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# Implications of Physical Activity Breaks in the Classroom

Micah Kuchta  
kuchtam@csp.edu

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Implications of Physical Activity Breaks in the Classroom

Micah Kuchta

Concordia University, St. Paul

Master of Arts in Education – Instructional Leadership

ED 590: Conducting Research and Completing the Capstone, Cohort 784

Professor Dorothy Bialke

Dr. Sara Kellogg

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Table of Contents

Abstract.....4

Chapter One: Introduction.....5

    Scope of Research.....5

    Importance of Classroom PA Breaks.....6

    Research Questions.....7

    Connection to the Program Essential Question.....7

    Definition of Terms.....7

    Summary.....8

Chapter Two: Literature Review.....9

    Advantages.....10

        Physical Activity.....11

        On-task Behavior.....13

        Academic Achievement.....14

        Health Concepts.....18

        Fun and Engaging.....19

    Strategies to Address Challenges.....20

    Implementation Strategies.....22

        Comprehensive School Physical Activity Program.....23

        Social Interaction.....23

        Practice, Practice, Practice.....24

        Health Concepts.....25

        Short, Scheduled Breaks.....25

Use of Technology.....26

Chapter Three: Summary.....27

    Review of the Proposed Problem.....28

    Importance of the Topic.....28

    Summary of the Main Points of the Literature Review.....29

Chapter Four: Discussion and Application.....30

    Insights Gained from the Research.....30

    Application.....31

    Recommendation for Future Research.....32

References.....34

### Abstract

With the increased focus of education being on teaching to the standardized tests, students have decreased opportunities for reaching their physical activity needs within the daily rigors of the school day. As a result of more classroom instruction time, off-task behaviors and obesity levels are on the rise while teachers are struggling to find teaching strategies that keep students engaged in the classroom. The purpose of this literature review was to analyze the implications that classroom physical activity breaks can have on on-task behaviors, increase physical activity within the normal school day, and improve student academic achievement. On-task behaviors were improved with the implementation of scheduled, short (five to ten minutes) physical activity breaks on a daily basis, as a result students overall academic achievement also improved. Additionally, students increased their overall physical activity levels throughout the day. When implemented correctly, short physical activity breaks that are scheduled into classroom learning can have a positive impact on on-task behaviors, physical activity levels, and overall academic achievement.

*Keywords:* physical activity, on-task behaviors, academic achievement, classroom breaks

### Implications of Physical Activity Breaks in the Classroom

Childhood obesity is a serious issue in the United States today as obesity rates of children and adolescents have continued to grow over the past thirty-five plus years. According to the Center for Disease Control and Prevention (CDC), obesity prevalence among six to eleven-year-olds was 18.4% from 2015-2016 (Hales, Carroll, Fryar, & Ogden, 2017). It is an effective strategy for educational leaders to incorporate movements into the classroom and create opportunities for students to learn academic content while being physically active at the same time. Although some PA breaks may be physical movement that is not related to academic content, teachers may also incorporate the academic content into a movement break as a means to create additional learning opportunities. The population of this study will focus on K-5 students because it is essential to educate students at a young age the importance that regular physical activity has on their overall health and well-being. Additionally, it will explore research behind the ability for physical activity (PA) breaks to help on-task behavior and academic achievement within the classroom. Using short, scheduled PA breaks within the classroom is a classroom strategy that can have a positive impact on helping students with attention-deficit/hyperactivity disorder (ADHD) to concentrate and stay in the classroom without being a distraction. In addition to helping students with ADHD to concentrate, PA breaks within the classroom can also help students focus more on the academic content being learned in the classroom. Consequently, this will increase overall academic achievement as students are able to release built up energy while still practicing the academic skills required of them.

#### **Scope of Research**

The purpose of education is to educate individuals on how to be effective, healthy members of society. As curricula has been adjusted to meet the needs of state and national

requirements, the amount of PA that students receive within the school day continues to decrease. The plan of this literature review is to determine how to effectively implement a curriculum that allows for movement breaks within the classroom that creates opportunities for students to release all their built-up energy. This build-up energy is a result of limited opportunities for students to move, leading to off-task behaviors, and classroom distractions. Additionally, these classroom distractions cause more instructional time to be spent on classroom management and less time on actual teaching. In its entirety, this literature review will discuss how to effectively implement movement breaks into the classroom, while identifying the implications that PA breaks can have on increasing on-task behavior and overall academic achievement, in addition to increasing the amount of PA that K-5 children will receive.

### **Importance of Classroom PA Breaks**

This study is intended to help educators gain the confidence and skills to implement PA breaks into the classroom as a means to increase on-task behaviors and overall academic achievement. Movement within the classroom has been shown to increase on-task behaviors and helps students to refocus attention while providing the brain a short break necessary to consolidate academic information (Savina, Garrity, Kenny, & Doerr, 2016). According to the National Health and Nutrition Examination Study, “most youth do not participate in sufficient levels of physical activity, with 42% of children aged 6 to 11 years and only 8% of adolescents obtaining the recommended 60 min per day of moderate intensity or greater physical activity” (Mahar, 2011, S60). Additionally, incorporating physical activity into the classroom will help to increase PA levels in students. This will help students to maintain healthy fitness levels, as well as educate students on the importance of regular physical activity (CDC, 2013). Incorporating

regular physical activity breaks can help to decrease the obesity levels of children today while empowering students to understand health concepts and benefits at a young age.

### **Research Questions**

How can educators create increase classroom behavior and academic achievement? How can educators create more opportunities for physical activity into the school day?

