

Physical Activity Patterns of Students from Low-Socioeconomic Status  
A Synthesis of the Research Literature

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## **Abstract**

Research indicates that in today's society, there is less and less physical activity happening amongst young children from low-socioeconomic households. The purpose of this synthesis was to review the literature on physical activity patterns and behaviors of children from low socioeconomic families. Teachers, families, and communities can have an impact on the lives of these children. Results indicate that there are ways we can increase physical activity and positive behaviors amongst low socio-economic youth.

## **Chapter 1 – Introduction**

Teachers have the ability to change the lives of so many students, however it can be difficult to reach them all. Physical education is one of the only subjects that sees all students within a given district. Since physical education teachers see a variety of students, they can have an effect on the behaviors of students who come from low socioeconomic status households. The role of physical education is to develop students into physically literate individuals, meaning they should be well rounded in all three domains of learning: psychomotor, cognitive, and affective. Affective assessment data has indicated that different physical education teaching models can affect life skill development in students (Jenny & Rhodes, 2017). Students who may be considered “at risk” or “high risk” are often marginalized and have feelings of low motivation and lack of confidence. This leads to lower mortality rates in these students (Hopper & Iwasaki, 2017; Cohen et.al 2017). Physical education teachers need to have a role in their students live in order to assist the student in understanding the appropriate behaviors that will lead to a healthy lifestyle.

### **Statement of the Problem**

The problem in the current education system is that the one size fits all approach to teaching children is not effective. Every child is different; therefore, teachers and educators must address their needs individually. Students who come from areas of low socioeconomic status (SES) will express their needs differently than students of high SES. These students have roles outside of being a student that they must fulfill in their home lives, and are not always able to focus on education let alone their physical activity.

These inequalities in their education need to be addressed in their PE and health classes (Jonathan M. Cosgrove & Darla M. Castelli, 2018).

If students who are at “high risk” have expressed feelings of low motivation and lack of confidence, then it is critical for the teacher to provide intervention. It is known that physical activity can promote feeling of happiness; therefore creating an afterschool activity program can help adjust these feelings of low motivation. There is a statistically significant correlation between physical activity and academic performance. Inequalities for students of low SES has been addressed using physical activity (Cosgrove & Castelli, 2018). Researchers have discovered that school-based afterschool activity programs are an important opportunity for promoting physical activity amongst ethnic minority children. Ethnic minority children living in high priority neighborhoods will see an improvement to their physical activity levels by participating in afterschool programs. (Youngdeok & Lochbaum, 2017). This information demonstrates the problem students of low SES are having when it comes to education practices. There is a need for more physical activity intervention programs.

### **Purpose of the Study**

The purpose of this synthesis is to review the literature on physical activity patterns and behaviors of children from low socioeconomic families.

### **Operational Definitions**

1. **“At Risk” or “High Risk” Students:** youth who are often socially excluded from accessing opportunities and resources, and who are at high risk and are vulnerable to poverty, homelessness, abusive/addictive behaviors, mental health challenges,

discrimination, stigma, and or compromised developmental outcomes (Hopper & Iwasaki, 2017).

2. **Physical Education (PE):** PE should not be confused with recess, intramurals, or recreational endeavors (Evenson, et al, 2009). A quality PE program has certified PE teachers who provide developmentally appropriate, standards based, programs centered on individual student needs while incorporating appropriate instruction, meaningful content, and ongoing assessments (Evenson, et al, 2009).
3. **Low Socioeconomic Status (SES):** Low SES refers to individuals living in or near poverty-stricken areas.

### **Assumptions**

1. It is assumed that all studies were valid and reliable.
2. It is assumed that all participants answered all questions truthfully.

### **Limitations**

1. Samples are from school districts in different parts of the country and may not be truly representative of the larger population
2. Sample sizes only included public schools and may not be representative of all school systems

### **Delimitations**

1. All articles were peer-reviewed and published between 2009-and 2019.
2. All students used in the study were school-age children between 6 and 18
3. All articles are related to physical activity, behavior, education and socio-economic status.

## **Research Question**

1. How can physical education teachers have an effect on the activity patterns and behaviors of students from low socioeconomic families?
2. How does socio-economic status influence physical activity and behaviors of school age children?
3. What programs can benefit school-age children on promoting physical activity and lifelong movement?

## Chapter 2 – Methods

The purpose of this chapter is to review the methods used to review the literature on physical activity patterns of children from low socioeconomic families. The studies collected for this synthesis were located using the EBSCO database from The College at Brockport's Drake Library. Within the EBSCO database, the following databases were searched: SPORT Discus, Physical Education Index, and Academic Search Complete. Within these databases, a total number of 13 articles met the criteria for inclusion as part of the critical mass within this literature review. In order for an article to meet the criteria for selection in this synthesis it must have been published between 2009-present, this will provide the synthesis with the most up to date and current information available. Other criteria for selection included scholarly and peer reviewed articles that were full-text. Having scholarly and peer reviewed articles provides more validity within the articles and better overall quality. Other articles or sources selected as part of this literature review provided context about the topic, background information and supplemental information to complete the review. All articles and sources are appropriately cited in the reference section of this paper.

