**Physical Education in Pennsylvania Public Schools: Stricter Policy to Reduce Child and Adult Overweight and Obesity**

by

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Abstract

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**Increased Physical Activity and Stricter Physical Education Policy in Public Schools Will Help Reduce Child and Adult Overweight and Obesity in Pennsylvania**

Nanina Oliverio Sexton, MPH

University of Pittsburgh, 2020

**Abstract**

**Background:** Physical inactivity, overweight, and obesity are risk factors for the nation’s most common chronic diseases. In the United States, 39.8% of adults and nearly one in five youth, ages 6-19, are obese. Lax and inconsistent policy regarding physical education and physical activity in public schools is relevant to public health because physical inactivity is associated with poor physical health in a multitude of ways. States vary in the frequency, overall quantity, and type of activity they require, and for which grade levels. Some states have no requirements but they make recommendations based on guidelines from external entities. The last several decades have revealed a systematic decline in school-based physical activity due to an increased emphasis on core academic disciplines and conditional funding based on standardized test scores.

**Methods:** The Centers for Disease Control and Prevention (CDC), the Pennsylvania Department of Health (DOH), and other professional organizations are primary sources of health data for Pennsylvania children and adults. The Pennsylvania Department of Education’s (DOE) School Code is the subject of this policy analysis. Pertinent research studies and reports from state agencies are reviewed here, to convey the current landscape of physical education, school-based physical activity, and policy implementation in Pennsylvania public schools.

**Results:**  Children and adults in Pennsylvania are highly physically inactive. The adult obesity rate increased from 13.7% in 1990 to 30.9% in 2018. With regard to childhood and adolescent obesity, Pennsylvania underperformed on both corresponding Healthy People (HP) 2020 objectives. Rural youth are more likely to be overweight than urban youth, which will become increasingly problematic as the state’s rural population grows faster than the urban population. Current Pennsylvania School Code mandates physical education instruction for all grade levels but does not require a minimum frequency or amount of instruction. A three-part reform of this policy will promote increased physical activity and the monitoring of students’ fitness levels and improve accountability and adherence among schools.

**Conclusion:** Schools should adopt more rigorous physical education and physical activity policies as means to increase physical activity among youth. This is a systemic approach to help delay, and potentially prevent, the perpetuation of obesity-related chronic diseases.

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# Preface

I would like to thank everyone who has played a role in my development as a public health professional. To my professors from the Graduate School of Public Health and Graduate School of Public and International Affairs, you have all contributed to my professional development in unique ways. Thank you for creating a learning environment that encouraged me to share my ideas and ask questions, pushed me to maintain an open mind, challenged me to see new perspectives, broadened my definition of health, and inspired me to pursue the type of public health work that excites me. I am especially grateful for Dr. Thistle Elias: my academic advisor, Bridging the Gaps (BTG) practicum coordinator, and chair of my reading committee, for devoting many hours to providing thoughtful feedback on this essay. You have taught me that good public health practice is that which is socially conscious and equitable for all. I would also like to acknowledge Dr. Carma Repcheck from the School of Education’s Department of Health and Physical Activity, whose instruction and expertise in the fields of physical activity and exercise science were an invaluable asset to this essay-writing process and my career in the fitness industry.

I am deeply appreciative of my BTG practicum experience at Youth Enrichment Services (YES). To Denise Jones, Jasmine Davis, Amanda Harris, and the rest of the YES team, thank you for showing me the power of multidisciplinary collaboration. To my Summer Scholars students, your creativity, spirit, and resiliency when faced with adversity reminded me that we all have the ability to define our own future.

There are many people in my personal life who helped me tremendously as I navigated graduate school. First, thank you to my family for your unconditional support. My enthusiasm for pursuing a career in public health and for living as actively as possible is rooted in my parents’ leading by example. I am thankful for all of my personal training clients that make work so enjoyable and have offered words of advice and encouragement throughout the years. I consider myself lucky to have such a strong and selfless group of friends who know how to lift each other up. Last but certainly not least, thank you to Jake and Niko, whose wagging tails and loyal companionship got me through countless late nights of writing and studying.

# Introduction

Physical inactivity, overweight, and obesity underlie many of the deadliest health conditions that currently face the United States ([Centers for Disease Control and Prevention, 2019a](#_ENREF_14)). In Pennsylvania, specifically, nearly one third of youth and adolescents are either overweight or obese ([National Physical Activity Plan Alliance, 2018](#_ENREF_40)). Rural areas in Pennsylvania are experiencing faster population growth and consistently higher prevalence rates of overweight youth than urban areas of the state ([Gajanan and Fiorentino, 2019](#_ENREF_29)). This raises alarm because early onset of overweight and obesity can indicate early onset of chronic disease. However, an increase in one’s physical activity can help mitigate these adverse health outcomes because physical activity is a highly protective factor against overweight and obesity ([Centers for Disease Control and Prevention, 2013](#_ENREF_10)). Therefore, Pennsylvanians are in need of far-reaching, easily accessible, and evidence-based interventions that promote regular physical activity. This essay argues that a broad, system-wide policy intervention in Pennsylvania public schools meets the aforementioned intervention criteria and thus is well positioned to combat this growing public health concern. This policy solution also mitigates common individual, interpersonal, community, and societal barriers to physical activity.

This essay proposes a three-pronged revision of the Pennsylvania Department of Education’s (PDE) physical education policy. The primary recommendations are to incorporate greater amounts of physical activity and physical education during the school day, require universal use of the FITNESSGRAM® test battery to assess student fitness levels, and mandate school district reporting of related programming and student assessment outcomes. This essay demonstrates the need for stricter policy regarding physical education and school-based physical activity as a vehicle to improve public health outcomes in Pennsylvania, in contrast to decades of public education policy that prompted the redirection of resources and attention away from these areas and toward other core academic disciplines.

# Background

Obesity is a serious public health concern because it is a risk factor for several of the United States’ deadliest chronic conditions such as heart disease, hypertension, type II diabetes, sleep apnea, kidney disease, stroke, asthma, bone and joint damage, and multiple forms of cancer ([National Center for Health Statistics, 2016](#_ENREF_39)). Heart disease is the leading cause of death in American males and females, claiming 24.4% and 22.3% of all deaths, respectively ([CDC, 2019a](#_ENREF_7)). Greater chronic disease burden leads to increased mortality, worse quality of life, and higher health care costs ([Centers for Disease Control and Prevention, 2019a](#_ENREF_14)). The Centers for Disease Control and Prevention (CDC) estimates that medical care costs of obesity in the U.S. total $147 billion ([Centers for Disease Control and Prevention, 2019a](#_ENREF_14)).

CDC data show that 39.8% of adults in the United States are obese ([Centers for Disease Control and Prevention, 2019a](#_ENREF_14)). The CDC defines obesity by body mass index (BMI). BMI is a simple calculation of weight in kilograms divided by height squared in meters. Although BMI does not consider body composition (fat mass versus muscle mass), it is strongly correlated with body fat levels. BMI-for-age is a useful measure for youth populations because one can compare overweight and obesity rates for age cohorts across states, counties, or schools ([Gajanan and Fiorentino, 2019](#_ENREF_29)). Other obesity measures such as waist circumference and waist-to-hip ratio, which are widely used for adult populations to assess chronic disease risk, lack adequate reference data for youth and adolescent populations ([Harvard T.H. Chan School of Public Health](#_ENREF_31)).