**Connection to the program essential question.** In light of what is known about how children learn and educational policy and practice, what is the impact of regular, scheduled movement breaks within the classroom on classroom behavior, physical activity levels and academic achievement of elementary students?

### **Definition of Terms**

***On-Task Behaviors*** refer to behaviors that show students are engaged in the learning that is taking place and are exhibiting actions that display their attentiveness in the lesson. According to Stoepker, Dauenhauer, and McCall, on-task behaviors include, “working on an assigned task, discussing work with a partner, looking at the teacher, moving in response to teacher directive, or asking questions” (2018, p. 503).

***Academic Achievement*** refers to individuals being successful in the classroom and learning in accordance with specific grade level expectations. Additionally, academic achievement throughout this review will refer to the students’ ability to receive a passing grade from their teacher in the subject areas of reading and math.

***Executive function*** according to Howie, Shatz, and Pate (2015) are “higher-order complex cognitive processes including working memory, inhibition, and cognitive flexibility. Executive function has been researched extensively in clinical populations and it has been shown

to be highly predictive of academic achievement with early assessments of executive functions predicting later academic success” (p. 217).

*Physical Activity Opportunities* refer to opportunities within the regular school day for students to engage in exercise and increase their heart rate while learning important health skills related physical activity as well as academic content. The exercise opportunity can be directly related to reading and math skills or simply moving to release some energy. Specific learning programs have been created to incorporate fitness into the academic curriculum and include learning at the same time. Take 10 is a program that can be used to increase student’s energy expenditure while incorporating PA breaks into academic learning. With this method students do not sacrifice academic instruction; the activity is the mode of learning (Take 10, 2015).

*Comprehensive School Physical Activity Program (CSPAP)* approach incorporates five different components into the school day to “independently and collectively seek to increase physical activity levels of young people: physical education, physical activity during school, physical activity before and after school, staff involvement, and family and community engagement” (McMullen, Kulinna, & Cothran, 2014, p. 512). This synopsis will focus on one portion of the CSPAP, incorporating physical activity during the school day.

### **Summary**

With proper implementation and practice there are many positive benefits that can arise as a result of incorporating PA into learning. These positive benefits include increased time spend on-task as a result of decreased distractions, time spent on classroom management, increased academic achievement as a result of more time spent on task, and increased PA levels for students throughout the school day.

Chapter two of this paper will entail a complete literature review of a variety of scholarly reviewed articles and educational studies that focus on PA within a classroom setting. Chapter three is a summary of the literature review that will include a review of the proposed problem, the importance of classroom PA, and a summary of the main points within the literature review. Chapter four will be a discussion and application section that includes tips on how to effectively implement PA teaching strategies as well as some suggestions for future studies about PA in the classroom.

### **Chapter Two: Literature Review**

With the requirements of recent educational regulations put into place (for example, No Child Left Behind, which was put into place in 2001) there is additional pressure on educators to improve academic skills among students. “Schools must accomplish the daunting task of educating all children while preparing them to achieve mastery on high-stakes assessments” (Byrd, 2007, p.2). This forces educational leaders to reassess their curricula and often times search for a new curriculum to ensure students are receiving the best education possible to increase academic achievement. A direct result of an increased focus on achieving mastery on English and math assessments, is increased sedentary time in the classroom in order to dedicate additional time on core subjects. As expected, students begin to get restless with prolonged sedentary instruction leading to engagement in off-task behaviors, many of which become detrimental to learning. With an increase in off-task behaviors and sedentary classroom learning, teachers are looking for a teaching strategy that will increase on-task behaviors throughout the school day. This analysis will discuss if scheduling short physical activity breaks within the classroom can be an effective instructional strategy to decrease off-task behaviors. In its entirety, this literature review will analyze a number of scholarly articles, both qualitative and

quantitative, that focus on providing students with short, scheduled exercise breaks within classroom instruction in an effort to increase on-task behaviors, academic achievement, and physical activity levels.

There are many different aspects to this literature review that will culminate towards a complete synopsis of the advantages, challenges, and implementation strategies of incorporating PA breaks into the classroom. First, Chapter Two will discuss the advantages that have been found through the analysis of a variety of research studies and articles on this topic. Next, the challenges will have examined that have been noted to be associated with incorporating PA into the classroom. All implementation strategies suggested within this analysis will be discussed to assist educators who may be interested in incorporating PA into the classroom. Concluding this chapter will include a complete review of important implementation strategies to assist educators in incorporating short, scheduled exercise breaks into the classroom as an effective teaching strategy to increase on-task behaviors, academic achievement, and physical activity levels. Some of these implication strategies include having a scheduled time for PA breaks multiple times throughout the day, allowing students an opportunity to socialize during PA breaks, and creating new ideas for PA breaks that are fun, engaging, and relate to academic content.

### **Advantages of Classroom PA**

According to Perera, Frei, Frei, and Bobe (2015), physical inactivity is one of the leading causes of childhood obesity in the U.S. as it can negatively impact academic achievement as well as increase cardiovascular disease risk factors in elementary school children. Children spend a majority of their time awake in a school setting, so it is important to provide plenty of opportunities for students to achieve healthy physical fitness levels throughout the school day. Incorporating PA breaks into the classroom can have a lasting impact on the value of education

that each student is receiving. This section of Chapter Two will discuss these advantages and how they can help students to be successful in the classroom, while increasing PA levels during the school day.

