STRENGTH AND COMPREHENSIVENESS OF MANDATED SCHOOL DISTRICT WELLNESS POLICIES IN RELATION TO HEALTH-RELATED STUDENT FITNESS MEASURED BY FITNESSGRAM®

By

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Abstract: School wellness policies (SWPs) are documents developed by school districts with the objective of addressing nutrition and physical activity. The Child Nutrition and WIC Reauthorization Act of 2004 (CNRA) was passed by the U.S. Congress which required schools to possess a SWP by the 2006-2007 school year. Since passage of the CNRA, health outcomes of students such as obesity, have been of interest. This study sought to see if there is a connection between the strength and comprehensiveness of SWPs and physical fitness in students, as measured by Fitnessgram®. Physical fitness assessed by Fitnessgram® is determined by conducting six tests with the goal of meeting the healthy fitness zone (HFZ) for each test. Students (N=747) were obtained from twenty-seven districts that received funding from Physical Education Program (PEP) grants to conduct Fitnessgram® testing and review SWPs. SWPs were evaluated using the Wellness School Assessment tool (WellSAT), generating two scores, strength and comprehensiveness (Rudd Center, n.d.). Data was analyzed using two methods: 1) Linear regression analysis with clustered robust standard error at the individual level, and 2) Bivariate correlation analysis with student fitness scores aggregated at the district level. Mean SWP strength ($\bar{x}$=24.13) and comprehensiveness ($\bar{x}$=48.91) from schools assessed in Oklahoma were lower than other states (Schwartz et al., 2012). Regression analysis showed there was no relationship between attainment of the HFZ and strength (p=0.18) or comprehensiveness (p=0.18), however gender and attainment of the HFZ was significantly correlated (p=0.04). The correlation analysis further confirmed that there was no relationship between mean attainment of the HFZ and strength (r=0.14, p=0.48) or comprehensiveness (r=0.14, p=0.48). Although physical fitness can be related to childhood obesity, results from this study suggest SWPs in Oklahoma are not strong or comprehensive enough to facilitate change in student fitness. School districts should consider enhancing opportunities for physical activity and physical education not only in the school, but also among the home and community environments.

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CHAPTER I

INTRODUCTION

Obesity is the most prevalent nutrition-related disease in children and is a condition that is highly influenced by the environment to which an individual is exposed (Dietz, 1998). Although obesity rates have plateaued since 2003, rates remain at an alarming level, affecting nearly one-third of the younger generation (Ogden et al., 2014). Physical activity is a dynamic factor associated with obesity, yet only fifteen percent of parents indicate that physical activity is a top concern for their children, despite the high obesity rates (YMCA, 2011). Physical education, nutrition education, and school meals are other factors associated with obesity which are provided by school districts. What schools provide to their students in terms of health, such as school meals, physical education, physical activity, and nutrition education affects nearly 48 million students over 180 days during each year (Abbey, 2014; Geller et al., 2007).

In the past decade, the federal government has passed two laws regarding school wellness polices: The Child Nutrition and Women's, Infants, Children Reauthorization Act of 2004 (CNRA) (WIC Reauthorization Act, Public Law 108-4981) and the Healthy, Hunger-Free Kids Act of 2010 (HHFKA) (HHFKA, Public Law 111-296). The CNRA required schools participating in the National School Lunch Program (NSLP) to adopt and implement a school

wellness policy (SWP) by the 2006-2007 school year, while the second law strengthened the requirements. The policies are required to include goals addressing nutrition education, physical activity, reimbursable school meals, competitive foods (foods sold outside the NSLP), and implementation (WIC Reauthorization Act, Public Law 108-4981). Following nation-wide adoption of SWPs, evaluators found that while most districts possessed a SWP, there was great variability in the content of the policies and many were weak and underdeveloped (Chriqui et al., 2009). Because policies lacked overall strength and comprehensiveness, the federal government passed the HHFKA which built upon the CNRA and required districts to meet additional requirements regarding accountability, implementation, review, community engagement, and health promotion (HHFKA, Public Law 111-296). Evaluation of this federal mandate found that SWPs still remained weak overall and needed improvement (Chriqui et al., 2013).

SWPs can elicit change in a variety of outcomes such as body mass index (BMI), nutrient intake, and physical activity (Coffield, Metos, Utz, Waitzman, 2011; Cullen, Watson, Fithian, 2009; Evenson, Ballard, Lee, Ammerman, 2009; Parsons, Garcia, Hoffman, 2013). A secondary outcome of SWPs, physical fitness, is influenced by the amount of physical activity engaged in during the school day. Physical fitness is an attribute that has shown a strong relationship with increased academic achievement, decreased delinquencies, and higher attendance (Welk et al., 2010). Although physical fitness is not a common evaluation outcome, schools should be interested in physical fitness because of the research that suggests higher academic performance among physically fit students.

Fitnessgram® is a validated way for schools to assess fitness by assessing cardiorespiratory endurance, muscular strength, muscular endurance, flexibility, and body composition through a series of tests. Student performance is compared to criterion-referenced standards, so parents, educators, and students can evaluate fitness status. Use of Fitnessgram® has been growing in schools since its development in 1982, and has reached 247 schools in

Oklahoma, affecting more than 92,000 children (B. Cash, personal communication, October 15, 2014).

Because Oklahoma ranks as the 44th least active state in the nation with more than 25% of the state being physically inactive, schools should be concerned about the fitness level of their students (OSDH, 2014). SWPs have the ability to propagate health-related changes in children; however, the extent to which policies can affect fitness is largely unstudied. Because of the positive outcomes that physical fitness can manifest, it is the goal of this study to examine if there is an association between the strength and comprehensiveness of SWPs and student fitness levels. Secondary goals of this study include, to define how strong and how comprehensive SWPs are in Oklahoma and how well students in Oklahoma are meeting the standards for physical fitness.

CHAPTER II

LITERATURE REVIEW

The following section will examine childhood obesity and its associations. Childhood obesity in school will be examined, which also requires consideration of other environments such as the home and community. Facets of childhood obesity that will be reviewed in this section will include school wellness policies (SWPs) and physical fitness of students.

Childhood Obesity

Obesity is a result of a caloric imbalance brought about by consuming more calories than are expended. In reality, obesity is quite complex. While, childhood obesity and adult obesity are both serious health concerns, working to prevent childhood obesity is more impactful because it affects the future population. The World Health Organization (WHO) has identified childhood obesity as, "one of the most serious public health challenges of the 21st century" (World Health Organization [WHO], n.d.a). Obesity is a serious issue, especially among children and adolescents, because it is the most prevalent nutrition-related disease in this population (Dietz, 1998). By cultivating healthy habits early in life, those habits will likely follow a child through his/her lifetime resulting in a healthier population and an overall healthier country.

In the past 30 years, obesity has doubled in children, and has more than quadrupled among the whole population in the United States (Ogden, Lamb, Carroll, Flegal, 2010; National

Center for Health Statistics, 2012). In 2012, more than one third of children were either overweight or obese (Ogden et al., 2014). In 2011-2012, obesity alone, in the United States, accounted for 16.9% of the childhood population, compared to 34.9% of adults (Ogden et al., 2014). Worldwide, 11% of the population is classified as obese, which reveals that the United States has almost three times the prevalence rate when compared to the worldwide population (WHO, n.d.a). Since 2003, obesity rates for children aged 2-19 have plateaued, but rates still remain high (Ogden et al., 2014). Although levels of obesity have not increased, the prevalence still remains at an alarming level.

Calculating BMI is one method of assessing overweight and obesity. For adults, it is determined by calculating the ratio of weight in kilograms to height in meters squared. For children, obesity is defined as having a body mass index (BMI) at or above the 95th percentile for children of the same age and sex. Since body composition changes rapidly during the early years, growth charts are used to assess BMI percentiles by comparing children of the same age and gender (WHO, n.d.a). Classification of overweight for children aged 2-20 years is defined as having a BMI at or above the 85th percentile and lower than the 95th percentile for children of the same age and sex. Children and adults classified as overweight or obese increases risk for both immediate, and long-term health effects (WHO, n.d.a). Although the validity of the BMI measure is relatively low, it remains the standard due to ease of assessment and its minimally invasive procedure (Rankinen, Kim, Perusse, Despres, Bouchard, 1999).

With increasing rates of obesity in the past thirty years (Ogden et al., 2010; National Center for Health Statistics, 2012), there has been an associated increase in direct medical expenses and related healthcare costs. In a quantitative review of 33 studies, Tsai, Williamson, Glick (2011) estimated that the annual direct medical cost per capita of being overweight is approximately $266 higher than normal weight individuals and $1723 higher for obese individuals (Tsai et al., 2011). The aggregate national cost of both overweight and obesity is

approximately $170.2 billion (Tsai et al, 2011). It is approximated that 20.6% of United States health care costs are spent on treating obesity-related illnesses (Cawley & Meyerhoefer, 2012). The billions of dollars that are spent on treating obesity applies a significant burden to the health care system. Focusing efforts on obesity prevention would have a direct effect on mitigating health care costs in the United States.

Local Obesity Rates

Oklahoma consistently ranks as one of the states with the highest prevalence of overweight and obesity (Trust for America's Health [TFAH], 2014). The increase in obesity rates over the last fifteen years has resulted in Oklahoma moving from the 12th least obese state to the 7th most obese state in August 2014 (TFAH, 2014). Oklahoma is considered to have the fastest growing overweight and obese population moving from a prevalence of 51.3% to 67.1% in fifteen years (TFAH, 2011). While this statistic reflects the entire population, childhood obesity rates are also above the national average with 17.4% of children, aged 10-17 being obese (TFAH, 2014).

The Centers for Disease Control and Prevention (CDC) reported statistics on Oklahoma's nutrition, physical activity, and obesity profile (Center for Disease Control and Prevention [CDC] 2012). Ninety percent of survey participants ate less than three servings of vegetables a day and 76% ate less than two servings of fruit a day (CDC, 2009). Physical activity in children was low with only 28% meeting the physical activity recommendation for at least 60 minutes every day, and only 31% participated in daily physical education classes (CDC, 2009). Also, 29% of adolescents watched television three or more hours per day on an average school day (CDC, 2009). Oklahoma's rate of physical inactivity directly contributes to its obesity problem because of its direct effect on energy expenditure.

Risk Factors for Obesity

Racial and ethnic differences are a strong predictor for obesity (Ogden et al., 2014). In the United States, Asians have the lowest prevalence of obesity with 9% of youth in the 3rd grade classified as obese. Within the same age group, 13.1% of Caucasians were classified as obese; 23.8% of African Americans; and 26.1% of Hispanics (Ogden et al., 2014). Overall, females have a higher prevalence of obesity (19.1%) than males (15.4%) between the ages of 6-11 (Ogden et al., 2014). Children from families of low socioeconomic status (SES) and education have higher rates of obesity compared to families of a higher SES and education (Ogden et al., 2014).

While socio-demographic risk factors can predispose individuals to obesity, other risk factors remain. Risk factors that are directly related to childhood obesity include parental obesity, high BMI or adiposity rebound early in life, eight or more hours spent watching television per week, catch-up growth, weight gain in first year of life, birth weight, and short sleep duration (Reilly et al., 2005). These risk factors during early childhood are associated with an increased risk of obesity in late childhood (Reilly et al., 2005). Geographic location can also be a predictor of weight status with obesity being more prevalent in rural communities than urban communities (Lutfiyya, Lipsky, Wisdom-Behounek, Inpanbutr-Martinkus 2007). Aspects of the built environment that have an effect on overweight and obesity include limited access to parks, sidewalks, physical education classes, exercise facilities, and public transportation (Lutifiyya et al., 2007). Oklahoma, which is a predominately rural state, faces the risks associated with being a rural environment.

Poor food environments, often termed "food deserts" can have a considerable effect on obesity as a risk factor (Cummins & Macintyre, 2006). A food desert can occur in both rural and urban environments and is defined if greater than 25% of residents live ten or more miles from a grocery store (Blanchard & Lyson, 2006). In the United States, approximately 23.5 million people live in food deserts and more than half of those individuals have low incomes (USDA,

n.d.). In Oklahoma, 32 of the 77 counties are classified as food deserts, representing nearly half of the state (Blanchard & Lyson, 2006). Being able to have access to healthy and nutritious foods such as fresh fruits and vegetables can have an effect on the prevalence of obesity in the area (Cummins & Macintyre, 2006). Food access within the built environment can be divided into two areas: access to foods for home consumption from supermarkets and grocery stores, and access to ready-made food and out-of-home consumption (Cummins & Macintyre, 2006).