Table 1. BMI weight status categories used by the CDC

|  |  |
| --- | --- |
| **Adult weight status category** | **BMI range** |
| Underweight | **≤ 18.5 kg/m²** |
| Normal or healthy weight | 18.5 – 24.9 **kg/m²** |
| Overweight | **25.0 – 29.9 kg/m²** |
| Class I obesity | **30.0 – 34.9 kg/m²** |
| Class II obesity | **35.0 – 39.9 kg/m²** |
| Class III obesity | **≥ 40.0 kg/m²** |
| **Child and adolescent (age 2-19) weight status category** | **BMI range for children of same sex and age** |
| Underweight | **BMI percentile < 5** |
| Normal or healthy weight | **5 ≤ BMI percentile < 85** |
| Overweight | **85 ≤ BMI percentile < 95** |
| Obese | **BMI percentile ≥ 95** |

([Centers for Disease Control and Prevention, 2018b](#_ENREF_12); [National Center for Health Statistics, 2016](#_ENREF_39))

Obesity-promoting lifestyle habits such as sedentarism and poor nutrition that children build early in life become more difficult to break as they age ([Centers for Disease Control and Prevention, 2018a](#_ENREF_11)). Currently, nearly one in five school age children and young people (age 6-19 years) in the United States has obesity. This figure has tripled since the 1970s. A myriad of factors contribute to obesity, with four of the top five being modifiable factors: genetics (non-modifiable), metabolism (how efficiently the body utilizes food for energy), short sleep duration, community and neighborhood design and safety, and eating and physical activity behaviors ([Centers for Disease Control and Prevention, 2018a](#_ENREF_11)). The American College of Sports Medicine (ACSM) defines physical activity as any bodily movement produced by the contraction of skeletal muscles that results in a substantial increase in caloric requirements over resting energy expenditure ([American College of Sports Medicine, 2019](#_ENREF_5)). *Table 2* demonstrates that obesity prevalence increases with age in the United States ([National Center for Health Statistics, 2016](#_ENREF_39)).

Table 2. American obesity prevalence rates by age group

|  |  |
| --- | --- |
| **Age group** | **Obesity prevalence rate** |
| WIC participants ages 2-4 | 13.9% |
| Children ages 10-17 | 15.3% |
| High school students  (includes children in the ages 10-17 range who are in high school) | 14.8% |
| Adults (ages 20+) | 39.6% |

([National Center for Health Statistics, 2016](#_ENREF_39))

Obesity is a serious public health concern for the United States because preschool children who are overweight or obese are five times more likely to be overweight or obese as adults than normal-weight preschool children. Obese adolescents have a 70% chance of remaining overweight or obese as adults. The greater the proportion of children and adolescents who have obesity, the higher the prevalence of early-onset, obesity-related chronic conditions in that population ([Centers for Disease Control and Prevention, 2013](#_ENREF_10)).

Although this paper focuses on physical activity as a vehicle to reduce obesity and chronic disease prevalence in youth and adults, it is important to recognize the role of the American diet as another major risk factor ([Centers for Disease Control and Prevention, 2019a](#_ENREF_14)). Most Americans consume more than the daily recommended amounts of saturated fats, sodium, added sugars, and overall calories, and less than the daily recommended servings of vegetables, fruits, dairy, and oils ([USDHHS & USDA, 2015](#_ENREF_56)). These eating patterns contradict the *Dietary Guidelines for Americans’* healthy eating pattern, lead to a chronic overconsumption of calories, and cause high rates of overweight and obesity ([USDHHS & USDA, 2015](#_ENREF_56)).

To address the school-aged population, the Healthy, Hunger-Free Kids Act (HHFKA) of 2010 mandated several reforms to better align the nutritional quality of school meals with the Dietary Guidelines for Americans. This involved stricter limitations on high-fat, high-sodium, and high-sugar foods and drinks, and greater access to vegetables, fruits, whole grains, and low-fat and fat-free milk for students ([Gearan & Fox, 2020](#_ENREF_30)). A recent study assessed the change in nutritional quality of meals in the National School Lunch Program (NSLP) and School Breakfast Program (SBP) from pre- to post-HHFKA implementation. Using the Healthy Eating Index 2010 assessment tool, the authors found that NSLP and SBP meals improved their scores from 58% to 82% of the maximum score and 50% to 71% of the maximum score, respectively ([Gearan & Fox, 2020](#_ENREF_30)). As schools have more time to expand implementation of HHFKA regulations and receive more support from the United States Department of Agriculture (USDA), the nutritional quality of school meals will likely continue to improve and have a desirable impact on weight status in youth.

The National Center for Education Statistics reports that there are more than 100,000 functioning elementary and secondary schools across the United States and District of Columbia public school system as of 2016 ([National Center for Education Statistics, 2019](#_ENREF_38)). Approximately nine out of every ten students in the U.S. – over 49.5 million students – are enrolled in public school. Private elementary and secondary schools enroll the remaining five million students ([National Center for Education Statistics, 2019](#_ENREF_38)). Private school policy is not addressed in this paper due to its relatively small reach and less government regulation compared to public school policy ([U.S. Department of Education, 2009](#_ENREF_53)). A change in public school policy has the potential to reach the vast majority of American youth. For example, less than a quarter (24%) of American school-aged children and adolescents, ages 6-17, engage in the recommended 60 minutes of daily moderate to vigorous physical activity ([Centers for Disease Control and Prevention, 2018c](#_ENREF_13)). A mandatory increase in school-based physical activity would give 49.5 million students greater opportunity to increase their physical activity levels, reduce their risks of overweight, obesity, chronic disease, and mortality, enhance their quality of life, and decrease health care costs.

Increased physical activity is also correlated with beneficial effects on cognitive development during early childhood (ages birth to five) and improved cognitive functioning and greater academic achievement in children ages five to 13 ([Carson et al., 2016](#_ENREF_6); [Donnelly et al., 2016](#_ENREF_25)). Children experience enhanced executive functioning skills, such as those related to attention and memory, as physical activity and aerobic fitness levels increase. Evidence also suggests that English language arts and mathematics are the two subjects where performance can be influenced the most by physical activity ([Committee on Physical Activity and Physical Education in the School Environment, 2013b](#_ENREF_23)).

The United States Department of Education (DOE) has no overarching laws or policies that mandate a minimum amount of physical education or physical activity in public schools. State governments have full authority over these policy decisions. President George W. Bush’s No Child Left Behind Act (NCLBA) of 2001 mandates annual standardized testing for all students in grades 3-8 in English language arts and mathematics ([Whitehouse & Shafer, 2017](#_ENREF_58)). Under the NCLBA, state and local educational agency eligibility to receive federal funding is contingent upon improvement in standardized test performance. Low-performing schools are particularly incentivized to achieve progress objectives so they can receive State Academic Achievement Awards ([U.S. Department of Education, 2002](#_ENREF_52)). Therefore, most state departments of education and local school districts allocated more resources to the tested subjects and fewer resources to physical education, recess, social studies, music, and arts programs ([Whitehouse & Shafer, 2017](#_ENREF_58)).