In order to gather valuable articles for this synthesis certain keywords and phrases were used when searching the database. The first keyword searched was "physical activity" and "low-socioeconomic status" that resulted in 44 number of hits and presented 3 quality articles for research. Physical activity was chosen for the keyword search, as many researchers will use this when referring to activity in physical education classes. Low socio-economic status was chose as it yielded more specific articles having to do with schools than the term poverty. Poverty yielded more articles having to do with the

main population than with school population. Keeping this search short and simple presented a variety of quality articles for the synopsis of the research.

The second set of keywords searched was “low-socioeconomic status” and “physical activity” and “united states of America” and “youth or adolescents” that resulted in 5 number of hits that presented 1 article towards research. Again, low-socioeconomic status was utilized in this search as it was more specific to school populations than using the term poverty. United States of America was used in order to keep research in the general population of the US. Articles for this synthesis are from both the US and European Countries. Youth or Adolescents kept the search from expanding into the elderly or middle-aged population. Again, physical activity was chosen as the key word as many researchers will use this or the term PA when talking about activity patterns in students.

The next set of keywords searched was “youth” and “engagement” and “high-risk” and “physical education.” That resulted in 1 article for research. This search was focused on the behaviors of students in the physical education setting and their level of engagement in class activities. The term high risk was used in order to demonstrate the need to focus the search on that population only. Youth was also utilized again in order to keep the search within the delimitations of the synthesis.

The following set of keywords was then searched in order to find more articles for research. The words “epidemiology” and “physical education” and “survival” yielded 23 articles and one was utilized towards the synthesis of the research. Epidemiology is a synonym for low-socioeconomic status and yielded slightly different articles discussing the health aspect of the neighborhoods. This put a different spin on the data that was

utilized and allowed more of the health data to be added to the synthesis. Survival was used to see what the rates of survival actually were for the low socioeconomic status communities as a result of their activity and behavior patterns in physical education. This did not give much information. “Physical education” was used again to keep the subject matter the same.

Next, the set of keywords “low-socioeconomic status” and “physical activity” and “young children” yielded 2 articles towards research. Again, this combination of key words hit the target population of students by using the phrase “young children.” “Physical activity” was used to see the activity patterns of the young children from “low-socio-economic” households.

The remaining articles were found using the ancestry method. The ancestry method was used as there are a significant amount of articles that were listed within others that were beneficial to the synthesis for material.

Articles that were selected for use in this synthesis were scholarly and peer reviewed articles that were full-text. In addition, when selecting articles for use in this synthesis it was important that each article selected had valuable information related to activity and behavior patterns of low-socioeconomic youth.

Specific criteria were used in order to be a part of the literature review. All of the articles selected were based on the activity and behavior patterns of low-socioeconomic youth. Participants in the studies reviewed were all school age children that were from school districts of low socio-economic status.

For this synthesis, a total number of 13 articles were used to compile data on the topic of activity and behavior patterns of low-socioeconomic youth. Articles came from a

variety of journals including the Journal of Parks and Recreation, Journal of Physical Education, Recreation and Dance, Health Education and Behavior, American Journal of Public Health, Physical Educator, American Journal of Health Promotion, Journal of Physical Activity and Health, American Journal of Health Education, Journal of Sport and Exercise Physiology, Journal of Sports Science and Medicine, and Psychology of Sport and Exercise.

The critical mass for this synthesis is comprised of 6,040 number of participants that were school aged children and 360 that were parents. Within the 13 articles used for the literature review there was a total of 80 males, and 104 females that are clearly identified in the journals. The age range of the participants was between the age of 6 and 14. All participants were either black, Hispanic, non-Hispanic black, or other. Participants in the studies were also in poverty, meaning they had less than a high school education or were unemployed. This is only a summary of the known data from the critical mass used for the synthesis.

Data were analyzed using the following methodologies for the studies under review. The majority of the studies under review were quantitative in nature. In many of the studies, a control group was identified and an intervention was given to another group to see the results of an experimental implementation. Population groups were selected from census data and by using statistics; they were broken down into sub categories to identify race, mortalities, behavior, and status. Computer software, such as SPSS was used to analyze the quantitative data, as well as simple statistical equations. Frequency distributions, paired sample t-test, 2-tailed Pearson bivariate t-tests, and ANOVA were also used to analyze quantitative data. The data that was qualitative in nature helped

shape the discussion for interventions in PE. Students were interviewed and were asked open-ended questions to learn more about their educational experiences. Students were also asked to complete questionnaires and complete 5-point Likert scales in several of the studies. Between the author's recommendations and the statistical data presented in the critical mass, the discussion regarding students of low-socio-economic status, activity and behavior patterns could be formed.

## **Chapter 3**

### **Review of Literature**

The purpose of this chapter is to present a review of literature on physical activity patterns and behaviors of children from low socioeconomic families. In particular, the following topics are reviewed; types of interventions, and accessibility. These themes emerged throughout the review of literature and proved important to the synthesis of information related to the purpose. They are broken down into sub topics of playtime interventions, afterschool interventions, behavioral interventions, parents and community, parks, and nutrition. The importance of this synthesis is demonstrated in the *Healthy People 2020 Social Determinants Approach*. The *Healthy People* initiative plans to emphasize the need for considering factors such as poverty and education that can influence the health of a population (Koh, et. al 2011). This information represents the need for increased physical activity interventions.