Health Effects of Obesity

Due to the high prevalence of obesity in Oklahoma, it is not surprising that rates of obesity-related disease are also elevated since obesity directly contributes to immediate and long-term health consequences. These include diabetes, cardiovascular disease, and other chronic diseases (Oklahoma State Department of Health [OSDH], 2014). Over the next 20 years, Trust for America's Health predicts that obesity could contribute to 512,801 new cases of type two diabetes, 1,081,186 new cases of coronary heart disease and stroke, 969,830 new cases of hypertension, 620,784 new cases of arthritis, and 147,073 new cases of obesity-related cancer in Oklahoma alone (TFAH, 2011). With increasing rates of disease prevalence that is related to obesity, it is clear that obesity should be the target for prevention and intervention strategies to reduce disease and decrease related health care costs.

Immediate health effects of obesity include high cholesterol and blood pressure which are both major risk factors for cardiovascular disease. In a sample of 5-17 year olds, 70% of obese children had at least one risk factor for cardiovascular disease (Freedman, Zuguo, Srinivasan, Berenson, Dietz, 2007). In addition to risk factors for cardiovascular disease at such an early age, children may also experience increased risk of impaired glucose tolerance, insulin resistance, and type two diabetes (Whitlock, Williams, Gold, Smith, Shipman, 2005). Breathing problems, such as sleep apnea, and asthma may develop as well as joint problems and musculoskeletal discomfort (Beuther, Weiss, Sutherland, 2006; Han, Lawlor, Kimm, 2010; Taylor et al., 2006).

Psychological problems can develop, such as discrimination and poor self-esteem (Dietz, 1998; Schwartz & Puhl, 2003; Whitlock et al., 2005). In addition to immediate health issues, there are a multitude of long-term health consequences that can manifest. Most importantly, children that are overweight or obese have a 70% chance of being overweight or obese as an adult and this is increased to 80% if one or more parents are obese (Whitaker, Wright, Pepe, Seidel, Dietz, 1997). Obese children are also at risk for developing a range of chronic diseases such as type two diabetes, heart disease, stroke, osteoarthritis, and a variety of cancers (Office of the Surgeon General, 2010).

Obesity Prevention

Childhood obesity prevention is a common aim for health intervention programs in order to decrease the prevalence of obesity-related illnesses in the future population. Since obesity is related to, and is a risk factor for many diseases, by targeting obesity, multiple disease states can be addressed simultaneously. Children who are of normal weight status have only a 21% chance of being obese as an adult (Wang, Chyen, Lee, Lowry, 2008). This statistic reflects the importance of childhood obesity as a primary intervention target for youth health programs.

There are many methods to prevent obesity as it is a complex disease involving a variety of risk factors. Healthy eating, healthy lifestyle habits, and physical activity are commonly referred to as the main prevention methods (Office of the Surgeon General, 2010). A child is exposed to different environments throughout the day and prevention methods should be reinforced in each environment (Center for the Advancement, 2013). These environments include schools, communities, home, faith-based institutions, medical care providers, childcare settings, government agencies, and the media. The interplay between these environments is often difficult to manage and can have conflicting views, making it confusing to parents, children, and other caretakers. When developing interventions for obesity and other health-related issues, it is important to develop them with the social ecological model in mind (McLeroy; Bibeau; Steckler;

Glanz, 1988). The social ecological model (Figure 1) is a framework that is used to understand the interplay between the hierarchy among personal and environmental factors which will be discussed in this chapter (McLeroy et al., 1988).

In response to the alarming obesity rates, Oklahoma has implemented several programs to work toward improving health outcomes. A State Food Policy Council/Committee was formed to bring together key players invested in the Oklahoma food system (CDC, 2012). A Farm to School TV show was created to encourage kids to eat locally grown fruits and vegetables and learn how food is produced (CDC, 2012). A cookbook was created to encourage cooking at home (CDC, 2012). The Coordinated Approach to Child Health Kids-Club (CATCH) program joined with the Oklahoma After-School Programs to encourage kids to consume more fruits and vegetables, engage in regular physical activity, and involve more parents to make nutritional changes at home (CDC, 2012). Forty-eight schools in Oklahoma received funding from the Oklahoma Department of Transportation (ODOT) to provide safe routes to Schools which is a federal program to encourage children to walk or bike to school safely (CDC, 2012).

The school environment is an excellent domain where obesity prevention can be put into effect and will be the main focus of this paper. Schools utilize a variety of resources to combat obesity, such as after school programs, physical activity requirements, physical education requirements, sports, SWPs, and school food/beverage regulations, school breakfast/lunch regulations. Schools for Healthy Lifestyles (SHL) is an example of a program in Oklahoma schools that works to provide health education programs for students, families, and faculty in schools. They address five key areas including promotion of physical activity and fitness, nutrition education and awareness, tobacco use prevention, safety and injury prevention, and oral health education (Schools for Healthy Lifestyles, 2015). It was found that 3rd grade children that attended an after-school program three times per week, had a significant reduction in percent of body fat ($p=0.009$) and an increase in cardiorespiratory fitness (CRF) ($p=0.0003$) (Yin, Moore,

Johnson, Vernon, Gutin, 2012). This validates the effectiveness of before/during/after school programs and how schools can play an active role in obesity prevention.

Children spend an average of six to eight hours per day at school and 180 days per year (Abbey, 2014). In the United States, approximately 55 million children are enrolled in school K-12 (Abbey, 2014). Based on these statistics, no other institution has as much intensive and continuous contact with children. Many children eat both breakfast and lunch at school and consume an average of 47% of their caloric intake at school (Abbey, 2014). This highlights the role that schools have to influence a child and how they develop. In this environment, children have the opportunity to learn about, and practice physical activity and healthy eating behaviors. Schools have a plethora of responsibilities besides promoting health among its students, such as promoting academic enrichment, providing a safe and supportive environment, engaging with the community, and educating students for future success (Abbey, 2014). In order to optimize each of these responsibilities, schools must develop policies to regulate these areas. SWPs are a way schools can ensure a consistent and positive health impact on their students. An in depth look into how SWPs can impact students will be discussed later in the chapter.

Physical Activity and Physical Fitness

One of the most impactful and modifiable risk factors of obesity is physical activity. By definition, physical activity is considered as any bodily movement produced by skeletal muscles that requires energy expenditure (WHO, n.d.b). Not only does physical activity have an impact on obesity, but also has an impact on a variety of other obesity-related illnesses such as cancer, hypertension, depression, bone and joint diseases, and diabetes mellitus (Warburton, Nicol, Bredin, 2006). Physical inactivity has the highest prevalence compared to other modifiable risk factor such as diet, smoking, sleep, and lifestyle (Warburton et al., 2006). It is the fourth leading risk factor for global mortality, accounting for an estimated 3.2 million deaths globally (Warburton et al., 2006; WHO, n.d.b). There are countless benefits of regular physical activity,

both short-term and long-term. Benefits include reduced risk of chronic diseases, bone and muscle development, improved psychological well-being, greater academic achievement, and reduced academic delinquencies (Gao & Kaplan, 2012; Warburton et al., 2006; Welk et al., 2010).

Physical Activity Rates

To get an idea of what Americans think about physical activity and how they spend their free time, the YMCA surveyed over 1,600 parents across the country about physical activity and their children (YMCA, 2011). Only 15% of parents indicated that their top concern for their children was physical activity, despite alarming obesity rates. Seventy-four percent of parents reported spending time watching TV and 53% of parents reported playing video games. Despite high rates of free time spent on sedentary activities, 38% of parents reported that there is not enough time in the day to provide a healthy lifestyle for their children. However, while 90% of parents claimed they provide a healthy environment for their children, only 41% of children reported getting 60 minutes of exercise at home more than one day a week (YMCA, 2011). Overall, time spent engaging in physical activity rates was low, and when presented with free time, a majority of parents and children spent that time doing sedentary activities. If behaviors flip so free time is spent being active, parents and children can work against childhood obesity.

In Oklahoma, physical inactivity rates are high, ranking Oklahoma as the 6th least active state in the nation with more than 25% of the population abstaining from physical activity (OSDH, 2014). The 2014 State of the State's Health Report of Oklahoma generated by the OSDH found that as age increases, physical activity decreases in Oklahoma (OSDH, 2014). Although Oklahoma ranks low when compared to other states, state level programs have been implemented to aid in mitigating the physical activity problem. For example, the Oklahoma Safe Routes to School program ensures safe streets so that children can be active before and after school. The Oklahoma Tourism and Recreation Department (OTRD) works with OSDH to

increase and promote physical activity in 34 of Oklahoma's state parks (OSDH, 2014). Also, the Oklahoma Tobacco Settlement Endowment Trust (TSET) works with OSDH to promote physical activity in public schools, businesses, and communities throughout the state (OSDH, 2014).

Physical Activity Recommendations

Children are advised to work towards attaining the recommended amount of physical activity to improve health, fitness, and reduce the risk for chronic diseases. The recommendations for physical activity can vary slightly depending on the affiliation. The CDC divides their physical activity recommendations for children into three disciplines; aerobic activity, muscle strengthening, and bone strengthening. Sixty minutes of moderate intensity physical activity is recommended every day. As part of the daily sixty minutes, at least three days should include vigorous-intensity, at least three days of muscle strengthening activities, and at least three days of bone strengthening activities (CDC, 2011). The WHO and American Heart Association (AHA) also recommend sixty minutes of physical activity per day (American Heart Association [AHA], 2015; WHO, n.d.b). The AHA recommends that if sixty minutes is not attainable, two thirty-minute periods, or four fifteen-minute periods of vigorous activity is sufficient (AHA, 2015). A more recent initiative, "Let's Move", recommends that children should participate in sixty minutes per day, at least five days a week, for six out of eight weeks. This organization also proposes an alternative to sixty minutes a day, by setting a step goal of 11,000 for girls and 13,000 for boys (Let's Move 2015). According to the 2008 Physical Activity Guidelines for Americans, 74% of children do not achieve the recommended sixty minutes of daily activity (United States Department of Agriculture [USDA], 2013a). Examples of moderate intensity activities include walking, gardening, dancing, household chores, and general tasks. Examples of vigorous intensity activities include running, climbing, swimming, cycling, aerobics, competitive sports, and carrying heavy loads (WHO, n.d.b).

Physical education guidelines for schools are categorized separately from public physical activity recommendations. Schools are suggested, but not required to follow the standards, framework, and curriculum set forth by SHAPE America. The purpose of SHAPE America is to set standards for schools to follow to allow students K-12 to become physically literate. Becoming physically literate allows students to have the knowledge, skills, and confidence to take an interest in physical activity in the future (SHAPE America, n.d.). Students in state and local school districts across the country work to achieve the five standards set forth by SHAPE America: 1) Demonstrate competency in a variety of motor skills and movement patterns; 2) Apply knowledge of concepts, principles, strategies, and tactics related to movement and performance; 3) Demonstrate the knowledge and skills to achieve and maintain a health-enhancing level of physical activity and fitness; 4) Exhibit responsible personal and social behavior that respects self and others; and 5) Recognize the value of physical activity for health, enjoyment, challenge, self-expression and/or social interaction (SHAPE America, n.d.).

In addition to the standards set forth by SHAPE America, the federal government has required school districts to set goals for their physical activity and physical education programs. At the federal level, there is no law that specifically states that schools must provide physical education (National Association for Sport & Physical Education [NASPE], 2012). However, in 2004, for schools to receive federal reimbursement for school meals, schools were required to develop and implement a SWP, which included goals for physical activity (Story, Nanney, Schwartz, 2009). At the state level, governments may set a minimum requirement or direction, but these decisions are often delegated to the school districts (NASPE, 2012). The lack of mandatory physical education standards at the federal and state level has led schools to provide only limited amounts of physical education with only four percent of elementary schools providing daily physical education (Lee, Burgeson, Fulton, Spain, 2007). To help schools with funding issues regarding physical education, they can apply for grants and contracts to initiate,

expand, and improve the physical education program through the Carol M. White Physical Education Program (PEP) which was established under the No Child Left Behind (NASPE, 2012; N.C.L. Behind, 2002). Grant allotments for physical education programs average $312,587 and are used for equipment purchases, teacher and staff training and education, and student participation (NASPE, 2012).

Benefits of Physical Activity

Individuals that engage in physical activity and minimize sedentary activities can elicit a variety of health benefits. Physical activity contributes to the primary and secondary prevention of chronic diseases such as diabetes mellitus, obesity, bone and joint diseases, hypertension, and depression (Warburton et al., 2006). The biological mechanisms that are responsible for decreased health risk include changes in blood pressure, body composition, lipid profiles, autonomic tone, glucose homeostasis, insulin sensitivity, blood coagulation, cardiac function, coronary blood flow, systemic inflammation, and endothelial function (Warburton et al., 2006). Primary and secondary prevention of these diseases leads to reduced premature deaths and a prolonged lifespan. Lifelong adoption of physical activity and adhering to the recommendations allows individuals to reduce their overall health risk (Warburton et al., 2006).