A national survey conducted by the Center on Education Policy (CEP) collected data on elementary school instructional time, separated by subject area, from the 2001-2002 and 2006-2007 school years ([McMurrer, 2008](#_ENREF_35)). The CEP found that over those five years, 58% of surveyed school districts increased elementary school instructional time for English language arts by an average of 141 minutes per week. Elementary mathematics instructional time increased in 45% of school districts by an average of 89 minutes per week. Simultaneously, 29% of school districts reduced their amounts of physical education or recess. Authors did not state whether the remaining 71% of surveyed schools experienced an increase in physical education or recess time or stayed the same. For districts that had reductions in physical education or recess time, the average decreases in minutes per week were 50 and 40 minutes, respectively ([McMurrer, 2008](#_ENREF_35)). Lack of uniform implementation of the NCLBA across school districts and states has contributed to the drastic inconsistencies in the existence, rigor, specificity, and enforcement of physical education policy across the U.S. ([Whitehouse & Shafer, 2017](#_ENREF_58)).

An analysis of public school physical activity legislation among states reveals a wide array of recess recommendations and requirements, physical education recommendations and requirements, and general activity recommendations and requirements. General activity includes both physical education classes and recess, plus any other physical activity opportunities that students have throughout the school day. ([Whitehouse & Shafer, 2017](#_ENREF_58)) The distinction between physical *education* and physical *activity* is important because the quantity of physical education class time may not translate directly to the same quantity of physical activity. Physical education classes often incorporate classroom lessons on topics such as sexual health, health-related career exploration, and drugs and alcohol, for which students are likely to be sedentary. However, physical education classes are an opportune time during the school day for students to be physically active. Thus, the focus of policy that aims to reduce the proportion of overweight and obese children should be on overall quantity and content of physical *activity.*

There are 13 states with physical *activity* requirements, either in terms of recess requirements or general physical activity requirements, as described in *Table 3* ([Whitehouse & Shafer, 2017](#_ENREF_58)).An additional 12 states have policy that recommends or encourages, but not requires, physical activity. For schools in those 12 states, it is the individual school’s choice whether or not to provide physical activity opportunities for students ([Whitehouse & Shafer, 2017](#_ENREF_58)).

Table 3. Public School Physical Activity and Recess Requirements by State

|  |  |  |
| --- | --- | --- |
| **State(s)** | **Requirement** | **Grade level(s)** |
| Virginia, Indiana | Daily recess, no specified minimum time | Elementary school |
| Tennessee | 90 minutes weekly of physical activity (equates to 18 minutes daily) | Grades K-8 |
| Arkansas | 90 minutes weekly of physical activity (equates to 18 minutes daily) | Grades K-6 |
| Missouri, Rhode Island, Connecticut | 20 minutes of daily recess | Elementary school |
| Iowa, South Carolina, Texas | 30 minutes daily or 150 minutes weekly of physical activity | Grades K-5 |
| Louisiana, North Carolina | 30 minutes daily or 150 minutes weekly of physical activity | Grades K-8 |
| Colorado | 600 minutes monthly of physical activity (equates to 30 minutes daily) | Elementary school |

([Whitehouse & Shafer, 2017](#_ENREF_58))

**Table 3 Continued**

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Figure 1. Maps of the states with recess or general activity requirements in public schools as of 2017

([Whitehouse & Shafer, 2017](#_ENREF_58))

As of 2017, 39 states have laws that require physical *education* in public elementary schools. Of those 39, only 19 states specify minimum time allotments of physical education that all students must fulfill ([Whitehouse & Shafer, 2017](#_ENREF_58)). This indicates discrepancies in quantity of physical education among the remaining 20 states, and among all states in the U.S. Also, more than half of U.S. states have various exemptions and caveats that allow students to forego mandatory physical education. For example, Arizona parents can withdraw their children from any physical education class or activity if they object to the content. Connecticut and Arkansas allow medical exemptions from physical education but offer no concrete details for what qualifies as a valid medical reason ([Institute of Medicine, 2013](#_ENREF_34)).

A screenshot of a cell phone

Description automatically generatedAbsenteeism in physical education class plays a role in the low overall physical activity level of American high school students. The CDC’s National Physical Activity Plan Alliance analyzed Youth Risk Behavior Survey data from 1991-2013 and found that half of all high school students reported no attendance in any type of physical education during that time period. For students who reported attending at least one day of physical education per week, the average number of days per week decreased from 4.64 in 1991 to 3.64 in 1995, and then stabilized at that value through 2013 ([Physical Activity Plan Alliance, 2016](#_ENREF_46)). When stratified by grade level, the data show the largest decrease in the proportion of ninth grade students who attended at least one day per week of physical activity: from 75.8% in 1991 to 64.3% in 2013. Data from tenth grade students represented a similar, though not significant, trend ([Physical Activity Plan Alliance, 2016](#_ENREF_46)). These statistics are problematic because only 27% of high school students get the CDC-recommended 60 minutes of physical activity per day ([Centers for Disease Control and Prevention, 2019f](#_ENREF_19)). Greater attendance and frequency in physical education classes would give high school students more opportunities to achieve 60 minutes of daily physical activity ([Centers for Disease Control and Prevention, 2019f](#_ENREF_19)). *Figure 2* shows that higher grade levels have significantly fewer physical education requirements compared to lower grade levels which also contributes to physical inactivity in high school students.

Figure 2. Percentage of schools with required physical education by grade level

([Centers for Disease Control and Prevention, 2019f](#_ENREF_19))

Several national organizations such as the CDC, the American Academy of Pediatrics (AAP), the National Association for Sport and Physical Education (NASPE), National Association of Elementary School Principals (NAESP), and National Association of State Boards of Education (NASBE) have published recommendations to influence policy that promotes increased physical activity in schools.

The AAP is a national organization of over 67,000 board-certified pediatric physicians whose mission is to attain optimal physical, mental, and social health and well-being for all infants, children, adolescents, and young adults ([American Academy of Pediatrics, 2020](#_ENREF_3)). The AAP advocates for policies that promote physical activity and obesity prevention as methods to reduce chronic disease risk and improve the health of youth. The AAP and CDC suggest 60 minutes of daily physical activity for youth ([American Academy of Pediatrics, 2017](#_ENREF_2)). To achieve that activity threshold, all of the aforementioned organizations recommend at least 20 to 40 minutes of daily recess for all elementary school students. Furthermore, these organizations agree that students should not be denied recess time as a punitive measure because less recess time leads to fewer opportunities for students to achieve their 60 minutes of activity ([American Academy of Pediatrics, 2017](#_ENREF_2)). Consequently, the Rhode Island General Assembly passed a law in 2016 that both mandates 20 minutes of daily recess for grades K-6 and prevents teachers and administrators from withholding recess from students as a form of punishment ([Whitehouse & Shafer, 2017](#_ENREF_58)).