**Increased physical activity levels during school.** With childhood obesity levels at an all-time high, an increased focus on getting children active has become more of an importance to educational leaders in recent years. According to the National Center for Disease Control and Prevention (CDC) (2013), children aged 6 to 12 should receive at least 60 minutes of moderate-to-vigorous physical activity (MVPA) on a daily basis. In accordance with Kliziene, Cibulskas, Ambrase, and Cibulskas, “physical activity with moderate intensity is defined as an activity that increases breathing, sweating, and heart rate, while PA with vigorous intensity refers to an activity that substantially increases breathing, sweating, and heart rate” (p. 718). Currently, schools are slowly attempting to incorporate more PA opportunities into the school day for students; however, it is essential to understand how much PA students currently receive on a normal school day in order to understand how much PA should be added. While additional PA opportunities are being added, educators must first understand how much PA a student gets in an average school day. Erwin, Beighle, Morgan, and Noland (2011) break down the percentages that each PA opportunity provided by the school gives to students:

With regard to school PA, it has been shown that given 2 recess periods per day and two 30-minute physical education classes per week, attributing to 40.5% of overall daily PA. More specifically, different segments of the school day can make large contributions to overall PA. Participation in a quality 30-minute physical education class can contribute up to 18% of a low-active child’s daily PA. A 15-minute recess can provide approximately 16.4% of school PA. Finally, in the classroom setting students can obtain

approximately 700 steps during an active math lesson as compared to a traditional math lesson, which yields almost 300 steps. As suggested by these findings, the school day and environment offer children the opportunity to engage in a meaningful amount of PA (pp. 455-456).

Schools have begun to take more of an initiative in helping students to meet this PA goal through the use of a comprehensive school physical activity program (CSPAP). While adequate PE is an essential part of a CSPAP, students do not regularly have PE long enough to meet the 60-minute guideline set forth by the CDC (2013). When recess is discussed as an additional source for physical activity, educational leaders must understand that not all children engage in physical activity during recess. Some students use this time period to socialize with friends while remaining inactive. As this analysis will focus on incorporating PA into the classroom, it is important to gain an understanding of why and how adding a few exercise breaks can help to achieve the goal of 60 minutes of MVPA per day. Simply adding 3, five-minute exercise breaks throughout the day will already have assisted the students in reaching one fourth of their daily physical activity goal. Although it will not nearly meet this goal on its own, it can play a meaningful role in educating the students about the importance of regular physical activity on a daily basis. According to Stoepker et al. (2018), the addition of a 20-min PA intervention (four separate PA breaks, for a five-minute period), students accumulated approximately 63% of their daily recommended steps during school hours. Teachers have also expressed concern with students not receiving enough exercise, as they believe it is mainly the responsibility of the classroom teachers, the physical education (PE) teachers, and the parents to ensure children are getting enough exercise. Incorporating short, scheduled PA breaks is one strategy to help. PA is

an important topic in schools because it improves concentration, energy levels, and peer interaction (Perera et al., 2015).

**Increased on-task behavior during instructional time.** Off task behavior has been proven to be an obstacle in the classroom as it causes many classroom distractions and limits the academic learning that could be taking place. As a result, increased off task behaviors often lead to increased time spent on classroom management. This is valuable time that should be focused on learning or engaging in a physical activity break that allows the students to burn off excessive energy while still engaging in academic content. When PA breaks within the classroom are implemented on a regular basis, students have shown increased on-task behaviors after the completion of PA breaks. In a reviewed study that compiled qualitative and quantitative data of students performing 1-minute exercise breaks at least four to five times per day, Mahar (2011) concluded that, “a classroom-based physical activity program was effective for increasing physical activity levels of children in grades K-4 and for improving on-task behavior in 3rd and 4th grade students” (p. S63). Mahar (2011) continues to suggest, “Students who participated in classroom-based physical activities that incorporated academic concepts demonstrated significantly better improvements (+8.3%) in attention-to-task than control group participants (-3.1%)” (p. S60). Through the culmination of studies, nearly every article has shown correspondence with less off-task classroom behaviors and increased attentiveness directly after any sort of PA (ex. exercise breaks, PE, recess). According to Stoepker et al. (2018), on-task behavior increases by 7.5% through the use of PA breaks within a classroom setting. Carlson et al. (2015) found that implementation was negatively connected with students lack of effort in class, as well as student MVPA was negatively connected with students being off task or inattentive in the classroom. Savina et al. (2016) found that movement breaks in the classroom

helps students to refocus attention and gives the brain a break necessary to consolidate information. This information is widely known throughout the educational universe; however, educators are still struggling with ways to implement movement and exercise into the classroom.

In a study completed by Dinkel, Lee, and Schaffer (2016), a majority of teachers implemented PA breaks into their classroom simply because the behavior of their students drastically increased. This is an important study for educators to understand because these teachers were not forced to implement PA breaks; nonetheless, after implementing just 2 minutes of PA breaks into the classroom, educators did not question the academic benefits as the improved behaviors and increased time spend on-task spoke for itself. According to Dinkel et al. (2016):

Future professional development efforts should build on teachers' current knowledge of the importance of classroom PA and ensure teachers are aware of all of the potential benefits including behavioral, physical, and cognitive improvements for students to help teachers advance their classroom PA skills (p. 191).

Many educators understand the importance of PA and how it can play a positive role in the classroom by increasing on-task behavior. Educators need to be educated on specific implementation strategies that can help effectively promote a healthy lifestyle, while remaining academically successful at the same time. Effective implementation strategies will be discussed later in the chapter.