Physical Activity vs. Physical Fitness

When discussing physical activity, it is imperative to discuss physical fitness. These terms are often used interchangeably; however, these are two different concepts. Physical fitness is defined as a set of attributes that people have or achieve that relates to the ability to perform physical activity (United States Department of Health and Human Services, 1996). Physical activity is any body movement produced by muscle action that increases energy expenditure (WHO, n.d.b). Physical fitness is an outcome of engaging in physical activity; thus physical fitness cannot be achieved without physical activity. Both, physical activity and physical fitness are dependent on one another. The foundation of physical fitness is outlined by five areas: 1)

Cardiorespiratory fitness, 2) Muscular fitness, 3) Muscular endurance, 4) Body composition, and 5) Flexibility. These components of physical fitness are identified as the components of health-related fitness, as defined by Fitnessgram®. Physical fitness is a superior marker for health because it is more predictive and closely related to positive health outcomes than other health markers, such as physical activity. The components of health related fitness are associated with reduced total and abdominal adiposity, reduced cardiovascular disease risk factors, improved skeletal health, and improved mental health (Anderssen et al., 2007; Lobelo, Pate, Dowda, Liese, Ruiz, 2009; Ortega, Ruiz, Castillo, Sjöström, 2008).

Physical Fitness in Schools

Physical fitness benefits extend beyond health outcomes and can include important cognitive advancements. Students that possess higher fitness levels have higher test scores on standardized tests and a lower amount of delinquencies, including attendance and suspension days (Gao & Kaplan, 2012; Rauner, Walters, Avery, Wanser, 2013; Roberts, Freed, McCarthy, 2010; Welk et al., 2010). High fitness levels have also been related to improved cognition, reduced psychological distress, improved self-esteem, and increased time on task (Welk et al., 2010).

High-intensity training and vigorous physical activity should be the goal of public health promotion policies. Increases in physical activity will have a subsequent increase in related physical fitness and positive health outcomes. Public health promotion policies should be designed to improve all the components of physical fitness. Testing children through fitness tests, allows physical educators to identify where children have low physical fitness levels, such as cardiorespiratory endurance and muscular strength. Policy makers can determine what kind of changes need to be made to increase physical fitness by testing children (Ortega et al., 2008). Screening and monitoring in addition to epidemiological surveillance of children through testing

allows policy makers to see which population groups need the most attention form an intervention (Lobelo et al., 2009).

Student fitness levels can be influenced by their exposure to specific factors within a school's physical education program, as well as the policies that affect physical education (Zhu, Boiarskaia, Welk, Meredith, 2010). Researchers have identified key factors in boosting physical fitness including: teacher conference attendance, outdoor facilities, wellness programs/policies, physical education participation, practicing before Fitnessgram® test administration, recess time, physical activity space, and ethnicity (Zhu et al., 2010). The recommendations presented by this study allows schools to distinguish key factors that can positively contribute to student fitness.

While school districts should consider addressing some of the factors outlined by Zhu et al. (2010) to increase student fitness levels, the effects of related interventions may not be seen in a short period of time. Researchers evaluating rural Nebraska school districts were determined to uncover the effects of a two-year school-based fitness program to see if there was an association between body composition, cardiovascular fitness, and insulin sensitivity in overweight children (Donnelly et al., 1996). They found that the intervention was successful in increasing physical activity, but it appears that two years is too short of a timeframe to see changes in body composition and fitness (Donnelly et al., 1996).

There are many obstacles that children face when trying to attain the recommended amount of physical activity. Limited access to physical activity opportunities and structured physical activity, such as lessons and youth sports, occurs in many communities. Parks, hiking trails, sidewalks, and other various physical activity supports within the built environment are not available in some regions (Faucette et al., 1995). With limited access to structured and non-structured environments, schools serve as the most logical environment for increasing and promoting physical activity (Sallis & McKenzie, 1991). With the rising prevalence of obesity,

there becomes an increased need for interventions to increase leisure-time physical activity in various settings such as regular scheduled school recess (Troiano, Flegal, Kuczmarski, Campbell, Johnson, 1995). In the school environment, school officials must work to promote physical activity as much as possible throughout the day. When students are offered leisure periods, it is essential that children take advantage of this time. A study looking at how students make use of free time, found that when given an optional time for physical activity after eating lunch, only 30% of boys and 8% of girls were found using this time to participate in physical activity (McKenzie, Marshall, Sallis, Conway, 2000). Additional supervision, equipment, and organized activities would help to lead more students to be physically active as well as encouragement by educators to be active (McKenzie et al., 2000). If schools offer optional leisure time, they need to use that time effectively so that time spent doing sedentary activities is minimized as much as possible. A majority of the day in school is spent in subject areas, which is often sedentary, so the goal is to minimize sedentary time without sacrificing student performance.

One of the ways that schools and students can monitor their health is by performing fitness testing. Fitness testing includes tests that assess endurance, strength, and flexibility which are then compared to a set of standards. Less than half of the states recommend or require fitness testing, however it is a useful tool for both students and educators (Story et al., 2009). Although there is not federal requirement for fitness testing, testing for fitness, including BMI screening should be implemented in schools whenever possible.

Fitnessgram®

Fitnessgram® is a tool for educators developed by the Cooper Institute in 1982. It is a comprehensive educational, reporting, and promotional tool used to assess physical fitness and activity levels in students. It is designed to assess health-related fitness which defined by Fitnessgram® as the sum of five measurements: cardiorespiratory endurance, muscular strength, muscular endurance, flexibility, and body composition. Among these five areas of health-related

fitness, there are six individual tests that make up the Fitnessgram® assessment. These tests include: the PACER, curl-up, push-up, trunk lift, back saver sit & reach, and body composition. Criterion-referenced evaluations are used to measure student performance and compare it to a fixed set of standards. Criterion-referenced standards are set based on a single value that separates individuals with a high health risk from those that have a low health risk. By using criterion-referenced standards over norm-referenced standards, it allows students to compare themselves to determine their health risk, rather than performance standards. The current edition that schools are using in Oklahoma is Fitnessgram® 10.

For each test, an age- and sex-specific healthy fitness zone (HFZ) is determined based on criterion-referenced standards set forth by Fitnessgram®. Achievement of the HFZ indicates that the individual has reached the fitness standard that offers some degree of protection against diseases that can result from sedentary living. Scoring below the HFZ suggests that the individual needs improvement to reach the HFZ. Achieving the HFZ for at least five of the six Fitnessgram® tests is the standard set forth by the PEP grant guidelines and is a target for districts to reach. Additional information on the HFZ will be discussed in chapter three.

There are several guidelines that test administrators should follow to ensure reliable and valid results. The instructor should be familiar with the administration guidelines, students should be instructed on proper techniques and practice before being tested, and an atmosphere should be provided that motivates each student to do his/her best. Fitnessgram® is considered to be the most psychometrically sound assessment of fitness available for field-based testing in youth (Morrow, Martin, Jackson, 2010). By having strong reliability and validity, educators, parents, and district administrators can have confidence in the results. Overall, physical education teachers do a satisfactory job at test administration, but results are improved when experts were involved. In order for physical education teachers to increase data reliability and

validity, it is suggested that they review/re-read the Fitnessgram® manual, online trainings, DVDs, and attend in-person trainings (Morrow et al., 2010).

School Wellness Policies

Social Ecological Model

The ultimate goal of SWPs is to improve the health of students by reducing childhood obesity, and as discussed before, obesity is a multifaceted disease for which prevention requires effort from all levels of society. The social ecological model describes how environments are interrelated with personal factors and how to ultimately bring forth change in human development (McLeroy et al., 1988). Figure 1 illustrates how physical and social environments surrounding individuals comes together to form the hierarchy of the social ecological model (Bronfenbrenner, 1994). The model begins with public policy, being the most comprehensive layer, and becomes more individualized as the model progresses. Underneath public policy is: community, organizational, interpersonal, and the individual layers respectively represented by Figure 1. All layers of the social ecological model need to be considered when promoting physical activity and preventing obesity (McLeroy et al., 1988). To bring forth change in the knowledge, attitudes, skills, or behaviors of an individual, an approach must be developed that takes into account the different levels of the model (McLeroy et al., 1988). Schools are positioned in the middle of the social ecological model, between the community and interpersonal sectors. The federal government and other agencies that develop policy are at the top of the model, with an example of their efforts being the passage of the CNRA. This law affects how schools are operated which untimely has an effect on the individual, and his or her skills, attitudes, knowledge, and behaviors. The top of the model, public policy, serves the largest population while having a smaller impact at the individual level. Changes made at the interpersonal level serves a smaller

population but has the potential to make a larger impact at the individual level.

Figure 1: The social ecological model representing factors influencing diet and physical activity (Bronfenbrenner, 1994)

Bringing forth behavior change in children is the ultimate goal of SWPs and the social ecological model suggests that all levels need to be considered to make an ultimate impact on the individual. By adhering to federal laws, encouraging community engagement, and encouraging parent involvement, schools can play a critical role in the development of behaviors. SWPs are in place in attempt to formally organize the interplay between these environments. Delaware had a childhood obesity rate of 37% in 2006, and in an effort to improve behaviors, they launched a "social-ecological" initiative to reduce obesity rates (Chang, Gertel-Rosenberg, Drayton, Schmidt, Angalet, 2010). This community-wide effort involved schools, primary care facilities, and child care providers. In addition to SWPs, a message termed "5-2-1-Almost None" encouraged children to eat at least five servings of fruits and vegetables per day, to limit TV time to two hours, to participate in at least one hour of physical activity, and to consume almost no sugar-sweetened beverages. Behaviors of children changed which was evidenced by a halt in the increasing rate of obesity (Chang et al., 2010). In addition to "5-2-1-Almost None" message being stressed, changes that were made to increase physical activity behaviors in school were achieved through incorporating structured physical activity programs, adding fitness equipment,

and providing physical activity breaks for students (Chang et al., 2010). With the social ecological model approach in mind used with Chang et al. (2010), behavioral change can ultimately be achieved at the school level along with other key environments.

The Role that Schools Play in Obesity

Schools play a critical role in prevention of obesity and are identified as a key setting for public health strategies (Koplan, Liverman, Kraak, 2005). Other key environments that play a role in the development of obesity are the home and community. Making changes solely in the school environment is not sufficient enough to counter the childhood obesity epidemic, however schools should consistently work towards improving the health of their students (Center for the Advancement of Wellness, 2013). Even though schools cannot reverse the trend in obesity solely, it is crucial that school districts create an environment for children that stresses positive health behaviors. To have a significant impact on childhood obesity as a whole, this multifaceted chronic disease needs to be a target for all environments so that children are continually exposed to positive health practices throughout the day. It would be ambitious to identify all of the factors that play into the development of childhood obesity, so it is the goal of this section to concentrate on the impact of schools and how they can create an environment that is active and healthy.

Schools are identified as a key environment in the development and prevention of childhood obesity because children spend more time in schools than they do in any other environment beside the home. The United States has a high rate of enrollment in public schools with 95% of children aged 5-17 being enrolled in a school (Geller et al., 2007). There are more than 48 million students attending more than 94,000 public schools every day with an additional 5.3 million students attending private schools (Geller et al., 2007). The continuous exposure to the school setting that children experience allows the school system to positively impact their students in areas of academics, civics, health, and social responsibilities (Geller et al., 2007).

Health and education are intertwined in the school environment and educating students in these areas allows them to reach their full potential (Geller et al., 2007).

Childhood obesity within schools involves three areas; the food environment and polices, physical activity environment and policies, and overall SWPs (Story et al., 2009).

Food Environment

What children consume in school and out of school has a large impact on their caloric balance. On average, children consume between 19-50% of their daily calories at school (Gleason & Suitor, 2001). With up to half of calories being consumed at school, it is crucial to offer healthy foods to students such as whole grains, fruits, low-fat milk, vegetables, nuts, and foods with high-fiber. There are two types of foods and beverages that are offered in the school food environment: foods that fall under the National School Lunch Program (NSLP), and foods and beverages sold outside the formal meal programs such as foods sold via a la carte, snack bars, fundraisers, vending machines, and school stores, commonly referred to as *competitive foods* (Story et al., 2009). Competitive foods can cause an imbalance in the foods offered, and the increasing availability and number of food options available throughout the day is analogous to the rise in obesity (Koplan et al., 2005). Current standards for competitive foods include: <200 calories, <35% sugar by weight, <35% calories from total fat, <10% of calories from saturated fat, zero trans fat, and <200mg of sodium (USDA, n.d.b). Standards for competitive beverages include: 100% juice, low-fat unflavored milk, fat-free flavored or unflavored in portion sizes up to 8oz for elementary schools and 12oz for middle and high schools (USDA, n.d.b). Competitive foods are typically sold in vending machines, school stores, snack bars, and other areas outside where school meals are sold (Koplan et al., 2005). The most common competitive foods and beverages include sports drinks, high fat snacks, fruit drinks, high sodium snacks, and soda. On average, students consume more than 150 additional calories from competitive foods, which are often low in nutrition and are energy-dense (Story et al., 2009). Students participating in the

(NSLP) consumed fewer competitive foods than non-participants of the NSLP (Gordon & Fox, 2007). School districts also fear removing competitive foods because they provide substantial revenue for the district. Foods sold within the NSLP must comply with the federal regulations by the U.S. Department of Agriculture and meet the nutrition standards set by the Dietary Guidelines for Americans (Gordon & Fox, 2007).