#### **Types of Intervention for Academic Performance**

Research has demonstrated that there is a need for intervention to influence activity and behavior patterns among students from low socioeconomic status. Types of interventions that have been proven effective are playtime, afterschool activity time, and various behavior interventions. This section will divulge more information into the three types of intervention.

#### **Playtime Intervention**

In an exploratory study done by McWhannell, Triggs, and Moss (2019), physical activity levels and perception of physical activity were compared from two schools of different socio-economic status. The purpose was to assess and compare playtime

physical activity levels of perceptions of physical activity in primary school children from two schools of different socioeconomic status. In this study, 53 children who were between the ages of 7-8 wore an accelerometer during playtime for three consecutive school days. Thirty-three children participated in single sex focus groups to elicit their experiences of physical activity during playtime. Twenty-eight of the students were from School A (most deprived school) and 25 from School B (least deprived). Children's physical activity was measured by the accelerometer during playtime for at least 15 minutes over the course of the three days. The accelerometers captured activity patterns every ten seconds to determine light, moderate, or vigorous activity. Data was then downloaded using the ActiLife software at the end of each 3-day period. During the focus groups, the students were separated by sex. There were four to five participants per group. The groups were semi structured and informal in order to create a comfortable environment for the students. There was one moderator and one assistant moderator. Questions used were to explore the student's perceptions of physical activity. It was determined that children from low SES schools spent more time in sedentary activities with a P of .001 and spent less time in Moderate to Vigorous Physical Activity (MVPA) (P=.001) than children from the high SES school. Qualitative data regarding the perceptions of PA were similar between schools. Differences were found in their reasons for taking part in PA, perceptions of play environments, and ideas to improve PA. Essentially, this study was useful for finding new interventions, such as increased playtime, would be beneficial in low SES schools (McWhannell, Triggs, & Moss, 2019).

In addition, a study performed by Evenson, Ballard, Lee, and Ammerman (2009) explored how districts are meeting the physical activity related portion of the Healthy

Active Child Policy and explores the policy implementation successes and challenges. The policy requires that students K-8 receive at least 30 minutes of MVPA each day through physical education, recess, or other approaches. In this study, 106 school districts responded to a 50-question survey that was used through Zoomerang (an online research server). There were open-ended questions regarding the successes and challenges of the policy and how the policy was being implemented. Closed-ended questions were analyzed using SAS software. All answers to the questions were double coded, checked, and grouped into different themes. The authors of the study found that school districts were meeting the physical activity requirements most often with recess, physical education, classroom Energizers, and intramural sports. Benefits of the program included increased student focus on academic studies, increased physical activity participation, awareness of healthy habits, alertness and enjoyment, and higher staff involvement. Challenges to the policy-included lack of time in the school day, teacher participation, and concerns about academics. This study identified the need for an increase in physical activity programs to improve the activity and behavior patterns of students from Low SES. The study concluded that there are some challenges to the policy and if the challenges are addressed, the success of the Healthy Active Child Policy will strengthen. The Healthy Active Child Policy helps address the needs demonstrated in the *Healthy People 2020* initiative.

### **Afterschool Intervention**

Alternatively, afterschool programs can prove to be a beneficial experience for students including students from high poverty neighborhoods. A study completed by Youngdeok and Lochbaum (2017) examined the levels of and patterns of physical

activity in minority children, and focused on the contribution of regular physical education and school based after-school activity programs in promoting MVPA during a school week. In this study, 75 ethnic minority children were measured using a polar active accelerometer. Children used in the study were in 3<sup>rd</sup> and 5<sup>th</sup> grade and were a variety of different ethnicities from a low socioeconomic Title I elementary school in Texas. Data was collected from the accelerometers over the course of six weeks. Descriptive statistics was used to determine the demographics in the study. It was also used to estimate the amounts of MVPA amongst students in physical education classes, and during afterschool activity programs. Children ended up spending 41.6 minutes of MVPA during school hours, 14.1 minutes were during PE. The average proportion of time spent in MVPA during PE was 31.3%, which was significantly lower than the recommendation ( $\geq 50\%$  of MVPA), whereas 54.2% of time in afterschool PA program were spent in MVPA. The findings of the study highlighted that if school based after school activity programs were used in addition to physical education classes, then ethnic minority children would benefit from more PA on school days. Further research is still needed to increased physical activity levels during physical education classes (Youngdeok & Lochbaum, 2017).

### **Behavioral Intervention**

In this section, behavioral interventions for the use of physical activity to aid student behavior and activity patterns will be described. Specifically, how these behavior interventions affect students from low socioeconomic status. There are a variety of intervention strategies utilized in this section.

To begin, academic performance can be influenced by physical activity levels in low socioeconomic schools. Cosgrove and Castelli (2018) evaluated the relationship of objectively measured physical activity and academic performance among Hispanic adolescents in an urban school district. One hundred and sixty students were recruited from 6 Title I schools. They were asked to wear GT3X accelerometers over the course of 5 weekdays. Conveniently, the school districts were able to provide the academic scores and demographics of students. The students used in the study all had a BMI of over 25, meaning they were obese. This ties back to the need for the *Healthy People 2020* initiative, and how physical activity patterns of low SES youth needs to change. Fitness was measured by using the Fitnessgram during physical education classes. In order to analyze the data from the Fitnessgram and the accelerometers, a 2-tailed Pearson Bivariate correlation was run to identify potential associations. Consequently, the study found a weak negative relationship between physical activity and academic performance. Only very vigorous activity had an impact on academic performance. This study found that in urban school, the benefits of more physical activity may be secondary to the time spent engaged in academics.