**Increased academic achievement.** Physical activity that is integrated into academic content has shown many positive outcomes in terms of increased on-task behaviors, willingness to learn and participate, as well as academic skills and attention. This can be attributed to an increase in arousal levels during PA breaks that serve as a motivation technique for many

elementary aged students. According to Perera et al. (2015), a child's brain requires some sort of break from learning in order to effectively process information, especially after long instructional periods. When comparing other countries that score higher in scholastic tests, having short (10 minute) breaks between each 40 to 50-minute block of instruction can help the student with retention of academic content. Other countries that have scored higher in scholastic testing provide students with an opportunity to reflect on learning following instructional sessions of under 60 minutes (Perera et al., 2015). This provides students with ample time to review academic content and ensure they completely understand prior to moving on to more complex content. In the U.S., it is common that blocks of 60 to 90-minute instruction are taught consecutively, without breaks. Students are merely provided with five minutes of "passing-time" in which they are more worried about socializing with friends and getting to their next class, rather than reflecting on the content that was just taught. This scheduling technique can be extremely challenging for classroom teachers and students alike, which in turn contributes to "burning out" both parties (Perera et al., 2015). With this being said, classroom PA breaks should be less than 20 minutes as any longer than this allows students an opportunity to become disinterested. Studies have shown that offering physical activity breaks during standard classroom instruction can have many favorable indicators towards cognitive functioning. According to the CDC (2013), "neuroscience tells us that the brain shifts its attention and focus about every 90 minutes. Even a short break from focused concentration allows the brain to consolidate information for better retention and retrieval of memory" (p. 8). As research shows that breaks in academic learning is required for students to retain information, educational leaders need to make adjustments in instructional planning strategies to accommodate students with the most effective strategies in order to be successful.

The incorporation of PA breaks in the classroom can also be used as a means to practice or refine academic content. Recent studies have shown that when teachers incorporate academic content into the PA breaks, students have a better time recalling the content. This is because students learn better when they are physically involved and engaged in the activity. Having the students get up and move helps the information to stick in their memory, allowing them to relate and understand the content better than if they were simply listening to a lecture or doing sedentary classroom work. Savina et al. (2016) found that involving movement into learning may reduce cognitive load by switching from working memory representation of learning to the sensory-motor system. Additionally, allowing the body manipulate this learning may allow a different way of facilitating learning. Savina et al. (2016) continues in their article to mention a study, completed by Erwin and colleagues (2013), that involved incorporating at least 20 minutes of physical activities into math and reading lessons for 20 weeks with elementary school children. The authors found significant improvements in the intervention group on the curriculum-based measures of reading fluency and math aptitude (Savina et al., 2016). While this particular strategy seems much more logical for specific areas more than others (math PA breaks are easier to implement compared to reading or science PA breaks), these types of exercise breaks that incorporate academic content can play a large part in students being able to recall and remember academic content. This is a direct result of students being able to easily recall specific topics when they can associate academic content within a movement activity. According to Howie et al. (2015), when students are provided with at least a 10-minute PA break, they have shown improvements in diverse measurements of cognitive functioning. Howie et al. (2015) continues by suggesting:

Of the cognitive abilities shown to improve with exercise, the strongest effects have been seen in executive function. Executive functions are higher-order complex cognitive processes including working memory, inhibition, and cognitive flexibility. Executive function has been researched extensively in relation to learning disabilities, including attention-deficit hyperactivity disorder (ADHD), in clinical populations and it has been shown to be highly predictive of academic achievement with early assessments of executive functions predicting later academic success (pp. 217-218).

An additional study completed by Fedewa, Ahn, Erwin, and Davis (2015) focused on examining whether classroom PA breaks can result in increased achievement scores in standardized reading and math examinations. Nine hundred and seventeen students participated in the study, as 486 students participated in the control group, and 431 students participated in the experimental group (received additional classroom PA breaks). Students in the study were from four different urban schools in Southeast United States. The teachers were not allowed to volunteer for this study, rather they were told that they must participate in the study as a means to learn additional teaching strategies. Nonetheless, teachers within the experimental group were provided two training sessions in which researchers went over specific strategies to use within the PA breaks (Fedewa et al., 2015). Students were given a reading and math exam at the beginning of the school year as a pre-test. The control group of students then received instruction in math and reading as they normally would. The treatment group of students received similar instruction; however, they were allowed two or three PA breaks throughout the school day. These PA breaks took place between learning sections and lasted no longer than ten minutes. According Fedewa et al. (2015), both mathematics and reading achievement increased from fall to spring within the treatment classrooms. In control classrooms, students showed an increase in

mean fluid intelligence scores from fall to spring. However, in the control group classrooms, both mathematics and reading achievement slightly decreased from fall to spring. Fedewa et al. (2015), continues to suggest from their study the idea that:

Schools are in a unique position as they have access to the majority of children and adolescents in society; thus, providing physical activity breaks integrated into the school day could provide a wide-array of immediate and long-term physical and academic benefits at practically no cost (p. 149).

Educational leaders and teachers must embrace this as an opportunity to improve the effectiveness of learning in the classroom, while also educating students on health concepts that will have a lasting, positive effect on their physical activity levels at a young age; a skill that will have a better chance of sticking with them well beyond their years in school.