There are more than 31.7 million children that participate in the NSLP program every day to receive federally reimbursed meals (Fox & Condon, 2012). Low-income families can receive free or reduced priced lunches in an effort to make an impact on children's diets. The meals served through the NSLP must comply with the USDA standards (USDA, 2012). Daily requirements for school lunches in grades K-8 include 550-700 calories, 1 cup of fruits or vegetables, fat-free flavored/unflavored or low-fat unflavored milk, encouragement of whole grains, reduction in sodium content, <10% of total calories from saturated fat, and a reduction in trans fat (USDA, 2012). The standards set forth by the USDA are expected to enhance the diet and health of school children and help mitigate the childhood obesity trend (USDA, 2012). Although many schools would like to adopt a school meal program that features a variety of healthy foods, this goal is curtailed by financial issues as well as availability (Gordon & Fox, 2007).

School districts, like most institutions, run on a tight budget which makes it difficult to provide more nutritious meals. With the maximum federal reimbursement rate for lunches at $3.21, food service directors are forced to sell popular, lower-nutrition foods in the form of competitive foods to break even financially (USDA, 2014). Fruits and vegetables, which are typically less popular and more expensive to procure leads to a loss in revenue. The SNDA-IV study from Fox & Condon (2012) found that 37% of schools did not offer raw fruits and vegetables on a daily basis and schools only provided 6-10% of the recommended amount of whole grains. Schools are faced with a difficult challenge to provide healthy meals and decrease

availability of energy-dense all while maintaining equilibrium in the budget. The reimbursement rate from the federal government has not kept up with the increasing costs of food, labor, transportation, and indirect expenses (School Nutrition Association, 2008). If schools eliminated or restricted competitive foods, school meal participation would theoretically increase and increase revenues to purchase and serve healthier foods.

Children's diets are not only effected by the foods that are offered in the school, but also effected by their knowledge of nutrition. Nutrition education is a requirement in the curriculum of a majority of elementary, middle, and high schools that teaches nutrition and dietary behavior (Story et al., 2009). When nutrition education is taught, eating patterns are more likely to improve in the school environment (Lytle et al., 2004). It is important for schools to continue to find ways to improve the diet quality of students by offering healthy food choices and programs to enhance eating behavior. Foods offered in schools are relevant because of their direct impact on energy consumption and obesity.

Physical Activity Environment

At the federal level, there is no formal requirement for physical activity and physical education within schools, however, minimum requirements and directions are set by the states (NASPE, 2012; Story et al., 2009). In Oklahoma, several bills have been passed by the Oklahoma State Department of Education regarding physical education and physical activity requirements in schools. In 2005, the first physical education bill was passed (S.B. 312, 2005), which required school districts to provide at least sixty minutes per week of physical education programs to all students grades K-5. In 2008, a bill (S.B. 519, 2008) implemented a pilot program for Fitnessgram® to be used in fifteen elementary schools grades 3-5. As of September 2014, Fitnessgram® was expanded to 247 schools in Oklahoma, affecting more than 92,000 children (B. Cash, personal communication, October 15, 2014). To provide elementary school students with additional physical activity, S.B. 1186 (2008) was passed which required schools to

provide students with an additional 60 minutes of physical activity each week. Schools were advised to achieve this through exercise programs, recess, physical education, fitness breaks, classroom activities, and wellness and nutrition education. The most recent bill that was passed (S.B. 1876, 2010), requires physical education curriculums to be composed of activities that are at least 50% at the moderate-vigorous level. Oklahoma has continually made strides in the past ten years to increase the amount of physical activity in schools by signing bills that set new physical education requirements, but fall short of national recommendations.

In order to achieve high physical fitness levels, schools should work towards meeting the minimum requirement of physical activity outlined by the CDC. The physical education program within a school is largely responsible for providing a majority of physical activity to students. Because of this, it is imperative that schools provide a strong physical education program for students to experience the benefits of both, physical fitness and physical activity. Schools should make an effort to find a balance between physical activity and time spent in subject areas without having it negatively impact academic performance. Up to an hour of daily physical activity programs can be added to a school curriculum without having it negatively impact students' school performance (Trudeau & Shephard, 2008). Although there are no federal incentives for a school to adopt a formal physical education program, it is strongly suggested that schools do so.

Physical education recommendations for elementary, middle, and high schools are suggested by a few organizations, and the recommendations set forth by the National Association for Sport and Physical Education (NASPE) are the most commonly used (Story et al., 2009). NASPE provides schools with a comprehensive school physical activity program, time requirements, curriculum, assessment standards, class sizes, and appropriate equipment (Story et al., 2009). To receive federal reimbursement for school lunches, schools must adopt a SWP which requires setting goals for physical education. This area of the SWP should contain the standards and details for physical education and physical activity within the district.

To see how schools are able to include physical activity opportunities during the school day, a study examined how non-physical education teachers included daily moderate to vigorous physical activity for their students (Evenson et al., 2009). These districts claim that they don't have enough time within the school day to provide structured physical activity or physical education because it would compromise amount of time spent in other subject areas. Teachers reported using classroom energizers as well as in-class physical education. Reported benefits of in-class physical activity included greater student focus, awareness of healthy habits, student alertness, student enjoyment, and staff involvement. Challenges included insufficient time, teacher attitudes, and academic concerns (Evenson et al., 2009). The reported benefits of increased enjoyment and awareness in this study helps promote future engagement in physical activity at later ages (Malina, 1996). Required in-class physical activity could be an alternative for districts that have trouble increasing time spent in physical education.

Federally Mandated School Wellness Policies

In an effort to combat childhood obesity, the federal government proposed the Childhood Obesity Prevention Act to promote nutrition education and physical activity at the state and local level. The proposal of this law led to the formation of the first law that mentions SWPs, The Child Nutrition and Women's, Infants, Children Reauthorization Act of 2004 (CNRA) (WIC Reauthorization Act, Public Law 108-4981). This law required educational institutions participating in the NSLP and School Breakfast Program to adopt and implement a local SWP. Schools were required to possess a SWP by the 2006-2007 school year. The second federal law regarding SWPs is the Healthy, Hunger-Free Kids Act of 2010 (HHFKA) (HHFKA, Public Law 111-296). Following passage of the CNRA, policies were identified as weak and vague overall, so with an intent to strengthen SWPs, the HHFKA was passed to assist in allowing policies to become more useful tools in obesity prevention (Belansky et al., 2013). Stronger requirements

set forth by the HHFKA were intended to help schools result in possessing SWPs that were more stringent than before.

To receive federal reimbursement and funding for child nutrition programs educational institutions were required to comply with the CNRA. The CNRA requires the SWP to include: 1) Goals for nutrition education, physical activity and other school-based activities that the educational institution has determined will promote student wellness; 2) Nutrition guidelines selected by the educational institution for all foods available on each school campus during the school day with the objectives of promoting student health and reducing childhood obesity; 3) Assure that guidelines for reimbursable school meals establish a minimum standard for all foods available on each school campus; 4) Establish a plan to evaluate implementation of the SWP and designate at least one person who will have operational responsibility to ensure that the school(s) meet the SWP objectives; 5) Involve parents, students, food service directors and staff, school board members and administrators, and the public in the development of the SWP (WIC Reauthorization Act, Public Law 108-265)

While schools are required to address all five components in their SWP to comply with the law, content and details school districts wrote in their SWPs were entirely up to them and under CNRA, the federal government could not dictate the content of SWPs. The deadline to adopt a SWP was by the 2006-2007 school year, and at that time, 95% of students were enrolled in a school that met the mandate (Chriqui et al, 2009).

The CNRA was a big step forward for schools developing policies, and a large percentage of schools complied with the efforts (Chriqui et al., 2009). Following review of policies, it was found that implementation and monitoring in schools lacked sufficient plans and overall, policies were vague, weak, and underdeveloped (Belansky et al., 2013; Chriqui et al., 2009; Parsons et al., 2013; Probart, McDonnell, Weirich, Schilling, Fekete, 2008; Story et al.,

2009). This prompted for the need for stronger standards, so the HHFKA was a supplemental law that required educational institutions to meet additional requirements. It was proposed that schools review their SWPs during the 2011-2012 school year. The HHFKA required schools to meet additional requirements including: designating one or more school officials as appropriate to ensure that each school complies with the SWP; set goals for nutrition promotion; expand partners to include, at minimum, physical education teachers and school health professionals; engage partners in the implementation of the SWP and provide periodic review and updates; and inform and update the public about the content and implementation of the SWPs (HHFKA, Public Law 111-296). By the 2010-2011 school year, 99% of students reported being enrolled in a school district with a SWP (Chriqui et al., 2013). Overall, the CNRA directed educational institutions to have a SWP in place for each school, and the HHFKA brought in additional stakeholders, included additional requirements for implementation and review, and required public updates on the content and implementation of the SWPs.

After passage of the CNRA, a need to examine these policies arose in order to see what they contained in addition to identify opportunities to revise and strengthen existing policies. The wellness policy coding scheme developed by Schwartz et al. (2009) was used in a study to evaluate policies by Chriqui et al. (2009), which accurately represents the content of SWPs from a nationally representative sample two years following the federal wellness policy requirement. Overall, most students were enrolled in a school that possessed a SWP, however, there was great variability in the content of the policies and many were weak and underdeveloped. Implementation and monitoring lacked sufficient plans which means that schools should allow more time to develop policy implementation and ensure it is a high priority. The federal government acknowledged this need leading to the passage of the HHFKA. One year after passage of the HFFKA, policies still remained weak which commands the need for policy improvement at the federal, state, and district levels (Chriqui et al., 2013).

Overall findings from Chriqui et al. (2013) are in line with findings from another cross sectional descriptive study examining SWPs in Pennsylvania school districts (Probart et al., 2008). It was found that Pennsylvania school districts typically avoided goals that were more specific and measurable and instead replaced them with more general and broad goals (Probart et al., 2008). Both of these studies established that assistance needs to be provided with developing and implementing the plans for SWP measurement and evaluation.

School Wellness Policy's Effect on Obesity

To examine the effect that schools and their policies can have on their students, researchers have compared the relationship between SWPs and childhood obesity. A cohort study in Alaska tracked children from kindergarten through fifth grade and was composed of two groups, a cohort that was exposed to a SWP, and a non-exposed group (Parsons et al., 2013). The dependent variable, BMI was measured every year during the five-year span and independent variables included gender, race/ethnicity and SES. Results of the study found that exposure to a SWP did not significantly affect BMI status. However, students that were males, from a minority population, or from a low SES background were significantly related to staying overweight or obese. One of the major limitations of this study was that the strength and comprehensiveness of the SWP was not evaluated. Although this study did not produce expected results, the findings remain important and demonstrates that study design is important when evaluating SWPs.

To further examine the effect of SWPs on obesity, an observational study was conducted in forty Utah school districts (Coffield et al., 2011). Driver's license information from participants was used to pull the geographic location of their address to determine residing school district in addition to self-reported height and weights. Findings from this study indicate that certain areas of SWPs are more effective than others. For example, policies that included goals for "competitive foods and nutrition practices and education" was associated with lower odds of being overweight more so than other policy goals. This shows that schools should tailor their

SWPs to target specific health problems in the region. Independent findings from this study found that maternal education, marital status, race/ethnicity, and parental obesity all are significantly associated with childhood overweight or obesity. The method used to determine district classification based on drivers' licenses, in addition to Utah existing as an ethnically homogenous and leaner state than other U.S. states, exist as limitations in this study (Coffield et al., 2011). A link between SWPs and obesity was found, however the limitations of this studied must be weighed before making conclusions.

The extent to which SWPs can have an effect on BMI and obesity still remains ambiguous. The Parsons et al. (2013) study yielded insignificant results while the questionable study design of Coffield et al. (2011) yielded significant results linking the relationship between SWPs and student BMI. These studies illustrate that physical characteristics and attributes, such as body composition can be potentially reshaped by policy change.