Recess indicates unstructured, but supervised, play. Physical education is curriculum-based and involves more teacher instruction than recess does ([Whitehouse & Shafer, 2017](#_ENREF_58)). Whitehouse and Shafer have argued that elementary schools should have separate physical education and recess periods that do not replace or overlap each other because both present opportunities for physical activity and are important to a child’s accumulation of physical activity minutes. These physical activity periods break up a largely sedentary school day and are associated with several benefits to student learning: improved concentration, less disruptive behavior, improved motivation and engagement in lessons, and higher grades and test scores ([Centers for Disease Control and Prevention, 2019b](#_ENREF_15)).

## Monitoring and Assessing Physical Activity and Fitness in Schools

As there are no federal laws that require a minimum amount of physical activity in schools, there is no mandatory monitoring system in place to measure students’ physical activity or fitness levels. However, there are evidence-based programs that several states and school districts have adopted to assess students’ health-related fitness. As of 2012, schools and school districts in 14 states, including District of Columbia, report fitness assessment data to their state health department or education agency ([Presidential Youth Fitness Program, 2019](#_ENREF_47)).

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Figure 3. Elementary, middle, and high schools that require or recommend student fitness testing and reporting of results to the state or school district

([Presidential Youth Fitness Program, 2019](#_ENREF_47))

The Health and Medicine Division of the National Academies (HMD) provides ample evidence and support for increased physical education and fitness assessments in schools. The HMD, known as the Institute of Medicine before 2016, is a private, non-profit institution that generates reliable research and objective analysis of health problems to assist in policy decisions. The HMD provides multidisciplinary advising to federal agencies, independent organizations, and the U.S. Congress on health and medical topics, including school-based physical education and the important role it plays in combating the childhood obesity epidemic ([National Academy of Sciences, 2018](#_ENREF_37)).

The book, *Fitness Measures and Health Outcomes in Youth,* authored by members of the National Academies’ HMD, argues that student fitness testing in schools is essential for tracking fitness levels over time, monitoring chronic disease risk, setting healthy and appropriate fitness goals, and adjusting physical education curricula to meet the dynamic needs of all students ([Institute of Medicine, 2012](#_ENREF_33)). The authors recommend that schools administer a fitness test battery that includes, at minimum: standing height and weight measurements to calculate BMI (an indicator of body composition), a shuttle run (to measure cardiovascular endurance), handgrip strength test (to measure upper-body musculoskeletal strength), and standing long jump test (to measure lower-body musculoskeletal power and strength). These tests are valid, reliable, practical, and feasible to administer in a school environment, and directly related to one’s physical health ([Institute of Medicine, 2012](#_ENREF_33)). It is The HMD’s opinion that there is insufficient evidence to link other aerobic and musculoskeletal strength and endurance tests, such as the one-mile or timed run, push-up, modified pull-up, and curl-up tests, to child or adolescent health. Therefore, these tests should be supplemental, not core, components of school-based fitness assessments ([Institute of Medicine, 2012](#_ENREF_33)).

The 2016 Shape of the Nation report, published by the Society of Health and Physical Educators (SHAPE), urges schools to abide by five national standards for grades K-12 physical education ([Society of Health and Physical Educators, 2016](#_ENREF_50)). As a part of schools’ accountability to these standards, SHAPE recommends that schools self-assess their programming using the CDC School Health Index. This index includes items that measure quantity and quality of physical education, activity, and fitness. Specifically, SHAPE suggests the implementation of the Presidential Youth Fitness Program (PYFP) and FITNESSGRAM ([Society of Health and Physical Educators, 2016](#_ENREF_50)). The PYFP provides physical educators with resources to teach fitness education lessons, communication tools to promote physical activity and fitness assessment, and strategies for how to acknowledge students’ fitness and activity achievements ([Presidential Youth Fitness Program, 2019](#_ENREF_47)). FITNESSGRAM is a test battery that includes several test protocols across the five components of health-related fitness: aerobic capacity, body composition, flexibility, muscular strength, and muscular endurance. Physical educators can choose the most relevant and appropriate protocols from each of the five components ([The Cooper Institute, 2014](#_ENREF_51)). This aligns with the Institute of Medicine’s parameters for fitness assessment. The Physical Activity Plan Alliance, The Shape of the Nation report, PYFP, and FITNESSGRAM are all endorsed by the CDC or its affiliates.

# Methods

I acquired the majority of obesity and physical activity data and other relevant information from the Centers for Disease Control (CDC). As a part of the U.S. Department of Health and Human Services, the CDC and its subsidiaries (National Centers for Education Statistics and Health Statistics and Healthy People 2020) are valid and reliable sources for national and state-level data and information. Direct links from the CDC Healthy Schools, CDC Overweight & Obesity, and CDC Vital Signs web pages led me to associated organizations and programs that promote school-based physical activity, physical education, and advocate for related policy change.

After using data from the CDC, DOE, and Department of Health (DOH), and several other governmental agencies and research organizations to demonstrate the issues of childhood obesity, physical inactivity, and inadequate school-based physical education as public health problems, I found more detailed information on Pennsylvania school-age youth from the PDE and DOH websites, the PA School Code, The Robert Wood Johnson Foundation, The Center for Rural Pennsylvania, and the Joint State Government Commission of the General Assembly of Pennsylvania’s report on childhood obesity ([Pennsylvania Department of Education, 2019b](#_ENREF_43)). These entities were my primary sources of data because most school data reporting and analysis, and education legislation occurs at the state level ([U.S. Department of Education, 2020](#_ENREF_54)). The Center for Rural Pennsylvania’s and Joint State Government Commission’s reports on childhood obesity describe how weight status and other child health indicators are influenced by demographics and social determinants of health. These reports provided a comprehensive analysis of weight status disparities and identifies sub-groups of Pennsylvania youth who experience disproportionately high rates of overweight and obesity ([Advisory Committee on Childhood Obesity, 2014](#_ENREF_1); [Gajanan and Fiorentino, 2019](#_ENREF_29)).

I conducted a Google Scholar search with the terms, “physical education”, “childhood obesity”, and “Pennsylvania”, connected with “and” to only capture articles that included all three terms. A second Google Scholar search included the terms, “physical activity”, “wellness policy”, and “Pennsylvania”, connected with “and”. I limited the publication date range for both searches to 2015-2020. While these searches yielded hundreds of articles, the large majority did not pertain to Pennsylvania (the abbreviation “PA” was frequently used by authors to reference “physical activity”, not the state of Pennsylvania). I selected abstracts that focused on school-based, physical education intervention, policy, and evaluation in Pennsylvania. From this review, I identified two specific studies that met my criteria of analyzing and evaluating the implementation of evidence-based amounts of physical education and activity in Pennsylvania schools. Both studies examined school policies that were supported by the Pennsylvania DOH, which satisfied my parameter of using evidence-based practice in physical education and activity in schools.

