distance running (Meredith, Welk, & Cooper Institute, 2010). Aerobic Capacity is defined as the capacity to take in, transport and utilize oxygen while performing a fitness task. The Pacer helps students learn proper pacing and measures their aerobic capacity using a mathematical calculation from three data points. Their aerobic capacity is calculated from student performance on a 20-meter pacer run with personal health data, which includes their height and weight. Student's health information is only shared with parents or guardians to make healthy lifestyle choices.

Two of the fitness tests that focus on student's muscular strength and endurance are the Curl-up Test and Push-Up Test. Muscular Endurance is defined as the ability to contract your muscles repeatedly without excessive fatigue. The Curl-up Test is designed to test the abdominal strength and endurance of students in a controlled setting using a calibrated music cadence with proper form (Meredith et al., 2010). Developing core strength is important for good posture and protection of internal organs. The Push-up Test focuses on student's upper body strength and endurance. Maintaining strength and endurance of the muscles in the upper body is important in activities of daily living, maintaining functional health and promoting good posture. This is really important as the student ages into adulthood.

The final physical fitness assessment used in the curriculum measures students' flexibility through participation in the Back-Saver Sit and Reach. Flexibility is defined as the ability to move a joint through a full range of motion. Maintaining flexibility is important to functional health for students. The Back-Saver Sit and Reach tests one leg of the student at a time to measure hamstring flexibility. The testing provides extremely consistent scores when

administered. Wingfield, Graziano, McNamara & Janicke (2011) found that the demands placed on schools to produce students who meet academic standards, must understanding the relationship between physical fitness, and academic performance. This is crucial for quantifying the degree to which specific components of health affect learning and academic performance. With researchers linking student achievement to physical activity, the amount of time given to physical education should be consistent throughout the state or mandated by state law, which it is not.

### **Summary**

Physical Education concepts are important when talking about educating the whole child. Physical active and healthy choices can have lasting effects on personal health and wellness. With no federal mandated time requirements for physical education, school systems must make decisions based on standardized test scores and federal funding linked to Race to the Top. Schools need to make sure students are receiving quality physical education and are learning important fitness concepts in order to create active healthy learners who will be productive members in our society.

## **CHAPTER III**

### **METHODS**

The purpose of this study was to determine what effect the frequency of instruction has on students' understanding of concepts and terminology in the physical education classroom, and whether it will affect student's performance on standardized grade level assessments.

#### **Design**

This was causal-comparative study. The study used physical fitness data from Fitnessgram testing and standardized grade level assessments in a pre-post test model. Convenience sampling was used since the researcher is part-time between both schools during the 2013-2014 school year.

#### **Participants**

The participants used for this research included 39 students in 4th grade in Anne Arundel County. Participants include students enrolled at two different schools in Anne Arundel County with similar demographical information. The control group was made up of 20 students in 4th grade at an Anne Arundel County School in Maryland. The group had 11 boys and 9 girls with 2 students receiving special education services. The demographic sample included 2 African American students and 18 Caucasian students. At an Anne Arundel County, Maryland Elementary School, 315 students received Physical Education twice a week for 30 minutes of instruction. The experimental group was made up of 20 students at a second Anne Arundel County Elementary School. The group had 10 boys and 10 girls, with one student receiving special education services. The demographic sample included 3 African American students and 17 Caucasian students. The second elementary school physical education program services 349 students each week for one hour of instruction for students in 2<sup>nd</sup> grade through 5<sup>th</sup> grade.

Kindergarten and 1<sup>st</sup> Grade still used the control group time and frequency of instruction. The participants in the study represent a range of socio-economic levels, from lower to upper middle class.

### **Instrument**

The first instrument used in the study was the Fitnessgram program developed by the Cooper Institute and published by Human Kinetics. Fitnessgram is a battery of health-related fitness items that are scored based on criterion-referenced standards. The standards are age and gender specific and are established based on how fit children need to be for good health (Meredith, et al., 2010). The researcher used only four of the fitness items from Fitnessgram since all four tests are currently being used in Anne Arundel County. The four fitness items used during Fitnessgram Testing were the Pacer Test, Curl-up Test, Push-up Test and the Back Saver Sit and Reach Test. All testing data was entered into the computerized reporting system that allowed for direct feedback of student performance data. The report provided feedback based on whether or not the child achieved the criterion-referenced standards for physical activity.