Implementation of School Wellness Policies

Following implementation of the federally mandated CNRA, researchers found that overall, policies in rural, low-income elementary schools contained vague and weak language. To identify the areas where schools were struggling in regards to implementation efforts, a survey on SWPs was administered before and after policy implementation in 45 Colorado schools and completed by principals, foodservice managers, and physical education teachers (Belansky et al., 2013). Key informant interviews were also conducted with the foodservice manager to reveal their knowledge and familiarity with the district policy. Results found that the strength scores of polices were low and only 8 of the 11 food service managers interviewed were familiar with the SWP. Political difficulties and costs were identified as significant barriers to limiting competitive foods and the lack of financial resources was found to prevent healthier food options from being offered (Belansky et al., 2013). Findings of this study suggest that schools should develop a

systematic approach to implementing the policy at the family, organizational, and community level.

Difficulties in implementation of SWPs were investigated further in a more recent study in a New Mexico community (Sánchez et al., 2012). This study uncovered facilitating factors and barriers of implementation and aimed to understand the points of view of those implementing the policy and those most directly affected by it. Facilitating factors included improving opportunities for physical activity, improving availability of healthy food choices, and increasing grant funding and financial resources. Barriers included lack of time for physical activity, insufficient understanding of written policies by staff and parents, limited formal physical education requirement, and unappealing food. Key informant interviews and focus groups found that there were inconsistencies in identifying the individual responsible for implementing and monitoring the SWP (Sánchez et al., 2012). Policy developers should consider facilitating factors and barriers of implementation to have a successful SWP.

School Wellness Policies and Physical Fitness

The effect that SWPs can have on physical fitness is largely unstudied. It is known through previous studies that that SWPs have the ability to influence a variety of outcomes and behaviors such as BMI to an extent, quantity of physical activity, and nutrient intake provided by school lunches (Coffield et al., 2011; Cullen et al., 2009; Evenson et al., 2009; Parsons et al., 2013). Unlike physical activity, physical fitness can take an extended period of time to develop, and the time it takes to develop can vary from person-to-person. When researching changes in physical fitness, it is important to look at the study methods used to make sure physical fitness has adequate time to develop. Study methods that are used to track changes in obesity should be similar to methods used to track physical fitness in that they both take an extended period of time to manifest changes. The social ecological model posits that SWPs have the potential to impact students' physical fitness levels by changing school environments and practices. Because fitness

levels take time to improve and because SWPs have now been in effect for ten years, it is hypothesized that schools with stronger policies will have students with higher fitness levels. The objectives of present study are: 1) Define how strong and comprehensive the SWPs are in Oklahoma schools participating in the PEP grant; 2) Investigate whether the strength or comprehensiveness scores of SWPs have an effect on attainment of HFZs; 3) Describe how well students meet the HFZ for their defined age and sex.

CHAPTER III

METHODOLOGY

The following section will describe the methodology of this study including the variables of interest, study research questions, participants, study design, data collection methods, and the evaluation instruments.

Variables of Interest

Dependent variables: 1) Individual attainment of the healthy fitness zone (HFZ) for 0-6 tests, 2) District mean attainment of the HFZ for 0-6 tests

Independent variables: 1) School wellness policy (SWP) total comprehensiveness score, 2) SWP total strength score, 3) Gender

Research Questions

1. Do the strength or comprehensiveness scores of SWPs have an effect on attainment of HFZs in elementary school children?

2. How strong and how comprehensive are the SWPs in Oklahoma?

3. How well do students meet the HFZ for their defined age and sex?

Participants

Seventy-six schools in 27 districts in Oklahoma received federal funding from Physical Education Program (PEP) grants to conduct Fitnessgram® testing and review SWPs. Schools for Healthy Lifestyles (SHL) is a 501(c)(3) not-for-profit community-based health program in Oklahoma that provides health education to districts in Oklahoma. Their mission is to address five areas in youth health: 1) Promoting physical activity and fitness; 2) Nutrition education and awareness; 3) Tobacco use and prevention; 4) Safety and injury prevention; and 5) Oral health education (Schools For Healthy Lifestyles, n.d.). Schools within funded by a PEP grant use Fitnessgram® to assess health related fitness.

Table 1*: Descriptive statistics of subjects in school districts*

N = 747	Minimum	Maximum	Mean ($\bar{x}$)	Std. Deviation (SD)
Age (yrs)	10.00	13.00	10.49	+/- 0.65
Male				
Weight (lbs)	51	235	98.35	+/- 30.51
BMI	11.00	55.60	20.54	+/- 5.15
Female				
Weight (lbs)	50	221	96.32	+/- 29.26
BMI	11.40	38.00	20.09	+/- 4.64

Seventy-six schools within a sample of 27 districts in Oklahoma from SHL and Putnam City Schools were evaluated. Data was assessed from 747 students between 10-13 years old; and represent one cohort of students from three representations of data. Three students were excluded from analysis because of incomplete data. Table 1 presents the characteristics of sample examined. Ages ranged between 10 and 13 years old with a mean of 10.49 years old. Males had a higher mean weight ($\bar{x}$=98.35 lbs) and BMI ($\bar{x}$=20.54) than females, ($\bar{x}$=96.32 lbs) and ($\bar{x}$=20.09). When conventionally determining BMI, children under age 19 use growth charts to determine a percentile for their specific age and sex. In the latest version of Fitnessgram®, the BMI ranges for children have a similar format as the adult BMI ranges, which is why Table 1 has BMI values that are not in percentile form. Participants are classified as HFZ or non-HFZ based

on the ranges within the Fitnessgram® standards and is one of the six tests evaluated by Fitnessgram®. The Fitnessgram® standards for BMI are aligned to the CDC standards for children and can be viewed in Appendix A. Existing outside of the HFZ for body composition classifies an individual as either overweight or obese.

Table 2*: Distribution of subjects by grade level and gender*

Demographic Characteristics	**Frequency (N = 747)**
3rd Grade	36 (4.8%)
4th Grade	219 (29.3%)
5th Grade	432 (57.8%)
6th Grade	55 (7.4%)
Male	400 (53.5%)
Female	347 (46.5%)

Table 2 depicts the distribution between grades and gender among the sample population. A large majority (>50%) of the population were 5th graders, while a small portion of the population were 3rd (4.8%) and 6th (7.4%) graders. Genders were nearly evenly distributed, with 53.5% of the sample existing as males and 46.5% as females.

Fitnessgram® and SWP Data

Twenty-seven SWPs were electronically submitted by school districts in SHL and Putnam City schools to the Oklahoma State University Evaluation (OSU-E) team for evaluation purposes. The SWPs submitted were developed following the federally mandated Child Nutrition and Women's, Infants, Children Reauthorization Act of 2004 (CNRA). Fitnessgram® data was coded and obtained by PEP grantees, which was required for schools receiving PEP grants. Fitness and wellness policy data was collected from districts for the 2014-2015 school year. Fitnessgram® data is representative of three administrations with unique individuals from the fall 2014, winter 2015, and spring 2015 which was required for schools to report. HFZ attainment

was determined for all six tests at the individual level and at the district level. The number of HFZ achieved for each student was the outcome variable and students could achieve 0-6 for the 6 Fitnessgram® tests.

School Wellness Policy Assessment Tool

With a large number of SWPs being implemented nationwide following the CNRA passage, a need for evaluating these policies became essential. A 96-item coding tool was developed by Schwartz et al. (2009) which divided policies into seven area subscales: nutrition education, meal standards, competitive foods, physical education, physical activity, communication and promotion, and evaluation. The goal of this tool is to offer a standard method for quantitative assessment of SWPs.

An abbreviated version of the 96-item coding tool was developed by the Rudd Center for Food Policy & Obesity is called the Wellness School Assessment Tool (WellSAT) which includes 78 policy items (Appendix B). It has been updated recently to address the new requirements of the HHFKA and renamed the WellSAT 2.0 (Rudd Center, n.d.). The addition of best practices in the areas of food marketing, physical education and physical activity in schools is a new feature of the WellSAT 2.0. Also, the WellSAT 2.0 includes more extensive monitoring and evaluation of compliance with SWPs. The WellSAT looks exclusively at the written portion of the SWP. The WellSAT-i, which is still being developed, will measure implementation more closely (Rudd Center, n.d.) and be useful for future SWP studies.

Each item is scored as a zero, one, or two. A zero is received if there is no mention of the policy; a one is received if there is mention of the topic or use of vague language; and a two is received if the topic is addressed in a specific and directive manner. Strong language is used to decipher the difference between a one and a two. Words that are indicative of strong language being used are “will”, “require”, “shall”, “have to” and “must”. Words that are indicative of

weak language being used are “should” or “encourage” (Rudd Center, n.d.). For an item to be scored as a two, strong language must be present. The scores for each of the 78 items are totaled to generate two scores; comprehensiveness and strength. The comprehensiveness score reflects the amount of items within that scale scored as a one or two, indicating that the policy addressed the topic. The strength score reflects the amount of items coded as a two, indicating that the policy addressed the topic with clear and specific language (Schwartz et al., 2009). Comprehensiveness and strength scores are also calculated by section to yield a score for each section. Possible scores for both, total strength and total comprehensiveness range from 0-100 and are a percentage of 100.

Schwartz et al. (2009) tested the WellSAT for interrater reliability (IRR) by computing the intraclass correlation coefficient (ICC). The ICC for the mean IRR for both total strength and comprehensiveness cores was 0.82. Cronbachs α value determined for each subscale was internally valid at acceptable to excellent levels. Alpha values for each subscale were: competitive foods 0.93, meal standards 0.79, physical activity 0.75, physical education 0.74, communication and promotion 0.71, evaluation 0.71, and nutrition education 0.60. Results demonstrate that the WellSAT is a reliable and consistent tool that can be used to quantitatively assess SWP quality (Schwartz et al., 2009).

Policies for the present study were evaluated and scored by a trained individual using a scoring template (Appendix C) (Berg, 2015). Training included completion of the Yale’s Rudd Center for Food Policy and Obesity webinar and establishment of an acceptable inter-reliability rating between four scorers.

Fitnessgram® Test Data

To measure cardiorespiratory fitness and VO2max, a PACER test is administered which is a 20-meter shuttle run that increases intensity as time progresses. A cadence is played

throughout administration of the test to synchronize the test. The PACER test begins at a slow pace and increases every 60 seconds until the student can no longer keep up with the cadence. Musculoskeletal fitness is assessed by performing the curl-up, which tests abdominal strength and endurance, the trunk-lift, which tests trunk extensor strength and flexibility, the push-up, which tests upper body strength and endurance, and the back-saver sit & reach, which tests hamstring flexibility. To test abdominal strength and endurance, the curl-up test is set to a cadence of twenty repetitions per minute. The score is determined by how many repetitions can be completed until synchronicity with the cadence is broken. To assess trunk extensor strength and flexibility, the trunk-lift test measures the distance between the floor and the individual's chin. The individual being tested should lie on his/her stomach with arms to the side and be able to hold the position long enough to be measured. The push-up test, which tests upper body strength and endurance, is performed along with a cadence. The individual is encouraged to complete as many repetitions as possible without falling behind the cadence. The back-saver sit & reach is a measure of hamstring flexibility. The individual is encouraged to reach as far as possible onto a box with one leg extended and the other bent in. Trials are done for both legs (Meredith & Welk, 2013).

For each test, an age- and sex-specific HFZ is determined based on criterion-referenced standards set forth by Fitnessgram®. There are two groups below the healthy fitness zone. A needs improvement (NI) zone is determined which is below the HFZ and indicates that if the individual remains at this level, they are at risk for potential future health risk. Below the NI zone is the needs improvement (NI) – Health Risk group, which suggests that if the individual remains at this level, there is a clear potential for future health problems. Not all tests possess a NI-Health Risk group, however all tests do have a HFZ and NI zone. The shaded grey area in figure 2 represents the HFZ for the Boy's PACER and Girl's Push-up tests. The area below the shaded grey area represents the NI zone. Note that males and females below the age of ten do not have a

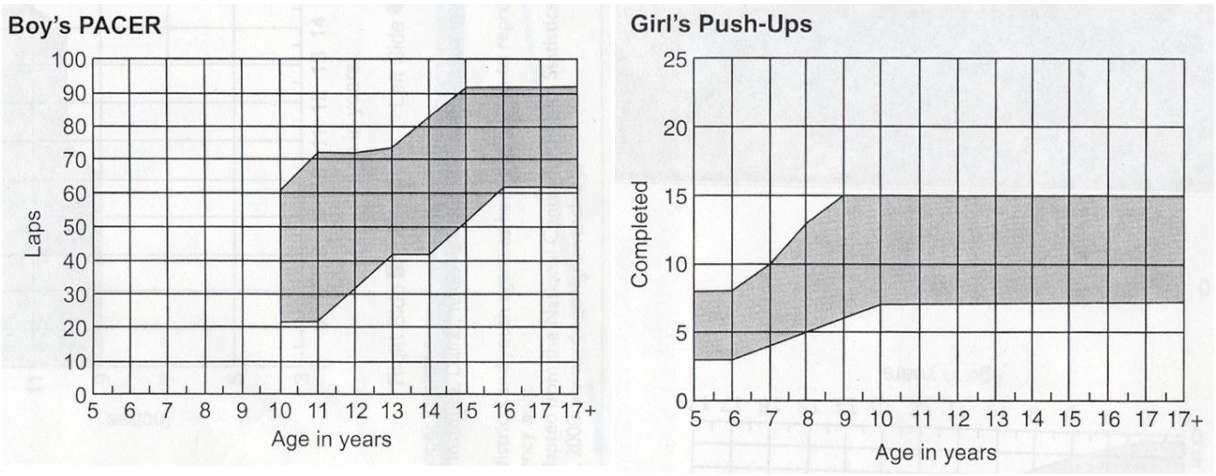

Figure 2*: Example of the HFZ and criterion-referenced standards for the boy's PACER and girl's push-up (Meredith & Welk, 2013).*

HFZ for the PACER test, because VO_2max values are not available for that age group (Meredith & Welk, 2013).