**Opportunity to educate students on health concepts.** According to the CDC (2013), participation in regular physical activity has many positive physical and mental health benefits. These health benefits include building healthy bones and muscles, decreasing chances of obesity and disease risk factors (such as high blood pressure), and reducing anxiety and depression (Raney, Henriksen, Minton, & Lynch, 2019). Many elementary schools do not have a specific health class that students are required to take. In essence their only class related directly to health is physical education, unless the teacher incorporates health lessons into their individual curriculum. By infusing physical activity into the classroom, teachers will be given an additional opportunity to educate students about important health-related topics that would not otherwise be introduced. For example, teachers can have a discussion with students about how much MVPA that they should receive on a daily basis. Educators can then continue with this topic by having students assess the amount of time they spend on a regular basis getting the PA that they need.

Another example is that teachers can discuss with the students the multiple different health benefits that come along with receiving an adequate amount of physical activity on a regular basis (health benefits stated above). Educating students at a young age of the health concepts related to physical activity can help students to live a healthy and active lifestyle far beyond their years in school. “When children meet the requirements of PA during the school day, PA has the potential to provide multiple health benefits such as healthier bones and muscles, improved cardiovascular health, and reduced risk for developing chronic disease” (Stoepker et al., 2018, p. 509). In alignment with the CSPAP, a whole-school approach is needed in order to make a lasting impact on the positive health of students. By incorporating and educating students on these important health related concepts, educators will serve as a positive role model for students to follow and learn from, while making physical activity and exercise a vital part of every day.

**Physical activity breaks are fun and engaging.** When students and teachers were asked about the exercise breaks and incorporating PA into the classroom, many replied that they enjoyed the PA breaks as it gave them an opportunity to get up and move while still learning at the same time. One student even mentioned they enjoyed the PA breaks because they got to go outside and enjoy the day, while still learning something. Another student stated, “if they are telling you something about nature and you are outside walking you learn more about what is around you and you probably are enjoying it more” (Stoepker et al., 2018, p. 508). Educators can utilize this idea as a means to further extending the understanding of academic content.

In addition to extending learning through PA, students also desire the opportunity to socialize with peers during physical activity breaks or movement-based learning experiences. In a qualitative study done by McMullen, MacPhail, and Dillon (2019), students proclaim they look forward to the physical activity learning segments as it provides them with opportunities to get

up and move while still learning. In this study, 135 students from two schools (one urban and one rural) in West Ireland provided with movement-based lessons instead of the normal sedentary-based lecture that they were used to. Students ranged from kindergarten to fifth grade, as all students were asked to complete a draw-and-write response illustrating their feelings about the movement-based activities they have been participating in. Additionally, a randomly selected group of twenty-four students were selected for individual interviews. McMullen et al. (2019) describes the draw-and-write responses,

Fun and enjoyment are conveyed throughout the draw-and-write sample and conveyed in different, yet complementary, ways. In many drawings, as stated previously, smiling faces convey a level of enjoyment that is further clarified through accompanying narratives. For example, one drawing by a 5th class girl includes two girls smiling, surrounded by cards with words on them and the narrative: 'I like this game because it is really fun and good (p. 56).

This qualitative analysis of this study indicates that learning through movement and physical activity can not only be fun for the students, but can also provide many other benefits as well, including increased self-esteem and reduced anxiety and stress levels (CDC, 2013).

### **Strategies to Address Challenges of Classroom PA**

Physical activity within the classroom is an important topic to discuss as many negative thoughts exist with regards to incorporating PA into the classroom, causing many teachers to stay away from this strategy. Some of these negative connotations include students becoming wild after short exercise breaks and/or the inability for students to efficiently transition between exercise breaks and classroom instruction.

Teachers are already under an immense amount of pressure to ensure students are meeting the high expectations that are put forth through standardized testing. With increased focus and attention on the core subjects within academic content (math, reading, science, social studies), many educational leaders have taken away time that is not dedicated to the core subject areas, including art, computers, music, and physical education. An argument for not incorporating more PA into the school day is that there is simply not enough time to incorporate everything that is desired. Unfortunately, exercise and educating students how to leave a healthy lifestyle gets pushed aside as a result. Educational leaders have also questioned the effectiveness of incorporating exercise into the classroom as, in the past, there has not been enough research done on this topic to warrant implementation.

Additionally, many educators that argue against incorporating exercise into the classroom state that they do not have enough open space, nor the proper equipment to include PA breaks into a classroom setting. As it is known that a classroom is not an ideal area for physical activities, it is important to understand that these breaks are short, and often do not require much equipment as they are body movement students can usually perform standing behind their desk.

Regardless of the change that educational leaders may be pushing towards, it can be extremely difficult to get buy-in from teachers when educational leaders are suggesting teachers make a change in their classroom. Many teachers have a routine they get into after a few years of teaching. Without convincing, supporting evidence towards the benefits of incorporating PA into the classroom, it is a challenge to convince teachers alter their routine. However, within the past decade, there has been a greater amount of studies done to examine the effectiveness of utilizing exercise breaks within the classroom. The purpose of this section of the literature review is to determine how exercise breaks in the classroom yield positive academic results, while not

disrupting the flow and transitions within the classroom. Furthermore, this analysis will discuss how educators can efficiently implement short exercise breaks into the classroom to reap all the benefits that PA can have on young students.

There are programs available (such as Take10 and GoNoodle) that provide teachers with activity breaks for the students while also incorporating academic content into the movement activity. For example, GoNoodle has a variety of videos that students can watch that help them get moving in the classroom while working on math, spelling, vocabulary, and even reading. However, these videos can still be a challenge as students begin to get bored with doing the same activity throughout the year. It has also been suggested that educators have had a difficult time with understanding how to truly incorporate reading skills practice into an exercise break, as it is much easier to incorporate math skills and concepts. This being said, with the increase in research that has been done to examine the effectiveness of classroom PA breaks, there has also been an increase in understanding specific strategies that assist in implementing reading and math into exercise breaks. These strategies and techniques will be discussed later in the chapter.