The Pacer (Progressive Aerobic Cardiovascular Endurance Run) assessment module calculated the student's aerobic capacity through a modified 15-meter shuttle run. The progressive nature of the assessment provided a warm-up and helped children pace themselves for the intense period of time. The test was set to music to help create a valid and fun testing environment compared to traditional distance running.

The Push-up assessment module was used to measure upper body strength and endurance. The goal of the student was to complete as many push-ups as possible at a rhythmic pace. Both female and male students used the same format for instructional testing. For abdominal strength

and endurance the Curl-up assessment module was given to measure student performance. Both assessments used a musical melody to keep proper form and pelvic alignment.

The final fitness module used during Fitnessgram Testing was the Back Saver Sit and Reach Assessment. Maintaining adequate joint flexibility is important to health as we age into adulthood. Most children generally don't have problem with flexibility. Therefore, the back saver sit and reach cannot be considered a valid measure of low back flexibility and should not be interpreted as such (Meredith et al., 2010).

The second instrument used for the study was grade level band assessments created by the researcher. In Anne Arundel County, students are given grade level band assessments in 2<sup>nd</sup> and 5<sup>th</sup> Grade. The researcher is the co-author to all physical education grade level band assessments in Anne Arundel County. The grade level band assessments used for this study were teacher-generated drafts of future county assessments. The assessments were given during a thirty-minute period of time and generated in Achievement Series for accurate scoring and grading using Scantron bubble sheets. Each question on the assessment was aligned with concepts taught in the physical education classroom and linked to current state standards. All test questions were generated by achievement series and picked from a vetted item bank used in Anne Arundel County. All questions given on the assessment were multiple choice, with some visual diagrams of movement skill activities. Validity and reliability statistics are not available for this instrument because the researcher created the assessment.

### **Procedure**

The two instrument assessments were given to the two groups of students using the test-retest model. Both groups were chosen through convenience sampling by the researcher since his placement for teaching includes both research sites. The researcher taught the same material to

each of the subject groups for twelve weeks of instruction, using the current curriculum guide from Anne Arundel County Schools. The control group (SPES) were taught each concept over two thirty minute periods during the week compared to the experimental group (BES), which was taught once a week for an hour.

During the first month of instruction, students completed the Fitnessgram Assessment Modules. Each week, students performed one-module of testing, allowing for understanding of concepts taught. By the end of the first month, all pre assessment testing data was completed and entered into Fitnessgram. After Fitnessgram Testing was completed, students learned key fitness concepts from the three major units of instruction in the curriculum for the next month of instruction.

Each week students learned about the importance of Aerobic Fitness, Flexibility and Muscular Strength and Endurance. After a 6 week block of instruction, the subjects were administered the 1st grade band level assessment. Instruction of key concepts and standards continued for another period of 5 weeks until the end of the March. During the last week of the study, students were assessed both physically and cognitively. Students were given the final written benchmark assessment focusing on key concepts of instruction and knowledge learned over all 12 weeks of instruction. Each question was linked to a standard taught during the 12-week period of time. Also, during the last week of the study, subjects post tested using the four Fitnessgram assessment modules.

## CHAPTER IV

### RESULTS

The purpose of this study was to determine what effect the frequency of instruction has on students' understanding of concepts and terminology in the physical education classroom, and whether it will affect student's performance on standardized grade level assessment. The benchmark and Fitnessgram scores for students receiving physical education one hour per week or twice a week for thirty minutes sessions were analyzed using a t-test for independent groups. The results are presented in Table 1.