Despite the disappointing findings in this study, it suggests that there may be factors in urban schools that influenced the relationship. The school lacked resources to newly renovated physical activity opportunities, lacked school resources for academics, lacked opportunities in schedule to participate in activity, and lacked behavioral interventions like changing the motivation to attend school. The schools may have had physical activity programs, but they were not quality programs, and they were not using them correctly to improve behavior in the classroom. Essentially, efforts to address the

inequalities should be embedded in health lessons and more quality physical activity opportunities for adolescents.

Coincidentally, a study performed by Armitage and Sprigg (2010) examined a group of students who were in a critical age for physical activity growth and development. The purpose of their study was to identify different psychological mediators of past physical activity on intention and future physical activity in order to form the basis of theory driven interventions. They wanted to test an intervention based of Gollwitzer's implementation of intentions to promote behavior change amongst students from low socioeconomic status. In order to perform their research, they selected 77 children between the ages of 6-10 from three classes in an inner city school in England. The school was selected since it was one school in a top 10% deprived area. They used a randomized controlled design in order to allocate students. The children were assessed using a questionnaire three separate times. Time 1 was assessed to find out a baseline of physical activity. This was a time they were asked to complete a questionnaire. Time 2 was assessed two weeks after the children were exposed to the measures of planned behavior constructs and were exposed to the intervention before playtime, and then completed measure of physical activity after playtime. During this time, they needed to create an intention such as "during playtime I will run a lot." This worked on using Goal setting as a behavioral intervention. The control group did not receive an intention. Time 3 came one month later and measured both physical activity and planned behavior variables after play time. Children self-reported their physical activity levels after playtime all three times. Children were also asked to complete a 5-point Likert scale in order to measure how well they completed their intention. The

results of the study showed that physical activity can be increased in students aged 6-10 from low socioeconomic status by using intentions. The authors suggest that implementation of intentions might help increase the effectiveness of children's physical activity programs (Armitage & Sprigg, 2010).

### **Accessibility**

In this section, accessibility for the use of physical activity to aid student behavior and activity patterns will be described. Specifically, how does having access to parks and parental/community support affect students activity and behavior patterns from low socioeconomic status. The use of the SCORES theory and park access are described in this section.

### **Parents and Community**

In addition to playtime, afterschool, and behavioral interventions, accessibility to opportunities for physical activity played a major role in the synthesis of data. Cohen et. al. (2017) examined the mediation effects of socio-ecological variables on accelerometer determined physical activity among children in the Supporting Children's Outcomes using Rewards, exercise, and Skills (SCORES) intervention. As noted by the researchers, "physical inactivity is a global health concern (Cohen et. al., 2017, pg 1)." The main purpose of the study was to examine whether changes in individual, social, and environmental constructs mediated physical activity changes in the SCORES intervention method.

This study contained both quantitative and qualitative measures in order to obtain data. The methods used in this study included a Randomized Controlled Trial that used an original sample of 460 students from grades 3 and 4. Only 101 out of the original

sample were used in the study due to providing useable analysis. All students were aged 7-10 years old. Eight primary schools (25 classes) were selected since they had a SEIFA Index (Socio-Economic Index for Areas) of  $\leq 5$ . ActiGraph GT3X accelerometers were used to assess children's physical activity during waking hours for 7 consecutive days. Activity was grouped into sedentary time, light, moderate, and vigorous. Children also completed a questionnaire to obtain demographic information.

Following this, children also completed a 5-point Likert scale (disagree a lot-agree a lot) called PACES (Physical Activity Enjoyment Scale) to assess their enjoyment of physical activity. Children also completed the perceived competence sub scale from Harter's Self-Perception Profile (SPP) to assess their perceived sport competence. Children were asked to select a response that they felt best suited them out of four choices, they would write one for the lowest competence and four for the highest sport competence. Children were also asked to report their social support for physical activity from members of their household and family. Another 5-point Likert scale was used in this situation ranging from never to always. On the reverse side of this, parents/household members were asked to report the level of social support they provide for their children using the Children's Leisure Activities Study Survey (CLASS). Parents also needed to assess their child's access to physical activity facilities by using CLASS. All scores from all methods of collection were recorded.

Results from this study found that there were significant intervention effects from teachers and parental perceived access to physical opportunities in the local community. There were also significant associations between perceived sport competence and parental perceived physical activity opportunities in the local community was found to

have a significant mediating effect on total MVPA. It was concluded that parental perceived access to physical activity opportunities in the local community is a potential mechanism of behavior change for children and mediated the effect of the SCORES intervention on objectively measured physical activity.