# A close up of a map Description automatically generatedResults

Figure 4. Changes in obesity prevalence among children aged 2-4 years enrolled in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), by WIC state or territory agency in the United States, 2010-2016

([CDC, 2019b](#_ENREF_8))

*Figure 4* shows that Pennsylvania is one of 41 WIC state or territory agencies that experienced a statistically significant decrease in obesity prevalence in WIC participants, aged 2-4, from 2010 to 2016. Three states reported a significant increase and 12 states and territories reported no significant change in obesity prevalence within this population. Pennsylvania’s degree of change is small within this population (from 12.8% obesity in 2010 to 12.2% in 2016) but it indicates progress ([Centers for Disease Control and Prevention, 2019e](#_ENREF_18)). However, the Pennsylvania WIC participants’, aged 2-4, obesity rate in 2008 was 11.6%. As of 2016, the obesity rate for this population was 12.2%, still above the 2008 rate ([Centers for Disease Control and Prevention, 2013](#_ENREF_10)). As a combination statistic, obesity and overweight affect 31.7% of Pennsylvania children and youth compared to 31.2% of children and youth in the U.S. overall ([National Physical Activity Plan Alliance, 2018](#_ENREF_40)).

Table 4. Obesity rates in Pennsylvania by age group

|  |  |  |
| --- | --- | --- |
| **Age group** | **Obesity prevalence rate** | **Rank among states** |
| WIC participants ages 2-4 | 12.2% (2016) | 39/51 |
| Children ages 10-17 | 13.5% (2019) | 36/51 |
| High school students  (includes children in the ages 10-17 range who are in high school) | 14.0% (2017) | 14/50 |
| Adults (ages 20+) | 30.9% (2018) | 25/51 |

([Robert Wood Johnson Foundation, 2019](#_ENREF_48))

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Figure 5. The adult obesity rate in Pennsylvania from 1990 to 2018

([Robert Wood Johnson Foundation, 2019](#_ENREF_48))

*Table 4* shows that obesity prevalence in Pennsylvania increases with age. Pennsylvania children ages 2-4 who are enrolled in WIC (The Special Supplemental Nutrition Program for Women, Infants, and Children) are ranked in position 39 out of 51 states for obesity prevalence ([Robert Wood Johnson Foundation, 2019](#_ENREF_48)). This demonstrates that Pennsylvania children experience less obesity than children in most other states prior to entering traditional schooling at ages four or five. However, the Pennsylvania DOH reports that they failed to achieve both Healthy People (HP) 2020 objectives related to childhood and adolescent obesity. The percent of students with obesity in grades K-6 is 16.4%, while the HP 2020 objective was 15.7% or less by 2020. For students in grades 7-12, 18.9% have obesity and the objective was 16.1% or less by 2020 ([Pennsylvania Department of Health, 2020](#_ENREF_45)). *Figure 5* shows that adult obesity in Pennsylvania has more than doubled, from 13.7% in 1990 to 30.9% in 2018 ([Robert Wood Johnson Foundation, 2019](#_ENREF_48)). Therefore, childhood overweight and obesity are public health concerns of greater urgency for Pennsylvania compared to much of the U.S due to their dangerous, causal effects on the increasing adult obesity rate.

Physical inactivity – defined as engaging in an insufficient amount of physical activity – is a major risk factor for overweight and obesity ([World Health Organization, 2020](#_ENREF_59)). Hence, it is no surprise that Pennsylvania youth and adults experience physical inactivity at high rates. Based on self-reported data from the 2015-2018 Behavioral Risk Factor Surveillance System, 24.8% of adult Pennsylvanians are physically inactive ([Centers for Disease Control and Prevention, 2020a](#_ENREF_20)). Less than half (42.4%) of Pennsylvania children and youth are physically active on five or more days per week ([National Physical Activity Plan Alliance, 2018](#_ENREF_40)). According to the 2012 Pennsylvania State Nutrition, Physical Activity, and Obesity profile, 27.7% of youth under age 18 got the CDC-recommended 60 minutes of physical activity on each of the seven days prior to taking the survey ([CDC Division of Nutrition, 2012](#_ENREF_9)).

In 2013, the Joint State Government Commission of the General Assembly of Pennsylvania created the Advisory Committee on Childhood Obesity. The Joint State Government Commission is a non-partisan, bicameral agency for research and policy development for the General Assembly of Pennsylvania. The multidisciplinary Advisory Committee’s members include representatives from the Department of Agriculture, Department of Education, Department of Health, a licensed dietitian, a pediatrician, a health and physical education teacher, a school nurse, other child health and nutrition specialists, and leaders of non-profit and community organizations that promote healthy living ([Advisory Committee on Childhood Obesity, 2014](#_ENREF_1)). The Advisory Committee released a report in 2014 that details the state of childhood overweight and obesity in Pennsylvania, federal and state legislation designed to reduce childhood overweight and obesity, school-based initiatives, and policy recommendations.

The Advisory Committee found a rural-urban disparity in childhood overweight prevalence in Pennsylvania. Rural school districts in Pennsylvania have higher rates of students that are overweight, and these districts’ proportions of overweight students increase faster than those of urban districts ([Advisory Committee on Childhood Obesity, 2014](#_ENREF_1)). A study by The Center for Rural Pennsylvania from 2005-2016 found that the average rural and urban school district rates for students in grades K-6 with overweight were 19% and 16%, respectively. The same trend applied to students in grades 7-12: average overweight rates were 21% in rural districts and 17% in urban districts ([Gajanan and Fiorentino, 2019](#_ENREF_29)).

This rural-urban obesity disparity is due to two main factors. First, rural areas have more food deserts than urban areas. Food deserts are low-income census tracts where a substantial number or share of residents (a minimum of 500 people or 33% of the tract’s population) has low access to a supermarket or large grocery store. A low-income census tract is a tract with a poverty rate of at least 20% or a tract where the median family income is no greater than 80% of the median family income in that metropolitan area or state (if the tract is not located in a metropolitan area). Low access is defined as being more than one mile from a healthy food outlet in urban areas and more than ten miles from a healthy food outlet in rural areas ([Economic Research Service, 2010](#_ENREF_26)). Food deserts have higher percentages of youth who experience economic disadvantage and overweight or obesity compared to non-food deserts ([Advisory Committee on Childhood Obesity, 2014](#_ENREF_1)). Therefore, low-income families in rural food deserts are more likely to struggle with access to healthful food compared to higher-income or urban-dwelling families. In addition to being financially restricted, these families are also geographically restricted from healthful food outlets due to limited or nonexistent public transportation in rural areas. Second, strict standards and increased emphasis on English language arts and mathematics by the NCLBA redirected school resources away from physical education ([Advisory Committee on Childhood Obesity, 2014](#_ENREF_1)). Less physical education results in less opportunity for school-based physical activity. The combination of an unhealthy diet and a low level of physical activity increases the likelihood of overweight and obesity ([Centers for Disease Control and Prevention, 2019f](#_ENREF_19)).