For this study, attainment of the HFZ for each test is coded as a one, and non-HFZ is coded as a zero. For each individual, the maximum score is six, implying that individual met the HFZ for all six of the six Fitnessgram® tests. The minimum score that could be achieved is zero, meaning that individual met the HFZ for zero of the six Fitnessgram® tests. If an individual only met the HFZ for three of the six Fitnessgram® tests, a score of three would be assigned.

Data Analysis

Data was analyzed by using IBM SPSS v23 and STATA 14, and assessed at the $p<0.05$ significance level. From the SWPs evaluated (N = 27), WellSAT total strength and comprehensiveness scores for each section and total scores will be used to represent policy data. With the varying sample size of students in each school district, a correlation test was completed to see if this affected the results of attainment of the HFZ. There was no significance, showing that the sample size of the school districts does not affect the results. Descriptive statistics were completed to demonstrate characteristics of data for age, weight, height, BMI, gender, and mean

attainment of HFZ. Two separate analysis were conducted: data aggregated at the district level; and individual level data.

A bivariate correlation analysis was completed comparing total strength and comprehensiveness scores to mean attainment of HFZ of students within the districts. To determine the mean attainment of the HFZ at the district level, each student in their respective district was aggregated to the district level. For this analysis, there are 27 subjects, representing each of the 27 districts.

At the individual level, a regression analysis was conducted using linear regression with clustered robust standard errors. Assumptions were met for correlation analysis, implying that the variable amount of students in each district did not affect validity of results. For this analysis, fitness data remained at the individual level, with 747 subjects clustered among 27 districts. This analysis compared total strength, total comprehensiveness, attainment of the HFZ, and gender.

CHAPTER IV

FINDINGS

The following section will include the data analysis and findings of this study. Statistics were determined from conducting correlation and regression tests on the attainment of the HFZ and total strength and comprehensiveness of SWPs. Descriptive statistics on the sample were also conducted.

Descriptive Statistics

Fitness results for all six tests include two cohorts of data: mean attainment of HFZ at the individual level, and mean attainment at the district level. To determine the mean attainment of the HFZ at the district level, each student in their respective district was aggregated to the district level. At the individual level (N=747), a regression analysis was completed comparing mean HFZ attainment and total mean strength and comprehensiveness of SWPs. At the district level (N=27), a correlational analysis was completed comparing mean HFZ attainment and total mean strength and comprehensiveness of SWPs.

Table 3 includes a descriptive analysis of mean attainment of HFZ of the participants. Individual attainment of the HFZ could range from 0-6, inclusive integers only. Mean attainment of the HFZ was ($\bar{x}$=3.97, SD=1.48).

Table 3*: Attainment of HFZ at the individual level*

N = 747	**Minimum**	**Maximum**	**Mean (x̄)**	**Std. Deviation (SD)**
Attainment of (0-6) HFZs	0	6	3.97	+/- 1.48

Table 4 includes the results of a descriptive analysis for all twenty-seven school districts' mean total strength and comprehensiveness WellSAT scores. Possible strength and comprehensiveness scores range from 0.00-100. Total comprehensiveness scores ranged from 3.85 to 70.51 (x̄=48.91, SD=15.40*).* Total strength ranged from 0.00 to 48.72 (x̄=24.13, SD=10.85*).* It can be seen that mean total strength score is about half as less as the mean total comprehensiveness score. HFZ attainment at the district level ranged from 2.75 to 6.00 (x̄=4.13, SD=0.74*).* Individual HFZ data in Table 4 is aggregated to the district level.

Table 4: Attainment of HFZ and total strength and comprehensiveness scores aggregated at the district level

N = 27	**Minimum**	**Maximum**	**Mean (x̄)**	**Std. Deviation (SD)**
Attainment of (0-6) HFZs	2.75	6.00	4.13	+/- 0.74
Total Comprehensiveness	3.85	70.51	48.91	+/- 15.40
Total Strength	0.00	48.72	24.13	+/- 10.85

Overall, more than half, and a majority of students were unable to meet the HFZ for at least five of the six tests outlined by Fitnessgram®. Meeting the HFZ for at least five of the six tests is the fitness standard outlined by PEP grant objectives. Table 5 shows the attainment of the HFZ divided by age and sex. Attainment of the HFZ for at least five of six tests for ten year olds was met by 49.7% (x̄=4.22) of males and 37.2% (x̄=3.84) of females. Attainment of the HFZ for at least five of six tests for eleven year olds was met by 38.4% (x̄=3.95) of males and 38.5% (x̄=3.80) of females. Attainment of the HFZ for at least five of six tests for twelve year olds was met by 43.5% (x̄=4.04) of males and 47.6% (x̄=3.62) of females. Attainment of the HFZ for at least five of six tests for thirteen year olds was met by 60.0% (x̄=4.40) of males and 50.0%

($\bar{x}$=4.50) of females. There was variability between the age groups, however overall, males had a higher mean attainment of the HFZ than females. Thirteen-year-old females had a higher mean attainment of the HFZ than males, however this age group had an abnormally low number of subjects (N=7), thus decreasing its significance.

Table 5*: Attainment of the Fitnessgram® HFZ for age and sex. BMI is one of the six Fitnessgram® tests.*

Age/Gender	**% meeting HFZ ≥ 5 of 6 tests**	**Mean HFZ Attainment ($\bar{x}$)**	**BMI HFZ**
10 years old			
Male (N=221)	49.7%	4.22	61.5%
Female (N = 215)	37.2%	3.84	67.4%
11 years old			
Male (N=151)	38.4%	3.95	45.7%
Female (N=109)	38.5%	3.80	64.2%
12 years old			
Male (N= 23)	43.5%	4.04	65.2%
Female (N=21)	47.6%	3.62	66.7%
13 years old			
Male (N=5)	60.0%	4.40	100%
Female (N=2)	50.0%	4.50	100%

Body composition is a commonly used measure to determine health of a population, so data concerning body composition is included in Table 5. In the ten-year-old sample, 61.5% of males and 67.4% of females met the HFZ for body composition by measuring BMI. Conversely, 38.5% of males and 32.6% of females did not meet the HFZ for body composition and were classified in the NI or NI-health risk category. The NI and NI-health risk category correspond to classification of overweight and obesity, respectively. In the eleven-year-old sample, 45.7% of males and 64.2% of females met the HFZ for body composition. In the twelve-year-old sample,

65.2% of males and 66.7% of females met the HFZ for body composition. Although possessing a low sample size, 100% of thirteen-year-olds met the HFZ for body composition.

Analysis 1: District Level Correlation

In each district, individual HFZ attainment was aggregated to the district level and a correlation was conducted with total strength and comprehensiveness scores (Table 6). A bivariate correlation analysis was completed which found that there was no significance between mean HFZ and mean total comprehensives (r=0.14, p=0.48), as well as mean HFZ and mean total strength (r=0.14, p=0.48). The correlation analysis showed that there was a significant correlation (r=0.89, p=0.00) between mean total comprehensiveness and mean total strength at the 0.01 level, which was to be expected.

Table 6*: Correlation analysis of attainment of HFZ, total comprehensiveness, and total strength at the district level.*

	HFZ Attainment	**Total Comprehensiveness**	**Total Strength**
HFZ Attainment			
Pearson Correlation (r)	X	0.14	0.14
Significance (p)	X	0.48	0.48
Total Comprehensiveness			
Pearson Correlation (r)	0.14	X	0.89
Significance (p)	0.48	X	<0.00
Total Strength			
Pearson Correlation (r)	0.14	0.89	X
Significance (p)	0.48	<0.00	X

Analysis 2: Individual Regression

Two analyses were conducted using linear regression with clustered robust standard errors by district in STATA 14 among 747 students clustered within 27 school districts (Table 7 & 8). Cases within school districts may be correlated, but not between districts. Two analyses were conducted for comprehensiveness and strength because both were highly correlated. Gender is associated with attainment of HFZ for both total comprehensiveness and strength (p=0.037, p=0.034), respectively. The attainment of the HFZ was not significantly predicted by total comprehensiveness or total strength (p=0.182, p=0.181), respectively. While the strength

(p=0.03) and comprehensiveness (p=0.04) models were significant with SWP and gender, variance was about 1%.

Table 7*: Regression analysis of gender and total comprehensiveness (gender: 0=female, 1=male)*

	Coefficient	**Std. Error**	**t**	**p**	**95% CI**
Gender	0.28	0.13	2.19	0.04	(0.02, 0.54)
Total Comp.	-0.01	0.01	-1.37	0.182	(-0.03, 0.01)
Constant	4.36	0.37	11.69	<0.00	(3.59, 5.13)

Table 8*: Regression analysis of gender and total strength (gender: 0=female, 1=male)*

	Coefficient	**Std. Error**	**t**	**p**	**95% CI**
Gender	0.29	0.13	2.23	0.03	(0.02, 0.55)
Total Str.	-0.01	0.01	-1.37	0.182	(-0.04, 0.01)
Constant	4.16	0.23	17.87	<0.00	(3.68, 4.64)

CHAPTER V

DISCUSSION

This section will discuss the findings of the previous chapter. The first section will discuss observations of the sample population, for both districts and individuals. Policy characteristics and total WellSAT scores for both strength and comprehensiveness will be examined. Next, interpretation of both, correlation and regression analyses will be performed which compares the extent to which the WellSAT corresponds to fitness levels in youth. The implications of this study will be presented followed by strengths and limitations of the present study. Lastly, recommendations for policy improvement on how school districts can improve the fitness of their students will be presented.

Policy and Population Characteristics

The policies that were submitted to OSU for review often followed a template policy, in other words, there would be school districts that possessed the same policy with similar structure and statements. It can be inferred that these template policies were provided to schools to adopt with the recommendation for unique revisions at the district level. With some schools possessing the same policies, it can be implied that schools did not make unique revisions and simply adopted the policy and accepted what was provided to them in order to comply with federal mandates.

A caveat of the WellSAT is that it only examines the written portion of the policy without

taking into consideration implementation. Schools could potentially adopt a strong or comprehensive policy without implementing or complying with what is written, or vice versa. In this current study, active policy implementation was not reviewed since it is not a component of the WellSAT. However, the Rudd Center for Food Policy & Obesity is currently in the development stage for the WellSAT-i, which looks more closely at implementation of SWPs. Typically, policies that are stronger and more comprehensive are more successful in active implementation, but the state of written policies and implementation is unknown in Oklahoma (Parsons et al., 2013)

From the 27 districts reviewed, 100% of schools possessed a SWP with varying total strength and comprehensiveness scores, in accordance with Schwartz et al. (2009). The mean total strength and comprehensiveness scores were 24.13 and 48.91, respectively. In a study evaluating the quality of SWPs in 151 school districts in Connecticut, mean total strength and comprehensiveness scores were 38.43 and 55.09, respectively (Schwartz et al., 2012). Total strength and comprehensiveness scores are higher in Connecticut; however, they are not significantly different than the sample of schools in this study from Oklahoma ($p=0.11$, $p=0.69$). Although state WellSAT scores from Connecticut may not be generalizable to other states, the strength and comprehensiveness scores from Schwartz et al. (2012) were consistent with national studies and studies from other states. The present study used the WellSAT 2.0 while Schwartz et al. (2012) used the first version of the WellSAT, so comparing scores may not be appropriate. Having a strong and comprehensive policy is meaningful to schools because they can be associated lower odds of being overweight or obese (Coffield et al., 2011).