### **Parks**

Continuing the discussion regarding community involvement in physical activity, park access also has a significant effect on the physical activity and behavior patterns amongst students from low socioeconomic status. In a study Dolash, He, Yin, and Sosa (2015) collected data on surrounding park users. The purpose of their study was to assess the factors associated with park use and the physical activity amongst park users in predominantly Hispanic neighborhoods. In their study, they used six parks in San Antonio, Texas. They used a cross-sectional research design to assess the factors associated with park use and physical activity within parks. Data were collected throughout the months of November and December, and the parks were both renovated and non-renovated. Data were collected by interviews with park users ages 13-18 about why they used the park, observations of physical activity, and park feature assessments were done using the Parks and Play Spaces Observation Tool. In order to analyze their data, they used SPSS to conduct t-tests and an ANOVA analysis. They found that parks that were renovated had statistically significant high physical activity expenditure amongst park users than non-renovated parks. Ultimately, in order to change activity and behavior patterns of students from low-socio economic status, they need to have access to newly renovated parks to promote their PA.

In addition to this study, Loprinzi and Davis (2018) discussed the risk predictors of physical activity and mortality. The purpose of their study followed 4 topics: 1) to assess the effect of socioecological factors on objectively measured physical activity, 2) assess the socioecological risk on all-cause mortality, 3) assess the interaction effects of social risk factors on physical activity and mortality, and 4) to assess whether physical activity mediates the relationship between social risk and mortality. The authors used a cross sectional and prospective design with 5,574 participants from the National Health and Nutrition Examination survey. Social risk was assessed on poverty level, education, minority status, and social living status. MVPA was assessed by using an ActiGraph Accelerometer in the state of Florida. A negative binomial regression and Cox proportional hazard model was used in order to analyze data. Essentially, they found that social risk is associated with less MVPA and an increase in all-cause mortality risk. It is evident that socioecological factors have an effect on activity and behavior patterns. Highly impoverished neighborhoods have limited access to physical activity opportunities, and need special attention in order to reduce the mortality due to lack of PA.

## **Nutrition**

In this section, healthy nutrition for the use of physical activity to aid student behavior and activity patterns will be described. Specifically, how does having access to proper nutrients for student growth and development affect behavior and activity? The use of the goal setting as an intervention will be described.

Coincidentally, Matthews et. al.(2015) noted that currently only 8% of adolescents are meeting the recommendations for physical activity designated by the

CDC. The purpose of this study was to examine physical activity levels and self-efficacy, and the healthy eating habits of third, fourth, and fifth graders from three low socioeconomic schools in an urban setting. Students were broken up by grade level, and were asked to complete the Physical Activity and Health Food Efficacy Scale (PAHFE) to assess the student's present level of physical activity and healthy food choices. This was only one of two stations. At the second station, students were assigned a pedometer, and the pedometer was calibrated so the data at the end of the 7-day period would be accurate. Significant results relevant to the purpose of the synthesis-included girls having higher goal setting for healthy food choices and decision making for healthy food choices than boys. This is significant to the purpose as it may be easier to use goal setting as an intervention to aid the physical activity and behavior patterns in young females than males. When assessing step counts per week, boys were significantly higher than girls were. Furthermore, a significant positive relationship was found for goal setting and physical activity/steps over the weekend. This means that an urban setting may have an influence on the amount of physical activity due to accessibility and opportunities to engage in physical activity. Continued research is necessary in order to help continue identifying populations that are less active, and identifying the barriers to why they are sedentary.

In summation, the review of literature demonstrates the activity and behavior patterns of students from low socioeconomic status. Their physical activity can be influenced by accessibility to parks, and the interventions used to aid them during the school day. When leisure activities are meaningful to at risk youth they are more likely to be affective. Physical activity opportunities promote life skill development among teens,

and allow them to create more opportunities for PA for their peers (Hopper & Yoshitaka 2017). When there are more opportunities for PA we can help aid in the Healthy People 2020 movement to create a healthier country.

## **Chapter 4**

### **Results, Discussion and Recommendations for Future Research**

The purpose of this chapter is to present the results of the review of literature on physical activity patterns and behaviors of children from low socioeconomic families and how these results align with the purported research questions which guided this synthesis project. In addition, recommendations for future research as it relates to activity and behavior patterns of students from low socio economic status are presented.

The results of this review of literature revealed the following, students from low-socioeconomic status do benefit from behavioral and physical intervention programs. The use for afterschool programs, and increased playtime influenced students in their behavior and activity patterns. The literature also revealed that accessibility to parks and having parental support increased the amount of physical activity that students from low SES are receiving. The data suggests that schools and communities should be providing more opportunities for physical activity in order to positively influence young children.

## **Discussion**

### **Interpretations**

As part of this literature review, several research questions were posed. The first research question, how can physical education teachers have an effect on the activity patterns and behaviors of students from low socioeconomic families? The results indicate that physical education teachers can positively influence both academics and physical activity amongst young children. This is supported by research done by Evenson, Ballard, Lee, and Ammerman (2009). They found that school districts who meet physical activity

requirements through physical education show an increase in healthy habits, alertness, enjoyment, and increased participation in physical activity. Physical education teachers can also provide afterschool activity programs for students and this helps increase their overall physical activity. Results from multiple studies indicate higher MVPA in afterschool activity programs. This information helps support the need for the *Healthy People 2020* initiative.

The second research question, how does socio-economic status influence physical activity and behaviors of school-age children? The results indicate that socioeconomic status has a major impact on activity and behavior patterns. Specifically access to newly renovated parks, and play areas. Research found that areas that had newly renovated parks, access to basketball courts, and outdoor play areas had a decrease in overall mortality of the residents. Highly impoverished neighborhoods have limited access to physical activity opportunities, and need special attention in order to reduce the mortality due to lack of PA. Essentially, without access to quality facilities, students and their families are not motivated to be physically active outside.