Certain demographic and economic characteristics are strongly correlated with student weight status in Pennsylvania. In urban school districts, the proportion of the population that has not graduated high school has a strong, positive correlation to the proportion of overweight students in that district. Market value per capita and proportion of the population with a bachelor’s degree or higher are also strongly and positively correlated to overweight status in urban districts ([Gajanan and Fiorentino, 2019](#_ENREF_29)). In rural districts, the proportion of overweight students is strongly and negatively correlated to mean and median gross rent. Rural districts are generally poorer than urban districts. The median household income is $4,800 less, and per capita income $8,100 less, in rural districts than in urban districts ([Gajanan and Fiorentino, 2019](#_ENREF_29)). However, families in urban districts have higher usage rates than rural families of public assistance programs such as Supplemental Security Income (SSI), cash public assistance benefits, and Supplemental Nutrition Assistance Program (SNAP), especially among districts with the highest proportion of overweight students. This is likely due to the significantly higher number and density of SNAP retailers in urban areas than rural areas ([Gajanan and Fiorentino, 2019](#_ENREF_29)).

The Advisory Committee sees schools as, *“uniquely situated to combat childhood obesity”* because children spend approximately 2,000 hours per year, and consume half of their daily caloric intake, in schools. They cite early childhood and school age interventions as the best opportunities for success in curbing the upward trends in overweight and obesity, and promoting physical activity, in Pennsylvania adults and youth ([Advisory Committee on Childhood Obesity, 2014](#_ENREF_1)).

## Public School Physical Education Policy in Pennsylvania

Title 22, Chapter 4, of The Pennsylvania State Board of Education Curriculum Regulations states the health and physical education requirements for Pennsylvania public schools. Current policy is vague. Recess is not required for any grade level. Chapter 4, § 4.21, § 4.22, and § 4.23, require elementary, middle, and high schools to offer planned instruction in the areas of physical education and lifetime physical activities for every student. Lifetime physical activities are types of physical activities such as outdoor recreation, fitness activities, walking, dance, and sports, that promote a healthy lifestyle for people of all ages ([Utah Education Network, 2016](#_ENREF_57)). Curricula and instruction must be adaptable for students with disabilities. The PA School Code allows the planned instruction to be a separate course during the school day or included within another course or activity. There are no mandatory minimums for time or frequency of physical education or physical activity. In Pennsylvania, 19.6% of public school students attend physical education class five days per week compared to 29.9% in the U.S. overall ([National Physical Activity Plan Alliance, 2018](#_ENREF_40)).

As for all other academic disciplines, such as mathematics, science, social studies, and language arts, The PA School Code calls for physical education curricula and instruction to be standards-based. The state allows local districts to choose their own curricula as long as they align with state standards ([NASPE, 2010](#_ENREF_36)). The Academic Standards for Health, Safety, and Physical Education are divided into five categories: Concepts of Health, Healthful Living, Safety and Injury Prevention, Physical Activity, and Concepts, Principles and Strategies of Movement. Each category contains a series of items that students should know and be able to do upon completion of third, sixth, ninth, and twelfth grade ([Pennsylvania Department of Education, 2002](#_ENREF_41)). It is at each district’s discretion how much time and instruction is sufficient for students to achieve proficiency in the Academic Standards for Health, Safety, and Physical Education ([Commonwealth of Pennsylvania, 2016](#_ENREF_24)). Unlike the other academic disciplines, there is no state-mandated physical education assessment to measure students’ knowledge and abilities against the standards. Local school districts must design and implement their own assessment tools. Physical education is also unique in that the state does not require a minimum number of credits for graduation. Local districts may either abide by the minimum physical education requirements detailed in the Curriculum Regulations or create their own additional requirements that surpass state minimums. To qualify for graduation, students must complete all courses and locally established assessments, produce a culminating project, and have passing grades ([Pennsylvania Department of Education, 2019b](#_ENREF_43)).

Exemptions, waivers, and substitutions for physical education classes are not permitted in Pennsylvania public schools. Students cannot receive physical education credit by participating in other classes or extracurricular activities such as interscholastic sports teams, marching band, or Junior Reserve Officers’ Training Corps (JROTC). Although these endeavors are physical in nature, physical activity is only one component of physical education. Cyber Charter School students are eligible to take online physical education courses for credit as long as the courses meet the state and national standards ([NASPE, 2010](#_ENREF_36)).

Despite the lack of rigid, state-wide physical education policy in the Pennsylvania School Code, multiple school wellness policies have attempted to address physical activity, childhood obesity, and school nutrition in varying capacities. The 2004 Child Nutrition and WIC Reauthorization Act required all school districts with federally funded meal programs to develop and implement a wellness policy that included physical activity and nutrition programming. The Healthy, Hunger-Free Kids Act of 2010 (HHFKA) articulated the minimum components of a school wellness policy: documented goals for all wellness-related programming, all foods on school grounds be in alignment with USDA nutritional and meal pattern guidelines, one school official be appointed to ensure the school’s compliance to the wellness policy, and opportunities for all stakeholders to participate in reviewing and updating the policy ([Advisory Committee on Childhood Obesity, 2014](#_ENREF_1)). The Pennsylvania School Board Association (PSBA) created a wellness policy template for local districts to use as a guide to assess their compliance to the HHFKA standards ([Pennsylvania Department of Education, 2020](#_ENREF_44)). There is no publicly available data that directly links the wellness policy requirements of the Child Nutrition and WIC Reauthorization Act or the HHFKA to increased school-based physical activity or childhood overweight and obesity rates.

A 2017 evaluation study by Francis et al. adds value to this analysis by conveying the importance of the gap between policy formation and implementation. The Pennsylvania DOH and researchers from Pennsylvania State University evaluated 40 Pennsylvania public schools with high obesity prevalence (>24%) to determine the effect of wellness policy on physical activity implementation ([Francis et al., 2017](#_ENREF_28)). The analysis found that most schools’ wellness policies either contained no mention of physical activity or contained physical activity items with weak or vague language. The study used a validated self-assessment tool from the Alliance for a Healthier Generation’s Healthy Schools Program (HSP) to reveal that most schools’ physical activity practices are either not in place or remain under development. This is problematic because there was a strong, positive correlation (*r* = 0.92, *P* < 0.001) between the existence of explicit policy items and the degree of implementation ([Francis et al., 2017](#_ENREF_28)). The HSP is a national program, founded by the American Heart Association and the Clinton Foundation, that has helped over 44,500 schools make healthy changes using their tools and resources ([Healthy Schools Program, 2020](#_ENREF_32)). The authors concluded that most districts had insubstantial physical activity policy which lead to a limited degree of policy implementation and low potential to impact physical activity, overweight, and obesity outcomes in students ([Francis et al., 2017](#_ENREF_28)).

In 2006, the Secretaries of Education, Health, and Agriculture created the Interagency Coordinating Council for Child Health, Nutrition, and Physical Education (ICCCHNPE). The Council was charged with creating, revising, and publishing the Pennsylvania Child Wellness Plan. The Council was to advise schools on topics such as nutritional guidelines for food and beverages sold in schools, nutrition and physical education curriculum, local wellness policies, and allocation of any federal funds that may be available to schools. Although the ICCCHNPE appeared to be a step toward improving and streamlining school-based wellness policies throughout the state, it has not published what they intended to be an annual Child Wellness Plan since the 2009-2010 school year. Act 14, §1422.2(a) of Pennsylvania Law directs the Secretary of Education to appoint a chairman for the ICCCHNPE, but there is currently no chairman and the ICCCHNPE has not met in several years ([Advisory Committee on Childhood Obesity, 2014](#_ENREF_1)).