Of the twenty-seven school districts evaluated, there were 747 subjects distributed between ages 10-13. Students below the age of ten, in grades one and two, were excluded from this study because VO_2max values for the Fitnessgram® PACER test are unavailable. Most of the subjects between ages 10-13 were in either the fifth (57.8%) or fourth (29.3%) grades, with

the remaining students being in grades three and six (12.9%). Gender was almost evenly distributed with 53.5% of the population being males and 46.5% of the population being females. The average weight of children, both males and females between the ages 10-13 was 97.40 lbs. A wide range of weights were reported for this age group with the lowest being 50lbs and the highest being 235lbs.

For age and sex, there are specific ranges of the BMI that relate to the HFZ, which can be viewed in Appendix A. BMI ranged in children from 11-55.6 kg/m^2 with the mean BMI being 20.3 kg/m^2. In all age groups besides thirteen year olds, >30% of the sample did not meet the HFZ for body composition, which classifies them as either overweight or obese. Eleven-year-old males had the lowest attainment of the body composition HFZ with 54.3% classified as either overweight or obese. Approximately 30-40% of children were overweight or obese in other age groups. Nationally, about one-third of children are overweight or obese which shows that rates in Oklahoma at, or above the national average depending on age (Ogden et al., 2014). Parents should be cognizant of their child's BMI because being obese negatively impacts attainment of the HFZ compared to normal weight children, increases odds of being overweight as an adult, as well as a wide range of other health consequences (Welsh, 2014; Whitaker et al., 1997).

SWP and Fitness Relationship

The link between fitness and strength and comprehensiveness of SWPs has not been defined before, which makes this research novel. Evaluation of the results will be presented; however, because of the originality, research parallels are limited.

Research has shown that SWPs can be significantly associated with attenuating obesity, depending on study design (Coffield et al., 2011; Parsons et al., 2013). Although SWPs have been found to be related to improvements in behavior and outcomes, when comparing the strength and comprehensiveness of SWPs to physical fitness in children, there is no relation. In

both correlational and regression analyses, there was no significant correlations between SWPs and physical fitness. The only parameter that was significantly related to total strength and comprehensiveness was attainment of the HFZ by gender at the $p < 0.05$ level, $p=0.037$ and $p=0.034$ respectively. In this case, males had a better chance of attaining more HFZs for stronger and more comprehensive policies than females. This suggests that gender is associated with higher HFZ attainment and that males have a greater chance of reaching the HFZ than females. Females on the other hand, are less likely to meet the HFZ at the same strength and comprehensiveness level.

Overall, a majority of students were unable to meet the HFZ for at least five of the six Fitnessgram® tests, which are the standards set forth by districts receiving funding from PEP grants. A descriptive analysis of HFZ attainment by age and sex showed that males have a higher mean attainment of the HFZ than females, excluding the 13-year-old group. Less than 50% of both males and females met the HFZ for at least five of six tests however, regression and descriptive analyses show that males have a higher mean attainment of the HFZ than females. In schools using Fitnessgram®, there is a significantly higher percentage of students in the HFZ that are males, than females (Gao & Kaplan, 2012). In a sample of over 38,000 students' Fitnessgram® data across over 1,000 districts found that for students 10-12 years old, a larger percentage of males were in the HFZ for cardiovascular fitness and BMI than females (Welk et al., 2010). Criterion-referenced standards for cardiorespiratory fitness assessed by Fitnessgram® were also met by a greater percentage of males than females (Anderssen et al., 2007; Lobelo et al., 2009; Welsh, 2014). In national studies, males have consistently been able to reach the HFZ in greater numbers than females, which is in line with the findings from the present study. With less than 50% of students meeting the fitness standard set for by PEP grant criteria, fitness in Oklahoma schools has room for improvement.

A possible explanation for the finding that a majority of subjects were unable to meet the HFZ for at least five of six Fitnessgram® tests could be attributed to the individual(s) administrating the tests. Overall, physical education teachers do a satisfactory job at test administration, but test results improve when experts are involved (Morrow et al., 2010). Due to shortages of time and trained staff to assist in large-scale Fitnessgram® test administration, physical education teachers often rely on students, parents, and other individuals to assist in administrating the Fitnessgram® tests. It is crucial for schools to conduct widespread training for individuals administering Fitnessgram® tests because validities and reliabilities can increase with training (Morrow et al., 2010). Training can include, but not limited to review of the Fitnessgram® manual, online trainings, DVDs, and in-person trainings (Morrow et al., 2010).

The low levels of fitness in Oklahoma schools is in line with the obesity and physical inactivity statistics in Oklahoma. Oklahoma exists as the 7th most obese state in the nation and local childhood obesity higher than the national average (TFAH, 2014). Additionally, Oklahoma ranks as the 6th most physically inactive state in the nation with 25% of the population abstaining from physical activity (OSDH, 2014). With physical activity and body composition existing as key factors that make up physical fitness, the physical fitness of students in Oklahoma students is affected negatively by these statistics. This underlines the importance of creating goals aimed towards obesity and physical activity.

Physical fitness is an important marker for schools to be aware of because it is significantly associated with improvements in academic performance and decreased delinquencies (Gao & Kaplan, 2012; Rauner et al., 2013; Roberts et al., 2010; Welk et al., 2010). There are multiple health benefits of increased physical fitness, such as reduced total and abdominal adiposity, reduced cardiovascular disease risk factors, improved skeletal health, and improved mental health (Anderssen et al., 2007; Lobelo et al., 2009; Ortega et al., 2008). Facilitating factors that have led to a higher percentage of students in the HFZ include teacher

conferences, adequate outdoor/indoor facilities, wellness programs, physical education participation, practicing before Fitnessgram® administration, and recess time (Zhu et al., 2010). The findings of this study suggest that there is room for improvement in physical fitness in Oklahoma schools, as a majority of students are not meeting the HFZ for at least five of six Fitnessgram® tests.

Results of this study suggest that changes to the written portion of SWPs are not enough to result in changes in physical fitness. Schools should look more closely at their physical education program and investigate spending more time per week promoting physical activity through physical education classes, in-class activity, recess, and before/after school activities. Time spent being physically active is the strongest predictor for changes in physical fitness. As a general recommendation for children, the CDC recommends sixty minutes of moderate-intensity physical activity every day, and the time students spend in school can contribute to this goal (CDC, 2011). Physical education laws in Oklahoma mandate only 60 minutes of physical education per week in grades K-5 in addition to 60 minutes of physical activity, which may be counted as recess (NASPE, 2012). National organizations including the CDC, SHAPE America, the Institute of Medicine, and the AHA recommend 150 minutes of physical education each week in elementary schools. Nationwide, while 90% of districts possess a strong policy for physical activity goals, only 5% of districts have a strong policy for attaining the recommended 150 minutes per week in elementary schools (Chriqui et al., 2013). It is encouraged that elementary schools extend beyond the state requirement and include at least 150 minutes of physical education per week.

During assessment of written policies in the current study, the physical education and physical activity (PEPA) section was one of the six sections of the WellSAT where there was great variability among district policies and scores were routinely weak in strength and comprehensiveness. This finding is in line with findings from Chriqui et al. (2009) that while

most schools possessed statements regarding physical education and physical activity, schools failed to write more specific goals in this area. Goals where a majority of schools had no policy or a weak policy included physical activity outside physical education, withholding physical activity as punishment, daily recess, physical education time requirements, physical education time devoted to moderate-vigorous physical activity, and qualifications of physical education instructors (Chriqui et al., 2009). Following implementation of the HHFKA, the PEPA still remained a section that contained weak language (Chriqui et al., 2013). Even though the relationship found in the present study between written policies and physical fitness is weak, schools should consider adopting stronger statements for physical education and physical activity, especially the statements outlined by Chriqui et al. (2009), in hopes of improving time spent being active and physical fitness.

In order to achieve higher physical fitness levels, schools should work towards meeting the minimum requirement of physical activity outlined by the CDC. The physical education program within a school is largely responsible for providing a majority of physical activity to students in school and because of this, it is imperative that schools provide a strong physical education program for students to experience the benefits of both, physical fitness and physical activity. Schools should make an effort to find a balance between physical activity and time spent in subject areas without having it negatively impact academic performance. Up to an hour of daily physical activity programs can be added to a school curriculum without having it negatively impact students' school performance (Trudeau & Shephard, 2008). It has also been found that structured physical activity programs, adding fitness equipment, and providing physical activity breaks for students can help achieve higher levels of physical activity (Chang et al., 2010). Although there are no federal incentives for a school to adopt a formal physical education program, it is strongly suggested that schools do so.

Policy implementation is the most commonly cited concern in unsuccessful policies. While some schools may have strong and comprehensive policies, they may not have the resources to adequately enforce the policy. Common barriers of implementation include lack of time for physical activity, insufficient understanding of written policies by staff and parents, limited formal physical education requirement, and unappealing food (Sánchez et al., 2012). Implementation can be ameliorated by focusing on these barriers and working to improve these areas, as well as incorporate facilitating factors of policy implementation. These include improving the opportunities for physical activity, availability of healthy food choices, and acquiring grant funding or boosting financial resources (Sánchez et al., 2012).

Nutrition and physical activity supports are both important aspects of health and physical fitness within the community. Being located in a food desert is a strong risk factor for obesity which is linked to physical fitness (Blanchard & Lyson, 2006). Of the 27 school districts evaluated in this study, 16 are located in food deserts, accounting for 59% of the sample population (USDA, 2015). Food deserts as defined by the USDA, are a low-income and low-access area where residents are located far away from a supermarket. For rural areas, "far" is defined as 10 miles and 1 mile for urban areas (USDA, 2015). Optimal nutrition is important for achieving good health and physical fitness and with over half of students being located in food desert communities, improvements in health and physical fitness becomes difficult. Breakfasts and lunches at school positively contribute to the health of children by complying with the health standards set by the USDA. Children consume between 19-50% of their total daily calories on average at school, which means that children must rely on home and community supports to complement their food intake (Gleason & Suitor, 2001). It is encouraged that children consume a diet that is rich in whole grains, fruit, vegetables, nuts, fiber, whole-grains, and low-fat milk outside of school, however these items can be difficult to procure in a food desert. Perhaps, if a greater percentage of districts were located outside of food deserts, students would become less

obese. Students who are overweight or obese have a significantly lower chance of meeting the HFZ for the Fitnessgram® tests, and normal weight students have a significantly higher chance of meeting the HFZ than overweight or obese students (Welsh, 2014). Although nutrition and food access can't directly contribute to physical fitness, it becomes important when discussing its direct effect on obesity.

The built environment within the community regarding physical activity supports is also a predictor of weight status. Communities that have limited access to parks, sidewalks, physical education classes, exercise facilities, and public transportation are positively correlated with gaining weight (Lutfiyya et al., 2007). Predominately rural states like Oklahoma have weaker built environments which contributes to obesity. Like food access, physical activity supports within the environment do not directly contribute to physical fitness, but remains a rather important factor.

The findings from this study suggests that attainment of the HFZ and strength and comprehensiveness of SWPs are not correlated illustrates the limits to which SWPs can modulate outcome changes in students. As discussed before, SWPs can modulate change in health behaviors and outcomes such as obesity and BMI, however the effect that SWPs can have on fitness still remains in question. Compared to other states, Oklahoma possessed weaker policies, which could have a diminished effect on modulating fitness outcomes. Additionally, less than fifty percent of students are meeting the HFZ standard for at least five of the six Fitnessgram® tests. Perhaps improvements in SWPs, especially statements regarding physical activity and physical education, would lead to effects in fitness. Implications for these findings exist for parents, students, and school administrators.

Implications

Childhood obesity rates remain at an alarming level and since schools are a major environment where children spend most of their time, focus is directed at schools for harboring change. SWPs are an excellent tool mandated by the federal government to assure that compliance with requirements are met. Districts have the responsibility to create strong and comprehensive policies with a goal to improve the health of their students and staff. Also, students and parents have the opportunity to provide input through committees. The social ecological model illustrates how policy change is controlled at multiple levels in society, however it takes effort at every level to achieve success, especially at the more narrow levels of the model. If positive health behaviors are only being enforced at school, and home and community environments are not applying the same effort, an imbalance occurs in the individual.

School administrators should be made aware that having a strong and comprehensive policy doesn't necessarily guarantee improved outcomes for their students, in this case physical fitness. If implementation lacks sufficient execution, the policy will have a reduced effect on the individual. If school administrators want to improve the fitness of their students, they should look into communicating with parents and the local community to expand physical activity opportunities for children. With the latest version of the Fitnessgram® software, informative individualized student reports can be generated and sent home to parents to make them aware their child's performance in comparison to standards. Alternatively, administrators can shift focus towards expanding implementation efforts of their current policy.