Finally, the third research question, what programs can benefit school-age children on promoting physical activity and lifelong movement? The results indicate that goal-setting programs can have a significant influence on promoting lifelong activity and movement. It is known that students are not meeting their required physical activity levels, but when they participate in goal setting activities, they are more likely to make better choices. The SCORES approach allowed students to set intentions for what they will do in physical activity programs and allowed them to have higher MVPA. PAHFE helped students set goals for step counts over the weekend and increased their physical

activity outside of school. This is a first step in creating lifelong movement outside of school.

### **Implications**

The implications of this study indicate that there is a need in rebuilding and restructuring low socioeconomic neighborhoods in order to better influence the lives of students living in them. The review indicates that more opportunities for students whether it be parks, afterschool programs, behavioral interventions, or playtime help increase the overall health and wellness of the student. This review of literature confirms existing theories regarding the impact physical activity has on the success of the student. Practically speaking, this review indicates a need for more physical education in schools, especially schools of low socioeconomic status. Students will in fact perform better in the classroom and outside of school if there is an increase in physical activity programs.

### **Recommendations for Future Research**

In reviewing the database on activity and behavior patterns of students from low socioeconomic status, the following limitations were noted regarding the studies under review; samples are from school districts in different parts of the country, and may not be truly representative of the larger population. It is also noted that sample sizes only included public schools and may not be representative of all school systems.

Based on these limitations and other insights related to the literature the following recommendations for future research should be considered:

1. Further research is recommended for the identification of additional variables that mediate the effect of PA and behavior.

2. Efforts to address inequalities in education should be embedded in health lessons and physical activity programs for adolescents.
3. Renovations to park amenities such as increasing basketball courts, trail availability, could potentially increase PA among the low-SES populations.
4. Continued research into identifying barriers is required to determine the impact on the obesity epidemic.

### **Summary**

The purpose of this literature review was to determine physical activity patterns and behaviors of children from low socioeconomic families. Delimiting variables were used to do an exhaustive databased search which yielded 13 articles. These articles were then systematically used to determine the physical activity patterns and behaviors of children from low socioeconomic families. Research revealed that students from low-socioeconomic status do benefit from behavioral and physical intervention programs. The use for afterschool programs, and increased playtime influenced students in their behavior and activity patterns. The literature also revealed that accessibility to parks and having parental support increased the amount of physical activity that students from low SES are receiving. Overall, there needs to be more physical activity support for students of low socioeconomic status in order to increase their overall success as a student and young adult.

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## Appendix A

Author	Title	Source	Purpose	Methods & Procedures	Analysis	Findings	Recommendations
Armitage and Sprigg, (2010)	The Roles of Behavioral and Implementation Intentions in Changing Physical Activity in Young Children With Low Socioeconomic Status	Journal of Sport & Exercise Psychology	Identify psychological mediators of past physical activity on intention and future physical activity and so form the basis of theory driven interventions and to test an intervention based on Gollwitzers implementation intentions to promote behavior change.	<p>Randomized controlled design</p> <p>Experimental children ages 6-10 N=39 Control Children N=38 Top 10 derived areas in UK</p> <p>Average age 8.06 SD 1.63 Large effect change at Alpha .01</p> <p>Three questionnaires</p>	<p>Time 1=baseline PA and Behavior Time 2=2 weeks later, measures of theory planned behavior constructs and intervention before playtime. Then completed measures of PA after playtime Time3=one month later, PA and measures of theory planned behavior assessed after playtime</p> <p>Likert scale 1-5</p>	<p>Theory of Planned Behavior provided a good amount of PA intentions and Behavior TOPB mediated the affects of prior PA on subsequent PA</p> <p>Increased PA in students of low SES</p> <p>Effects occurred independently</p>	Further research is recommended for the identification of additional variables that mediate the effect of PA and behavior

					Three questionnaires		
Cosgrove and Castelli, (2018)	Physical Activity and Academic Performance Among Adolescents in Low-SES Schools	American Journal of Health Education	to evaluate the relationship of objectively measured PA and academic performance among Hispanic adolescents in one urban school district	160 students recruited from 6 title 1 schools. Participants wore a GT3X accelerometer for 5 weekdays. District provided demographic and academic scores	Weak and negative relationship existing between PA and AP, the linear regression indicated the predictor variables explained 15.2% of the Variance $R^2=.0152$ , $F(7,1444)=2.352$ $P<.001$ . Very vigorous PA intensity had a significant negative effect on PA and AP $B=-1.241$ , $p=.04$	The benefits of chronic PA may be secondary to the affects of SES and time spent engaged with academics in regards to academic performance	Efforts to address inequalities should be embedded in health lessons and physical activity programs for adolescents
Cohen, Morgan, Plotnikoff, Hulteen, and Lubans (2017)	Psychological, social and physical environmental mediators of the SCORES intervention on physical activity among	Psychology of Sport and Exercise	Mediation effects of socio ecological variables on accelerometer determined PA among children in the Supporting	Randomized control trial mediation analysis  12 month study Multi-level linear analysis in MPlus	Significant intervention effects for social support from teachers $A=1.73$ , $SE=.088$ , and $p=.048$	Parental perceived access to physical activity opportunities in the local community is a potential	intervention successfully increased children's objectively measured physical activity, aerobic fitness and movement skill proficiency, there were no significant effects for any of the potential social or