In 2009, the Pennsylvania DOH developed the Active Schools program. Active Schools requires middle schools to have a minimum of 30 minutes of daily physical education. In a quasi-experimental study, Erfle and Gamble analyzed the effects of the Active Schools program on physical fitness and weight status in a selection of Pennsylvania middle schools during the 2010-2011 academic year ([Erfle & Gamble, 2015](#_ENREF_27)). The intervention group consisted of students from 30 Active Schools middle schools that required 30 minutes of daily physical education for every student. The control group was students from nine middle schools that did not participate in the Active Schools program but had similar weight status profiles to the schools in the intervention group ([Erfle & Gamble, 2015](#_ENREF_27)).

Over the course of the 2009-2010 academic year, the intervention group experienced significant improvements on weight status (measured by BMI) and all three physical fitness assessments: one-mile run, push-ups, and curl-ups, whereas the control group only saw improvements on push-ups and curl-ups. The Active Schools intervention was most impactful for at-risk students (BMI percentile **≥ 85). Multiple linear regression analysis approximated the effects of daily physical education on BMI percentile for at-risk females to be -1.2 kg/m², 95% confidence interval (CI) (-1.9, -0.5), and for at-risk males to be -0.8 kg/m², 95% CI (-1.5, -0.1). The authors concluded that 30 minutes of daily physical education in schools can improve weight status and physical fitness in middle school adolescents, particularly those at risk for obesity. The authors indicated that schools should offer daily physical activity as a means to reduce childhood obesity and encourage the development of active lifestyle habits (**[**Erfle & Gamble, 2015**](#_ENREF_27)**).**

# Discussion

The fact that physical inactivity is a risk factor for overweight and obesity is well understood and heavily documented in the literature ([Centers for Disease Control and Prevention, 2019a](#_ENREF_14)). Nevertheless, methods by which youth increase their physical activity, and thus reduce their future risk for obesity and chronic disease, are highly contested. Using public school policy as a mechanism for increasing physical activity in youth has potential to be a highly efficient method to affect change because approximately 90% of students (nearly 50 million) are enrolled in U.S. public schools ([National Center for Education Statistics, 2019](#_ENREF_38)). There are few, if any, other systems in the United States that reach as many of the nation’s youth or are as well-established and deeply ingrained in American life as the public education system. However, many school districts face financial, administrative, personnel, and time barriers to increasing physical education and activity during the school day ([Committee on Physical Activity and Physical Education in the School Environment, 2013a](#_ENREF_22)).

Increasing physical activity in youth is an upstream approach to improving the lifelong wellbeing of the next generation of adults. I strongly agree with the Pennsylvania Advisory Committee on Childhood Obesity’s evidence-based opinion:

“Early childhood and school age interventions provide the best opportunities for success in curbing national and state childhood obesity prevalence, which, in turn, stands the best chance to lower adult obesity rates in the future.” ([Advisory Committee on Childhood Obesity, 2014](#_ENREF_1))

The fact that public schools’ federal funding is largely contingent upon standardized test scores creates barriers to increasing school-based physical activity. Schools devote the majority of their time to teaching mathematics and English language arts because the NCLBA requires testing for these core academic disciplines. The pressure to meet or exceed NCLBA requirements causes schools to allocate funding, teacher training, equipment and materials, facilities, and other resources towards the tested subjects and away from physical education ([Committee on Physical Activity and Physical Education in the School Environment, 2013a](#_ENREF_22)). This is problematic because declines in childhood overweight and obesity rates can lead to a physically and mentally healthier adult population and schools are doing their students a disservice if they don’t take a leading role in this effort ([Centers for Disease Control and Prevention, 2019a](#_ENREF_14)).

A portion of the PDE Mission states:

“…every learner has access to a world-class education system that academically prepares children and adults to succeed as productive citizens…by ensuring that technical support, resources, and optimal learning environments are available for all students, whether children or adults.” ([Pennsylvania Department of Education, 2019a](#_ENREF_42))

The greatest motive for reducing childhood obesity is to prevent adult obesity and the onset of weight-related chronic conditions (hypertension, type II diabetes, stroke, heart disease, kidney disease, sleep apnea, asthma, joint and bone damage, and several types of cancer). These conditions are often debilitating and contribute to high medical costs and a lesser quality of life ([Centers for Disease Control and Prevention, 2019a](#_ENREF_14)). Chronic disease and low quality of life are not conducive to the PDE’s mission of developing productive citizens. Adults with obesity experience premature disability and contribute to workplace absenteeism (missing work due to obesity-related health reasons) and presenteeism (reduced productivity while at work), which in turn, lead to decreased overall productivity ([Centers for Disease Control and Prevention, 2019a](#_ENREF_14)).

In addition to the more obvious reduction of chronic disease burden, an increase in physical activity and decrease in childhood obesity can also lead to higher self-esteem, less exposure to bullying, better academic performance, greater future human capital consumption, and improved overall psychological wellbeing ([Gajanan and Fiorentino, 2019](#_ENREF_29)). The PDE’s mission to cultivate *optimal learning environments* should refer to environments where children are mentally well, less likely to be bullied, perform better academically, and foster their potential to be high future contributors to the economy.

Childhood overweight and obesity are of particular concern for Pennsylvania youth. Although Pennsylvania ranks 36 out of the 50 states for obesity in children ages 10-17 – meaning that 35 other states have higher childhood obesity rates – there are certain demographic categories of youth who are experiencing overweight and obesity at increasing rates, or at already disproportionately high rates, in Pennsylvania ([Gajanan and Fiorentino, 2019](#_ENREF_29)). For example, students in rural school districts have consistently higher rates of overweight and obesity, by an average of three percentage points across all grade levels, compared to students in urban districts. From 1990 to 2016, the number of Pennsylvania students enrolled in rural school districts has increased by ten percent, while the number of students in urban districts has only grown by six percent over the same time period ([Gajanan and Fiorentino, 2019](#_ENREF_29)). If rural school districts continue to grow faster than urban districts, and rural students continue to experience less food access, worse transportation, and lower household income than their urban counterparts, the rural-urban disparity in overweight and obesity rates is at risk for widening in coming years.