**Table 1**

**Physical Education Benchmark and Fitnessgram Results for Students Taught Once or Twice a Week.**

| Test  | Group               | Mean | N  | Std. Deviation | t    | Sig.   |
|---|---------------------|------|----|----------------|------|--------|
| 4 <sup>th</sup> Grade Benchmark Pre-Assessment  | 2-30Minute Sessions | 58.3 | 20 | 11.95          | 0.93 | 0.360  |
|   | One Hour Session    | 55.3 | 19 | 7.54           |      |        |
| 4 <sup>th</sup> Grade Benchmark Post Assessment | 2-30Minute Sessions | 88.9 | 18 | 8.32           | 4.00 | 0.00*  |
|   | One Hour Session    | 78.1 | 16 | 7.27           |      |        |
| Fitnessgram Pre-Test                            | 2-30Minute Sessions | 86.5 | 15 | 23.3           | 3.60 | 0.01*  |
|   | One Hour Session    | 63.6 | 19 | 13.6           |      |        |
| Fitnessgram Post-Test                           | 2-30Minute Sessions | 92.8 | 20 | 22.5           | 2.52 | 0.016* |
|   | One Hour Session    | 75.3 | 18 | 19.8           |      |        |

The hypothesis that there would be no differences between one hour of instruction and two thirty minutes sessions of instruction is rejected.

## **CHAPTER V**

### **DISCUSSION**

The purpose of this study was to determine what effect the frequency of instruction has on students' understanding of concepts and terminology in the physical education classroom and whether it will affect student's performance on standardized grade level assessments.

The benchmark and Fitnessgram scores for students receiving physical education once a week for a one-hour session or twice a week for thirty-minute sessions were analyzed using a t-test for independent groups. The statistical analysis for the two benchmarks and the two sets of Fitnessgram data showed a rejected hypothesis. The SPES (Dual Session) control group given physical education twice a week for thirty minutes scored higher on each assessment from the beginning of the test period until the end of the testing period. On the first benchmark assessment, the dual session group scored a mean score of 58.3 with a standard deviation of 11.951 compared to the BES (Single Session) experimental group given instruction once a week for one hour, with a mean score of 55.3 with a standard deviation of 7.541. The first benchmark assessment showed no statistical significance.

At the end of the twelve-week period, the post benchmark assessment showed an increase in student performance achievement in both the control and experimental group of study. The single session group showed an increase in content knowledge on the second benchmark by scoring a mean average of 78.1 on the exit benchmark assessment, while the dual session group showed an even greater growth in comprehension of content knowledge with a mean average of 88.9 on the exit benchmark assessment. Data analysis for the second benchmark showed a strong connection between content knowledge and application on the assessment. While both

groups showed continuous improvement on cognitive benchmark assessments, the dual session group showed the greatest growth over the twelve-week time frame.

Fitnessgram Testing data analysis showed similar findings compared to the grade level benchmark assessments. Since the pre-test scores between the two schools differed significantly, the posttest Fitnessgram scores were reanalyzed using an analysis of covariance to control for the pretest differences. The posttests results were significantly different. The Fitnessgram pre-test given showed that the dual session group scoring a mean score of 86.5, compared to the single session group scoring a lower mean score of 63.5. The pre-assessment showed a strong relationship to the county curriculum and content knowledge of the 4<sup>th</sup> grader's understanding of the key physical concepts of muscular strength, flexibility and aerobic capacity Post Fitnessgram Testing showed statistical significance.

### **Implications of Research**

The implications of this research study showed that two thirty minute classes twice a week provided more frequency of instruction and better understanding of content knowledge in the physical education classroom. Students seem to have better understanding of key concepts both physically and cognitively when seen twice a week compared to their fellow students in the county receiving one hour of instruction once a week. The research study should be shared with administrators at the school based instruction level to show how frequency of instruction can affect student achievement in the physical education classroom. One hour of instruction each week limits students understanding of key concepts and skill development compared to the students receiving instruction twice a week for short amounts of time. The research showed that the increased rate of regularity exposes the students to the curriculum and allowed for the better likelihood of content knowledge attainment, which led to improved performance on standardized

assessments. Given instruction twice a week for thirty minutes allows for more interaction with the instructor and allows for more interaction with key concepts and vocabulary compared to the single session group receiving physical education once a week for one hour of instruction.