Some educators may also believe that taking away classroom instruction time spent on improving academic skills can have a negative effect on the students' academic achievement. Within the past five to ten years, "growing cities like Atlanta built new elementary schools with no playgrounds, school districts were beginning to implement "no recess" policies claiming that recess wasted time better spent on academics." (Dills, Morgan, & Rotthoff, 2011, p. 1) As a result of decreased recess time, many schools have seen the reverse effect in academic achievement.

### **Implementation Strategies**

**Comprehensive school physical activity program (CSPAP).** CSPAP is defined by (CDC) as a multi-component approach by which school districts and schools incorporate increased opportunities for students to be physically active, meet the nationally-recommended 60 minutes of physical activity each day, and develop the knowledge, skills, and confidence to be physically active for a lifetime (CDC, 2013). This program has been created by the CDC as a guideline for schools to adopt a school-wide strategy that promotes physical activity and healthy lifestyles for students. The goal of CSPAP is to “...maximize understanding, application, and practice of the knowledge and skills so that all students will be fully physically educated and well-equipped for a lifetime of physical activity” (CDC, 2013, p. 8). Educational leaders can help promote a CSPAP with a school wide push towards increased PA throughout the school day. Classroom teachers can then contribute to the cause by incorporating classroom physical activity breaks. This guideline in its entirety can be found on the CDC website.

**Allow for social interaction.** Physical activity is more enjoyable for students if socializing is allowed with peers, while still engaging in the exercise. In a study completed by Stoepker et al. (2018), teachers noted that they desired to have more opportunities for social interaction within the classroom PA breaks. This was agreed upon with the students that allowing for students to discuss the academic content while still engaging in the exercise breaks could make the breaks more meaningful. One teacher that implemented the exercise breaks within the study suggested that, “When they were walking, I wish they could have been able to pause and talk to their neighbor about it. It is a long time for kids [to move] without interaction... I would love to see more interactive content somehow. I think moving makes them better, but I believe that social interactions will increase their comprehension” (Stoepker et al, p.508, 2018). Surveys completed at the end of PA breaks indicate students may be more engaged in the

exercise breaks if allowed to move around and socialize with peers. Engagement with peers, mentors, and teachers is essential for increased student achievement and overall development of academic content (Stoepker et al, 2018). As social interaction is a large part of being physically active, this is a strategy that should be implemented within exercise breaks. It can be done by having students perform an exercise break with a partner, or simply allowing students to move freely throughout the room during PA breaks. While this idea seems to be a beneficial idea, students and teachers will need to practice this within the scheduled PA breaks to ensure students understand what is expected of them during exercise breaks.

Physical activity breaks can also provide students with an opportunity to clarify expectations of an assignment or academic content with peers. At times, a student may feel uncomfortable asking questions to the teacher in front of the whole class. This social interaction can provide students with an opportunity to ask these questions to a peer, in a more comfortable fashion while still clarifying the academic information from the most recent instructional period.

**Practice, practice, practice.** Incorporating PA into the classroom can seem to be an unnecessary challenge in the classroom that is full of desks and academic equipment, not necessarily an ideal PA setting. Upon initial implementation, it is essential to help students understand the expectations during PA breaks. Have a classroom discussion with students to help them understand what is acceptable and unacceptable during PA breaks, and reinforce these expectations consistently is imperative to having success with classroom PA breaks. Also, provide students with plenty of opportunities to practice active learning in the classroom with learning activities that allow the students to get up and move. With clear expectations of students and plenty of practice, classroom exercise breaks can be an effective strategy to implement into the classroom that has many positive benefits. According to Howie et al. (2015), “time is a

critical resource in schools; therefore, it is crucial to maximize efficiency in implementing physical activity throughout the school day” (p. 218).

**Educate students on related health concepts from beginning.** Health education is not a staple within elementary curricula. Rather, it is usually based upon the discretion of the teacher whether or not to include health concepts into the classroom. Many believe that it is the responsibility of the physical education teacher to teach the students concepts related to health. While physical education teachers are responsible for educating students about the majority of elementary health concepts, classroom teachers can embrace this role as well through valuing physical activity and all it has to offer. Classroom teachers should discuss with students that part of the reason PA breaks will be incorporated into the classroom is to help them receive their 60 minutes of daily PA.

**Short, scheduled exercise breaks.** A specific question about PA breaks in the classroom is determining the exact length of break that is most beneficial to students. Howie et al. (2015) has examined the difference in effectiveness of activity breaks from five, ten, and twenty-minute exercise sections. In this study, 96 participants ages nine to twelve were drawn from eight different fourth and fifth grade classes at the same elementary school. Each student then participated in four different learning conditions: ten-minute sedentary classroom activity, and five-minute, ten-minute, twenty-minute classroom exercise breaks that incorporated math into the exercise break. According to the pre- and post-test findings, the change in math scores was statistically higher after ten minute and twenty-minute exercise sections compared with the sedentary conditions of the control group (Howie et al., 2015). In general, these activity breaks can occur all at one time, or spread throughout the day. As long as they are being implemented into the classroom schedule, the positive benefits will be recognizable. Exercise breaks can be

very simplistic, such as taking a couple minutes to stretch, marching in place, doing twenty jumping jacks, walking a few laps around the classroom, or even walking around the classroom and giving ten different people a fist bump. On the flip side, PA breaks may also be more complex and connected with the academic learning. Examples of this include creating a time line throughout the classroom where students must walk around to learn about the content or a true-false wall in which students must walk to the wall they believe is the correct answer.