The obesity rate among all Pennsylvania public high school students has increased by 2% since 2009, from 12% to 14% ([Gajanan and Fiorentino, 2019](#_ENREF_29)). *Figure 6* shows an increase in at-risk and overweight students in grades 7-12, from 35.2% in 2005 to 37.5% in 2016. It is important to note that in *Figure 6,* Gajanan and Fiorentino classify at-risk students as those who have a BMI between the 85th and 95th percentiles and overweight students as those who have a BMI above the 95th percentile. All other references in this document to weight status category (i.e., normal or healthy weight, overweight, and obese) are in respect to *Table 1*, where overweight is defined as a BMI between the 85th and 95th percentiles and obese is defined as any BMI beyond the 95th A screenshot of a cell phone

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Figure 6. Average percentage of at-risk and overweight Pennsylvania students, grades 7-12, from 2005-2016 ([Gajanan and Fiorentino, 2019](#_ENREF_29))

## Policy Proposal

The 2016 *Shape of the Nation* Report offers several policy solutions to improve school-based physical education and thus increase physical activity in the school-aged population. The PDE should adopt the following recommendations from that report:

1. **The PDE shall adopt SHAPE national physical activity standards.** 
   1. School districts must incorporate, during normal school hours, a minimum of 150 minutes of weekly physical activity in elementary schools and 225 minutes of weekly physical activity in middle and high schools. This minimum requirement should be supplemented with other physical activity opportunities throughout the school day so school-aged children can achieve the nationally recommended 60 minutes of moderate to vigorous activity per day ([American Academy of Pediatrics, 2017](#_ENREF_2); [American College of Sports Medicine, 2018](#_ENREF_4); [Society of Health and Physical Educators, 2016](#_ENREF_50)).
   2. Schools may increase their physical activity programming to achieve the required amounts of physical activity, detailed in part 1.a., through a combination of physical education class time, physical activity breaks, and recess periods throughout the school day, with these minimum requirements:
      1. All students of all grade levels must have at least one physical activity break in the morning and one in the afternoon, daily, for a minimum of 10 minutes each.
      2. No period of regularly scheduled school-based physical activity may be withdrawn from a student as a form of punishment.
   3. Necessary funds for part 1.a. must be included in the annual school district budget.
2. **Pennsylvania public schools shall use the FITNESSGRAM®** **test battery as a comprehensive, standardized method to assess student fitness.** 
   1. The FITNESSGRAM® test battery is a publicly available assessment tool that evaluates students on a variety of aerobic, muscular strength and endurance, flexibility, and body composition metrics ([The Cooper Institute, 2014](#_ENREF_51)).
   2. Schools may select which components of the FITNESSGRAM® to use based on the capacities and abilities of the students and available equipment.
3. **School districts shall be accountable for the overall quantity, quality, and outcomes of physical education and physical activity programming.**
   1. School districts submit an annual report to the PDE that documents each school’s physical education and physical activity programming, including average FITNESSGRAM® results by grade level ([Society of Health and Physical Educators, 2016](#_ENREF_50)).

These policy recommendations align with the Pennsylvania Childhood Obesity Prevention Advisory Committee’s suggestions for physical education and school-based physical activity. I agree with the Advisory Committee’s recommendation for the PDE to classify physical education as a *core* subject as a means to ensure it receives the same degree of consideration and resources as the current core subjects of English language arts, mathematics, and the sciences. The Advisory Committee also calls for schools to provide physical education for all students, grades K-12, every year. Specifically, elementary and secondary schools should aim to provide physical education for 150 minutes per week and 225 minutes per week, respectively. Daily, schools should make a reasonable effort to give students opportunities to achieve 30 minutes of moderate to vigorous-intensity physical activity ([Advisory Committee on Childhood Obesity, 2014](#_ENREF_1)).

The Advisory Committee emphasizes the importance of family involvement and community engagement in physical activity by calling schools to action in the following ways:

* Schools should make efforts to educate parents and guardians about how to encourage healthy habits at home.
* Schools should use their spheres of influence to initiate and develop partnerships with community organizations that endorse physical activity and wellness for all.
* Schools should consider input from stakeholders such as families and community leaders when developing and implementing wellness policies, practices, and programs ([Advisory Committee on Childhood Obesity, 2014](#_ENREF_1)).

## Barriers to Physical Activity

Becoming more physically active is likely to have fewer barriers to action compared to other healthy lifestyle habits. For example, healthy eating is less accessible to people who have low incomes, live far from food outlets, and have unreliable transportation ([Seguin, Connor, Nelson, LaCroix, & Eldridge, 2014](#_ENREF_49)). Smoking cessation, an incredibly beneficial health decision, is also inherently more difficult than participating in more physical activity because it involves breaking a dependency on a highly addictive substance (nicotine). The majority of Americans can engage in aerobic activities such as walking or jogging, bodyweight muscular strength exercises, and range-of-motion exercises to maintain or improve flexibility at any time, any place, and at no cost.

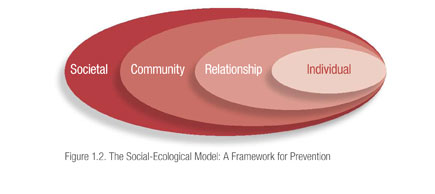
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Figure 7. The social ecological model

([Centers for Disease Control and Prevention, 2019d](#_ENREF_17))

The CDC’s social ecological model provides a framework for identifying and analyzing potential barriers to increasing physical activity. On an individual level, some potential and perceived barriers to physical activity are perceived stigma of using active transportation (biking and walking), inability to afford a fitness facility membership, lack of education on how to incorporate physical activity into daily life, lack of skill, and lack of motivation to act and maintain the behavior change ([Centers for Disease Control and Prevention, 2020b](#_ENREF_21); [Seguin et al., 2014](#_ENREF_49)).This is why it is important for children to receive adequate physical education and plenty of physical activity opportunities, starting from a young age. Health habits are more likely to transition into adulthood when people make them early in life ([Centers for Disease Control and Prevention, 2019c](#_ENREF_16)).Additionally, physical activity is a health behavior that can be easily modified to account for aging and varying fitness levels ([U.S. Department of Health and Human Services, 2018](#_ENREF_55)).

Social support is an interpersonal facilitator to physical activity because it keeps people accountable and emotionally invested in the activity over time ([U.S. Department of Health and Human Services, 2018](#_ENREF_55)). Therefore, lack of social support can act as a barrier. Community and societal barriers to physical activity mostly involve the built environment. Rural Pennsylvanians were part of the sample group in a 2014 study that found geographic isolation, lack of accessible recreation facilities, unsafe traffic conditions for active transport, and competition with activities that promote sedentary time (watching television, using the computer, reading, etc.) to be their main barriers to physical activity ([Seguin et al., 2014](#_ENREF_49)). Any interventions, school-based or otherwise, that aim to increase physical activity should attempt to ameliorate as many individual, relational, community, and societal barriers to change as possible.

# Conclusion

Physical activity interventions are highly upstream approaches to public health that can positively impact downstream health outcomes such as chronic disease morbidity and mortality and quality of life. Interventions that are imbedded in public school policy are uniquely positioned to reach nearly fifty million children, all of whom are susceptible to adopting sedentary, unhealthy lifestyles that have been modeled by previous generations. It is critical for school-age children to develop a habit of physical activity so they can maintain that habit throughout the lifespan. A more physically active population will also reduce the burden to the nation’s healthcare system and economy. Policymakers and education professionals should consider these public health benefits of increased physical activity when developing public school policy and making decisions regarding the allocation of school resources.

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