### **Internal and External Validity Concerns**

Internal validity concerns related to this research study would be lack of student data on certain post Fitnessgram Tests. Due to the scheduling conflicts at the elementary level in Anne Arundel County, over the course of the semester, students miss two to four classes physical education if they are enrolled in instrumental music. The double scheduling of instrumental music and physical education caused some students to be absent during participation in Fitnessgram post testing. If a student didn't participate in all four assessments, their Fitnessgram data wasn't entered into the data analysis program for final statistical reporting of the study.

External validity concerns related to this research study would be the unusual amount of snow in the state of Maryland during the spring semester, resulting in many lost school days. During the study's twelve week time period, each class missed one week of instructional time. The single session group missed one class of instruction in February, while the dual session group missed one session of instructional for the same reason in March. The snow days also affected the Maryland State Assessment schedule in March, which caused the rescheduling of the mandatory assessment. Since the MSA was moved later in the week; one class of instruction for the dual session group was cancelled because of this rescheduling; since both groups missed one week of instruction, this shouldn't have had any effect on the student's retention of content knowledge.

Another external threat to validity could have been the knowledge learned from home life and experiences in the community. Both schools have strong youth sports programs that support

physical activity and wellness in the community. Students that participate in these programs can be exposed to similar concepts taught in the physical education classroom, which could have affected students' performance on grade level benchmarks and Fitnessgram Testing.

### **Discussion to Current Research**

Wingfield et al., (2011) found that the demands placed on school administrators to produce students who meet academic standards, must understand the relationship between physical fitness and academic performance, since this is crucial for quantifying the degree to which specific components of health affect learning and academic performance. Elementary physical education is important for educating today's youth about healthy fitness concepts and developmentally appropriate skills. In order for students to become active healthy learners in adulthood they must have the foundational building blocks in elementary physical education.

This study focused on academic performance in the physical education classroom to see which teaching model was best for student achievement on standardized tests. The dual session group showed improved performance on both Fitnessgram Testing and Grade Level Benchmarks due to increased frequency of time in the gymnasium. Keating et al., (2010) found Statewide/County-wide assessment also has the potential to strengthen curriculum and instruction in the physical education content area. Physical Education is at a transitional phase in the education process, with more time focused on Common Core Standards and STEM curriculum instruction; less time is being allocated to physical education. Many administrators see physical education and physical activity as the same action that involves student playing and learning. Countywide assessments have the ability to bring accountability into the physical education content area and show that students are physically developing lifelong habits that contribute to healthy active learners. Physical educators need to be proactive about promoting

curriculum and defending their profession, or recess will be the only physical activity students receive at the elementary level in the future. This research study supports the current trend of more time for physical education and Shape America's goal of daily physical education.

### **Suggestions for Future Research**

With the ever-growing threat to physical education instruction, more research needs to be conducted on student's attainment of content knowledge in the physical education classroom. The United States has a growing obesity epidemic that needs to be addressed. Students need to know how to live a healthy lifestyle in order to be physically active into adulthood. Most large school systems in Maryland use Fitnessgram and give similar benchmarks linked to state and national content assessments. Future research needs to focus on explaining the importance of content knowledge in the physical education classroom, and look at the overall health of physical education in the State of Maryland.

### **Summary**

The purpose of this study was to determine what effect the frequency of instruction has on students' understanding of concepts and terminology in the physical education classroom and whether it would affect student's performance on standardized grade level assessments. The hypothesis that there would be no differences between one hour of instruction and two thirty minutes of instruction was rejected after completion of the study. The study showed that students receiving physical education twice a week for thirty minutes retained content knowledge better over the twelve-week course of the study compared to their fellow students receiving physical education once a week for one hour. More research needs to be done on cognitive knowledge in the physical education class over a longer period of time. With the advances in data management and longitudinal tracking, more school administrators should look at physical education data to

increase student-learning time and to make sure all students are receiving quality physical education.

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