**Use of technology enhances experience.** There are many different programs that have been created online to enhance the idea of classroom PA breaks. Two of the programs that will be discussed are GoNoodle and Take10. GoNoodle is a website that provides classroom teachers with a large variety of music videos that are very visually appealing and entertaining for K-5 students. The music videos consist of children singing different songs, or even creating their own catchy tunes, in an attempt to get the viewer up and moving. Some of the videos created incorporate academic content within the video. This can act as an additional learning experience for the students that enhanced the academic content. Take10 is a program that integrates grade specific (K-5) nutrition education and physical activity lessons, along with core curriculum concepts incorporated into each activity. Take10 provides over forty activities per grade level that teachers can easily implement directly into the classroom (TAKE10, 2015). This program not only has created PA breaks that are classroom-ready, but they have also integrated movement, nutrition, and health with core academic content. This allows teachers to incorporate PA into the classroom while not losing instructional time.

In summary, incorporating classroom physical activity breaks is a beneficial strategy to incorporate into the classroom as a result of the multitude of different positive effects that it has on academic achievement and on-task behaviors. This chapter has discussed the advantages of

incorporating short, scheduled exercise breaks into a classroom setting while also addressing challenges that may arise with beginning implementation of PA breaks. Additionally, specific techniques and tips are provided for teachers that are planning to implement PA into the classroom to improve on-task behaviors. Chapter three will contain a complete summary of the findings within the literature review, as well as a review of what these findings mean for educational leaders.

### **Chapter Three: Summary**

Integrating movement into the classroom has proven to be an effective teaching strategy to increase on-task behaviors and PA levels during school. According to Savina et al. (2016), the integration of PA into teaching academic content is beneficial for maintaining on-task behavior, in addition to a positive effect on academic performance. Chapter two consisted of a compilation of educational studies that focused on incorporating physical activity breaks into the classroom to help students and teachers with increased on-task behavior and academic achievement. Throughout the literature review, the author discussed how incorporating exercise into the classroom setting can help students with increased attentiveness, retention of academic content and on-task behavior, resulting in improved academic achievement. While some challenges do exist when initially attempting to implement exercise into the classroom (time, space, equipment, etc.), many techniques can be learned and practiced to eliminate these barriers and reap all the benefits that classroom PA breaks have to offer.

Not only does a classroom PA break have positive effects on academic achievement, PA breaks also have a positive impact on a students' PA levels and health concepts related to PA. Incorporating exercise and PA into the classroom provides teachers with an additional opportunity to educate students about the importance of regular PA on their health and wellness.

Understanding the importance of regular exercise is a health topic that teachers normally do not get to educate students about in a traditional sedentary learning environment. While this topic does seem to be the responsibility of the classroom teacher, collaborating with physical education and health teachers to educate children is a whole-system approach in accordance with the CSPAP.

### **Review of the Proposed Problem**

As a review from chapter one, the research questions that were addressed throughout this review are, how can educators create an increase in on-task behavior and academic achievement in the classroom? How can educators create more opportunities for physical activity into the school day? The initial research question connects to the program essential question; in light of what is known about how children learn and educational policy and practice, what is the impact of regular, scheduled movement breaks within the classroom on classroom behavior, physical activity levels and academic achievement of elementary students?

### **Importance of Classroom PA Breaks**

Childhood obesity rates in the United States are at an all-time high and continue to rise. According to the Center for Disease Control and Prevention (CDC), obesity prevalence among six to eleven-year-olds was 18.4% from 2015-2016, the highest that it has ever been (Hales, Carroll, Fryar, & Ogden, 2017). As educational leaders, it is important to take a stand in regards to obesity and accepting that it is also the school's responsibility to help eliminate this epidemic by educating students at a young age. In an attempt to meet the high demands of standardized testing, educators have increased sedentary classroom instruction. This instruction style has led students to become restless and engaged in more off-task behaviors. These off-task behaviors lead to more time being dedicated to classroom management than on learning valuable academic

content. With these two issues in the forefront, educational leaders have been looking for strategies that can help students receive their 60 minutes of MVPA each day, without taking away valuable classroom instructional time. An effective strategy that has become the focus of recent studies is incorporating classroom PA breaks within classroom instruction time. The incorporation of exercise breaks into the classroom can have a variety of benefits to a classroom, if implemented effectively in accordance with the strategies provided in chapter two.

### **Summary of the Main Points of Literature Review**

The literature review consisted of providing some points that are imperative to understand in regards to incorporating exercise breaks into the classroom. First and foremost, classroom PA breaks can have a lasting effect on a student's ability to retain academic content, increase on-task behaviors, and increase the energy levels in the classroom. Physical activity breaks help to retain academic content by providing students with an opportunity to review the content that was just taught during instruction and have an opportunity to reflect on their learning. Classroom PA increases on-task behaviors by allowing students an opportunity to get up and move around the classroom, burning off excessive energy that comes as a result of sedentary learning. Incorporating PA breaks into the classroom helps to increase energy levels in the classroom as well because students become more excited about PA breaks and tend to look forward to them as a break from instructional learning. Additionally, if educators incorporate academic content into the PA breaks, it forms as a reflection time as well as a strategy to increase energy within the classroom. Obviously, engaging in exercise breaks also effect students' individual health and reaching healthy PA levels on a daily basis. Participation in regular PA has many positive physical and mental health benefits. These benefits include building healthy bones

and muscles, decreasing obesity and disease risk factors (such as high blood pressure), and reducing anxiety and depression (Hales et al., 2015).