	<p>children living in low-income communities</p>		<p>Children's Outcomes using Rewards Exercise and Skills (SCORES) intervention</p>	<p>8 primary schools with a total of 460 students grades 3 and 4 aged 7-10 years</p> <p>SCORES intervention included- professional learning workshops for teachers Student leadership training Policy and environment changes Parental engagement School-community links</p>	<p>Parental perceived access to physical opportunities in local community A=2.69. SE 1.12 and p=.016</p> <p>Significant associations between changes in perceived sport competence B=.48 SE=.36 and p=.021 and changes in MVPA</p> <p>Parental perceived access to physical activity opportunities in the local community was found to have a significant mediating effect on total MVPA (AB ¼ 1.61,</p>	<p>mechanism of behavior change for children and mediated the effect of the SCORES intervention on objectively measured physical activity</p>	<p>psychological constructs. Alternatively, the intervention effect was mediated by changes in the physical environment, specifically parental perceived access to physical activity opportunities in the local community.</p>
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					95% CI ¼ 0.06 to 3.95, proportion 13%)		
Dolash, Meizi, Zening, and Sosa, (2015)	Factors That Influence Park Use and Physical Activity in Predominantly Hispanic and Low-Income Neighborhoods	Journal of Physical Activity & Health	Assess factors associated with park use and physical activity among park users in predominantly Hispanic neighborhoods	6 parks and included park environmental assessments to evaluate park features, physical activity observations to estimate physical activity energy expenditure as kcal/kg/minute per person. Quantitative data analysis was used and included ANOVA and T-tests	Parks that were renovated had higher PA energy expenditure score mean=.086 +- .027 than non-renovated parks mean=.077+- .028 t=-3.04 P<.01. Basketball courts had a significantly higher number of vigorously active park users mean =1.84+- .08 than tennis courts mean=.15+- .01 F=21.9 n2=6.1% P<.01	Thematic analysis of qualitative data revealed 4 themes: motivation to be PA, using the play spaces in the park, parks as the main place for PA, and social support for using parks	Renovations to park amenities such as increasing basketball courts, trail availability, could potentially increase PA among the low-SES populations
Evenson, Ballard, Lee, Ammmerman, (2009)	Implementation of a School-Based State Policy to	Journal of School Health	How districts are meeting the physical activity related	Online survey conducted in 2007 in all school districts	The PA requirement was met through recess, PE,	Increased student focus on studies, PA program	Addressing challenges of the policy would increase ongoing success of the policy

	Increase Physical Activity		portion of this policy and explores the policy implementation successes and challenges  -Healthy Active Child Policy	in the state 106of 111 responded 95.5% asked to describe implementation successes and challenges associated with including 30 min of PA in the school day Answers were double coded, checked, and grouped into themes	classroom energizers, and Intramurals  50 open and closed ended questions in an online survey issued to school districts	participation, awareness of healthy habits, alertness, and enjoyment, and higher staff involvement.	
Hopper and Yoshitaka (2017)	Engagement of “At Risk” Youth Through Meaningful Leisure	Journal of Park and Recreation Administration	To explore how youth-led leisure opportunities can help young people caught in the dynamics of exclusion and marginalization.	Literature Review of how leisure opportunities affects at risk youth. Also to determine how to define at risk youth.	Literature Review	Discussed possible opportunities for leisure opportunities affecting at risk youth.	Literature review-clear analysis of what cause and effect is going on.
Jenny and Rhodes (2017)	Physical Education Professionals Developing	Physical Educator	To demonstrate the value of affective assessment in	Literature review of how intentional life skill instruction	Literature review	Intentional life skill instruction does have a	Using the assessments at the end of the article could be a potential tool

	Life Skills in Children Affected by Poverty		students who may live in areas of low socio-economic status.	has a positive impact on students.		positive impact on the development of students from low socio economic status	for teachers to use on their own classrooms.
Koh, Pitrowski, Kumanyika, and Fielding (2011)	Healthy People: A 2020 Vision for the Social Determinants Approach	Health Education and Behavior	To show the pathway if took create the goals and objectives for the social determinants approach in the Healthy People 2020 initiative.	Interview and discussion with 13 assemblypersons involved in the healthy people 2020 initiative.	Interviews, and open review of past policies	The new objectives were developed	The healthy people initiatives need to be looked at more than every 10 years to determine the population data
Loprinizi and Davis (2018)	Socioecological Risk Predictors of Physical Activity and Associated Mortality	American Journal of Health Promotion	To assess (1) the cumulative effect of socioecological factors (social risk) on objectively measured physical activity, (2) the cumulative socioecological risk on all-cause mortality,	Cross sectional and prospective Five thousand five hundred seventy-four participants of the National Health and Nutrition Examination Survey 2003 to 2006. Laboratory- and survey-based	Negative binomial regression and Cox proportional hazard model. Compared to those with 0 social risk factors, those with 1 and 2p social risk factors engaged	Cumulative social risk is associated with less MVPA and increased all-cause mortality risk.	Cumulative social risk is associated with less MVPA and increased all-cause mortality risk. Given the interaction effects of socioecological factors, targeted interventions in identified populations may be needed.

			<p>(3) the potential interaction effects of social risk factors on physical activity and mortality, and (4) whether physical activity mediates the relationship between social risk and mortality</p>	<p>testing of the general US population Social risk was assessed from 4 variables, namely poverty level, education, minority status, and social living status. Moderate-to-vigorous physical activity (MVPA) was assessed via accelerometry. Mortality was assessed via linkage with the National Death Index, with follow-up through 2011.</p>	<p>in 11% and 10% less MVPA, respectively. Those with 1 (vs 0) social risk factor had a 2.0-fold increase in mortality risk, and those with 2 (vs 0) social risk factors had a 2.3-fold increase in mortality risk. Interaction effects for various socioecological factors on both MVPA and mortality were observable</p>		
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<p>Matthews, O'Neill, Kostelis, Jaffe, Vitti, Quinlan, and Boland (2015)</p>	<p>Physical Activity and Self-efficacy in Physical Activity and Healthy Eating in an Urban Elementary Setting</p>	<p>American Journal of Health Education</p>	<p>To examine PA levels and self-efficacy (SE) in PA and health eating (HE) of third, fourth, and fifth graders in 3 low economic elementary schools in an urban setting.</p>	<p>Students (N ¼ 295) were administered SE in PA and HE inventories and given Omron HJ7201TC pedometers</p>	<p>Girls had significantly (P , .05) higher goal setting for healthy food choices (4.34 ^ 0.75) and decision making for healthy food choices (3.85 ^ 0.89) than boys (goal setting: 4.11 ^ 0.87; decision making: 3.20 ^ 1.05). For step counts per weekday (SWKD), boys (7354.88 ^ 2631.44 steps/day) had significantly (P , .05) higher steps than girls (6273.87 ^ 2259.00 steps/day). Third and fifth graders (third: 7112.48 ^ 2564.13</p>	<p>An urban setting may influence the amount of PA due to accessibility and opportunities to engage in PA.</p>	<p>Continued research into identifying barriers is required to determine the impact on the obesity epidemic.</p>
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					steps/day; fifth: 7189.35 ^ 2470.57 steps/day) had significantly (P , .05) higher steps than fourth graders (6172.21 ^ 2350.32 steps/day). For step counts per weekend (SWKEND), no significant (P . .05) differences existed for gender (girls: 5732.38 ^ 3267.16 steps/day; boys: 6050.59 ^ 3564.21 steps/day) or grade level (third: 6486.23 ^ 3282.34 steps/day; fourth: 5605.74 ^ 3381.45 steps/day; fifth: 5617.51 ^		
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					3513.54 steps/day). A significant positive relationship was found for goal setting for PA and SWKEND ( $r = .20178$ , $P = .033$ ). In addition, significant relationships existed for transport questions, specifically, goal setting for PA was positively related to the number of times walking to school ( $r = .142$ , $P = .036$ ) and decision making for PA was negatively		
McWhannell, Triggs, and Moss, (2019)	Perceptions and measurement of playtime	European Physical	Assess and compare playtime PA	53 children wore and accelerometer	Children from Low SES school spent more time	Differences resonated in their reasons	Can be useful for finding new interventions in low ses schools

	physical activity in English primary school children: The influence of socioeconomic status	Education Review	levels of perceptions of PA in primary school children from two schools of different SES	during playtime for three school days while 33 children participated in single sex focus groups to elicit their experiences of PA during playtime Separated in to focus groups for perceptions	in sedentary activities P=.001 and spent less time in moderate to vigorous PA P=.001 than children from the high SES school	for taking part on PA, perceptions of play environment, and ideas to improve PA	
Murgia and McCullik (2009)	Engaging Urban Youths in Physical Education and Physical Activity: Introduction	Journal of Physical Education, Recreation & Dance; Reston	The purpose of this study is to illustrate just how important engaging urban youths in physical education and physical activity might be to everyone. The author made the case for this purpose by using a variety of	Literature review of the implications of motivating youth to participate in physical activity	Literature Review	They are able to find that we need to better prepare pre-service teachers to deal with under privileged youth to give them the appropriate education.	It is recommended that there be further education of preservice teachers on working with underprivileged youth.

			different scenarios.				
Kim and Lochbaum (2017)	Objectively Measured Physical Activity Levels Among Ethnic Minority Children Attending School-Based Afterschool Programs in a High Poverty Neighborhood	Journal of Sports Science and Medicine	To determine physical activity levels of students attending afterschool activity programs.	75 ethnic minority children were measured using a polar active accelerometer. Students attended a Title I elementary school.	Students were measured by using the polar active accelerometer  On average, children spent 41.6 mins (SE = 1.8) of MVPA during school hours and of those, 14.1 mins (SE = 0.6) were contributed during PE. The average proportion of time spent in MVPA during PE was 31.3% (SE = 1.3), which was significantly lower than the recommendation ( $\geq 50\%$ of MVPA),	After-school based physical activity programs would be a great benefit to promote physical activity in students of ethnic minority background.	Further research is needed to increase physical activity levels afterschool and during PE

					whereas 54.2% (SE = 1.2) of time in afterschool PA program were spent in MVPA.		