#### **Chapter Four: Discussion/Application and Future Studies**

##### **Insights Gained from the Research**

Incorporating physical activity into the classroom is an effective tool as it pertains to developing a plan that increases student on-task behavior, academic achievement and physical activity throughout the school day. There are four key concepts to understand in regards to the effectiveness that classroom exercise breaks can have for students. These concepts include: increased time spent on-task which leads to increased academic achievement, increased physical activity levels, increased knowledge of health concepts related to physical activity, and increased student engagement within learning activities. In addition to preventing obesity, additional health benefits have been recognized in relation with increased physical activity. Some of these health benefits include strengthening bones and muscles, helping to reduce stress, and reducing the risk for heart disease and diabetes (Raney et al., 2017). As incorporating physical activity breaks pertains to the program essential question, educational leaders must understand how children operate and what they need to be successful. In this regard, this literature review discussed the importance of giving students an opportunity to reflect on instructional learning, to release built up energy from excessive sedentary activities, and to socialize with peers in an effort to expand upon learning. When movement breaks and learning activities are built into the classroom, students perceive movement as a positive part of their learning. Students also reported that the physical activity breaks are fun, provided them with an additional opportunity to learn, and provided them with additional exercise throughout the day (McMullen et al., 2019).

A comprehensive school physical activity plan is the most effective strategy for schools to implement that encourages physical activity to be an important part of learning, keeping a whole-school approach in mind. According to a study done by Carlson et al. (2015) in which six elementary-school districts (397 teachers) in California implemented classroom physical activity interventions for 1,322 students, "...teacher implementation of classroom physical activity breaks was related to higher student physical activity during school and better on-task and attentive behavior in the classroom. The present findings suggest that, to meet the 30 min/day school physical activity guideline, comprehensive school physical activity programs are needed" (p.72).

### **Application**

The results from this study could be used as a means of educating leaders and teachers about the positive impact that incorporating PA breaks into the classroom can be an effective tool for classroom teachers to minimize off-task behaviors, increase academic achievement, and increase PA levels for students during the school day. More research has been done in the past five years that support the concept of including exercise breaks into the classroom. This literature review should be used to gain perspective on the importance of classroom PA breaks, but also, as a guideline as a means to effectively implement PA into the classroom. Educators should read this analysis and have the knowledge necessary to support their decision, through research, while also obtaining confidence to immediately incorporate PA into their classroom. Additionally, this literature review can be used as a resource for educational leaders to provide suggestions for teachers to implement classroom PA if off-task behaviors become an issue. Educational leaders should also consider adopting a comprehensive school physical activity program. Using a whole-school approach through implementing a CSPAP will help to advocate for the importance of regular exercise in living an active, healthy lifestyle.

**Recommendation for Future Studies**

Through the completion of this literature review, a few questions have emerged regarding how to effectively incorporating PA breaks into the classroom. Initially, it is important to determine the exact amount of time that should be spent on each PA break. One study that was reviewed for this analysis researched the effectiveness of five-, ten-, or twenty-minute PA breaks. However, this study did not find any statistical relationship between the different time lengths and the positive outcomes (Howie et al., 2015). As a result, more studies need to be done to determine the exact time that should be spent on classroom exercise breaks for increased effectiveness.

Another area for future studies to be focused on is gaining more of a perspective of different tools that can be used to incorporate reading lessons into movement-based learning segments. Currently, many strategies exist for incorporating math concepts into movement-based learning; however, there are very limited ideas that incorporate reading into exercise breaks. While reading is normally a skill practiced while sedentary, incorporating a PA break that can combine movement into reading could be an amazing tool that helps to motivate students who have trouble with reading while remaining sedentary. Researching program development techniques is necessary to design movement activities that are enjoyable and meaningful for children. Additionally, creating opportunities for students with disabilities to engage in PA breaks can also help them to make positive connections with living an active lifestyle (Savina et al., 2016).

Finally, future studies could focus on the effectiveness of incorporating social interaction into PA breaks. While it is noted in chapter two that students and teacher both identify a desire for increased opportunities for social interaction during the PA breaks, it would be interesting to

see how effective this strategy truly is. There can be an argument that this may cause a distraction with students as they are able to talk with their friends and may be less inclined to actually participate in the PA breaks. With this being said, another argument can be made that this would motivate the students to participate more in the PA breaks because students will find them more enjoyable if they are able to socialize with friends.

Physical activity has many benefits associated with helping students to become more successful in the classroom. Many different studies have been done within the past decade that show the positive results that incorporating movement and physical activity into the classroom can have on students. According to Perera et al. (2015), “Physical inactivity is one of the leading causes of the childhood obesity epidemic in the U.S. and can negatively impact academic achievement and cardiovascular disease risk factors in elementary school-aged children” (p. 55). As educational leaders, it is essential to create a whole-school approach towards tackling obesity as a community through educating students on the importance of living an active, healthy lifestyle. Additionally, Byrd (2007) suggests from his study “a positive relationship existed between physical activity and academic achievement. In other words, students that maintained a higher level of physical activity maintained higher grades and learned at a faster rate than those students who were less physically active” (p. 11). This literature review has analyzed multiple studies focusing on infusing PA into the classroom, as well as discussing the benefits that come from movement-based learning experiences. In conclusion, incorporating PA breaks into the classroom can help teachers to increase on-task behaviors, academic achievement, and healthy fitness levels.

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