Parents should consider being consistent with federal guidelines for physical activity and nutrition for their children at home. This is especially important in Oklahoma, ranking 44th in the nation for active living (OSDH, 2014). Physical inactivity rates are also high and more than 25% of Oklahomans are abstaining form physical activity (OSDH, 2014). Results from this study show that schools only have a limited extent to which they can change behaviors and outcomes. Relying on schools as a sole source for activity will not lead to changes in fitness. An improved

home or community environment aligned with the federal guidelines will keep activity levels consistent throughout the day leading to better fitness. Among the home, community, and school environments, 41% of children are reporting that they are getting 60 minutes of exercise less than one day a week (YMCA, 2011). Even though children are reporting low overall amounts of activity, 90% of parents claim they provide a healthy environment for their children (YMCA, 2011). Parents are also encouraged to be active in SWP committees to help boost efforts within the home and community. Older students also have the opportunity to be active in committees and the students that volunteer for these positions should exemplify positive attitudes towards health.

Although the strength and comprehensiveness of policies is not associated with changes in fitness, perhaps possessing stronger statements regarding physical activity within SWPs could improve fitness. Since physical activity and physical fitness are related, markedly improving the physical activity elements of a SWP would likely change physical fitness, however that is not certain. Individuals involved in policy development should consider the extent to which they could improve their physical activity and physical education programs, because it can only facilitate positive outcomes.

Strengths and Limitations

The two main variables in this study, physical fitness and SWPs have not been looked at in the same study before, making this research unique. Physical fitness can be difficult to measure and quantify, which is most likely the reason that it has not been studied before. Now that an increasing amount of schools in Oklahoma are using Fitnessgram®, a tool used to measure physical fitness; the measure becomes easy to assess. The validity of Fitnessgram® as a tool is considered to be the most psychometrically sound assessment of fitness in youth and has been used for over 30 years, so confidence can be preserved in the results (Morrow, Martin, Jackson, 2010). Although there are more direct ways to measure cardiorespiratory fitness, for

example, a treadmill stress test equipped with a metabolic cart, however these tests are unadvised for children and do not take into account muscular strength, muscular endurance, and flexibility like Fitnessgram® does.

The legitimacy of both tools, the WellSAT and Fitnessgram® is a strong point in this study for assessing two primarily qualitative variables, physical fitness and SWPs. Both, physical fitness and SWPs cannot be directly measured which is why we need tools to quantify these variables. The WellSAT is the most commonly used tool to assess SWPs and possesses acceptable IRR ratings (Schwartz et al., 2009). For this study, IRR was established before the study for one scorer who went on and scored all twenty-seven policies. Because one scorer was used to score all the policies in this study, IRR between scorers during the study was not a concern, as the sole scorer stayed consistent throughout. Both tools used, the WellSAT and Fitnessgram®, are the best tools currently available and backed by considerable research compared to other tools.

With twenty-seven districts and 747 subjects within the districts, there were two ways to evaluate the data. Fitness data was aggregated at the district level to conduct a correlation analysis. To reduce the amount of standard error, all 747 students' fitness data were applied in a regression analysis. Although both methods of analyses yielded insignificant results, the use of two different assay increases validity of the results.

With no studies in the past to guide the methodology of the present study, there were a couple of limitations that grew as the study progressed. In this study there were only twenty seven districts evaluated, which possessed varying amount of students in each district. In some districts like Nowata, there were only two students with data, while Putnam City schools had data for 311 students. The validity of the data in districts only possessing a small amount of students is compromised because only a few students are representing the district as a whole. In schools

with larger numbers of students, the data is more valid. Using a sample of districts with a more consistent student population would increase the validity of the results.

A limitation of this study as well as the WellSAT tool, is that implementation of SWPs is not measured. SWPs that are strong and comprehensive doesn't necessarily mean they are being implemented to their fullest extent. Although elements of implementation are assessed in the WellSAT, actual active implementation of SWPs is not. How well schools are implementing their policy is a key variable that plays into behavior and outcomes of students. In the future, measurement of implementation using the WellSAT-i alongside content of written policies measured by the WellSAT 2.0 would help reinforce validity further.

Recommendations

There are several recommendations that can be made to improve the fitness of students and strength and comprehensiveness of SWPs. Although these two variables were found to be unrelated in this study, a brief synopsis of recommendations will be made in this section for government officials, district officials, policy developers, community members, parents, and students.

- Policy developers should look into incorporating additional statements in the PEPA section of their SWPs. Although this study found no relation between policy and fitness, including strong statements related to physical activity can only be of benefit.

- School districts should work to ensure that implementation efforts are in line with what is written in their SWPs. Policy developers should look into facilitating factors and barriers related to implementation efforts.

- Policy developers should tailor their SWP the specific needs of their student population, rather than adopting a template policy without modification.

- Stakeholders in the community should work to improve access to healthy foods since nutrition, health, and fitness are related. Access should be particularly increased in Oklahoma districts located in food deserts.

- School districts should encourage physical activity behaviors at the home environment since it takes effort at all levels of society to produce change in an individual. Informative and easily understood individual Fitnessgram® generated reports should be sent to parents and guardians to keep them informed about their student.

- Stakeholders in the community should look into boosting supports for physical activity in the built community environment.

- Physical education teachers should look into incorporating specific activities into their curriculum where students are routinely scoring low in the Fitnessgram® assessment.

- A wellness committee should be established that includes individuals among all levels of society that are truly invested in improving the health of students. This will lead to a more focused effort in creating policy change.

Conclusion

School districts can serve as a key environment in making strides to counter the obesity epidemic. Also, SWPs serve as an effective tool for school districts to use to assist in meeting goals for nutrition education, school meals, physical activity, and physical education. The comprehensive approach that SWPs take toward childhood obesity fails to meet the more specific goal of physical fitness. In Oklahoma, the strength and comprehensiveness of SWPs evaluated by the WellSAT does not significantly influence physical fitness, evaluated by Fitnessgram®. Existing as one of the most obese states, Oklahoma school districts may consider working with, and improving physical activity supports within the home and community environments, as these

are key environments that impact a child's fitness. Furthermore, district wellness committees should consider developing strong statements regarding physical education and physical and ensure implementation is in line with what is written in the policy. To improve physical fitness in students, school districts must be part of a holistic approach for improving supports for physical activity and physical education among all levels of society. Even more, the testing procedure can be engaging for students, and physical fitness can become a measure that school districts continually emphasize to improve the health of students.

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APPENDICES

Appendix A

Standards for the HFZ by Age and Sex (Merideth & Welk, 2013)

FITNESSGRAM®
The Cooper Institute

IN PARTNERSHIP WITH Play60 THE NFL MOVEMENT FOR AN ACTIVE GENERATION

Standards for Healthy Fitness Zone®
Version10.x

BOYS

	Aerobic Capacity VO_{2max} (ml/kg/min) PACER, One Mile Run & Walk Test			Percent Body Fat				Body Mass Index			
	NI-Health Risk	NI	HFZ	Very Lean	HFZ	NI	NI-Health Risk	Very Lean	HFZ	NI	NI-Health Risk
5	*Completion of test. Lap count or time standards not recommended.*			≤8.8	8.9-18.8	18.9	≥27.0	≤13.8	13.9-16.8	16.9	≥18.1
6				≤8.4	8.5-18.8	18.9	≥27.0	≤13.7	13.8-17.1	17.2	≥18.8
7				≤8.2	8.3-18.8	18.9	≥27.0	≤13.7	13.8-17.6	17.7	≥19.6
8				≤8.3	8.4-18.8	18.9	≥27.0	≤13.9	14.0-18.2	18.3	≥20.6
9				≤8.6	8.7-20.6	20.7	≥30.1	≤14.1	14.2-18.9	19.0	≥21.6
10	≤37.3	37.4-40.1	≥40.2	≤8.8	8.9-22.4	22.5	≥33.2	≤14.4	14.5-19.7	19.8	≥22.7
11	≤37.3	37.4-40.1	≥40.2	≤8.7	8.8-23.6	23.7	≥35.4	≤14.8	14.9-20.5	20.6	≥23.7
12	≤37.6	37.7-40.2	≥40.3	≤8.3	8.4-23.6	23.7	≥35.9	≤15.2	15.3-21.3	21.4	≥24.7
13	≤38.6	38.7-41.0	≥41.1	≤7.7	7.8-22.8	22.9	≥35.0	≤15.7	15.8-22.2	22.3	≥25.6
14	≤39.6	39.7-42.4	≥42.5	≤7.0	7.1-21.3	21.4	≥33.2	≤16.3	16.4-23.0	23.1	≥26.5
15	≤40.6	40.7-43.5	≥43.6	≤6.5	6.6-20.1	20.2	≥31.5	≤16.8	16.9-23.7	23.8	≥27.2
16	≤41.0	41.1-44.0	≥44.1	≤6.4	6.5-20.1	20.2	≥31.6	≤17.4	17.5-24.5	24.6	≥27.9
17	≤41.2	41.3-44.1	≥44.2	≤6.6	6.7-20.9	21.0	≥33.0	≤18.0	18.1-24.9	25.0	≥28.6
>17	≤41.2	41.3-44.2	≥44.3	≤6.9	7.0-22.2	22.3	≥35.1	≤18.5	18.6-24.9	25.0	≥29.3

	Curl-up # completed	Trunk Lift inches		Push-up # completed	Modified Pull-up # completed	Flexed Arm Arm Hang seconds	Back Saver Sit & Reach** inches	Shoulder Stretch
5	≥2	6	12	≥3	≥2	≥2	8	Healthy Fitness Zone = Touching fingertips together behind the back on both right and left sides
6	≥2	6	12	≥3	≥2	≥2	8	
7	≥4	6	12	≥4	≥3	≥3	8	
8	≥6	6	12	≥5	≥4	≥3	8	
9	≥9	6	12	≥6	≥5	≥4	8	
10	≥12	9	12	≥7	≥5	≥4	8	
11	≥15	9	12	≥8	≥6	≥6	8	
12	≥18	9	12	≥10	≥7	≥10	8	
13	≥21	9	12	≥12	≥8	≥12	8	
14	≥24	9	12	≥14	≥9	≥15	8	
15	≥24	9	12	≥16	≥10	≥15	8	
16	≥24	9	12	≥18	≥12	≥15	8	
17	≥24	9	12	≥18	≥14	≥15	8	
17+	≥24	9	12	≥18	≥14	≥15	8	

**Test scored Yes/No; must reach this distance on each side to achieve the HFZ.

FITNESSGRAM®
The Cooper Institute

IN PARTNERSHIP WITH NFL Play60 THE NFL MOVEMENT FOR AN ACTIVE GENERATION

Standards for Healthy Fitness Zone®
Version 10.x
GIRLS

	Aerobic Capacity VO_{2max} (ml/kg/min) PACER, One Mile Run & Walk Test			Percent Body Fat				Body Mass Index			
	NI-Health Risk	NI	HFZ	Very Lean	HFZ	NI	NI-Health Risk	Very Lean	HFZ	NI	NI-Health Risk
5				≤9.7	9.8-20.8	20.9	≥28.4	≤13.5	13.6-16.8	16.9	≥18.5
6	*Completion of test. Lap count*			≤9.8	9.9-20.8	20.9	≥28.4	≤13.4	13.5-17.2	17.3	≥19.2
7	*or time standards not*			≤10.0	10.1-20.8	20.9	≥28.4	≤13.5	13.6-17.9	18.0	≥20.2
8	*recommended.*			≤10.4	10.5-20.8	20.9	≥28.4	≤13.6	13.7-18.6	18.7	≥21.2
9				≤10.9	11.0-22.6	22.7	≥30.8	≤13.9	14.0-19.4	19.5	≥22.4
10	≤37.3	37.4-40.1	≥40.2	≤11.5	11.6-24.3	24.4	≥33.0	≤14.2	14.3-20.3	20.4	≥23.6
11	≤37.3	37.4-40.1	≥40.2	≤12.1	12.2-25.7	25.8	≥34.5	≤14.6	14.7-21.2	21.3	≥24.7
12	≤37.0	37.1-40.0	≥40.1	≤12.6	12.7-26.7	26.8	≥35.5	≤15.1	15.2-22.1	22.2	≥25.8
13	≤36.6	36.7-39.6	≥39.7	≤13.3	13.4-27.7	27.8	≥36.3	≤15.6	15.7-22.9	23.0	≥26.8
14	≤36.3	36.4-39.3	≥39.4	≤13.9	14.0-28.5	28.6	≥36.8	≤16.1	16.2-23.6	23.7	≥27.7
15	≤36.0	36.1-39.0	≥39.1	≤14.5	14.6-29.1	29.2	≥37.1	≤16.6	16.7-24.3	24.4	≥28.5
16	≤35.8	35.9-38.8	≥38.9	≤15.2	15.3-29.7	29.8	≥37.4	≤17.0	17.1-24.8	24.9	≥29.3
17	≤35.7	35.8-38.7	≥38.8	≤15.8	15.9-30.4	30.5	≥37.9	≤17.4	17.5-24.9	25.0	≥30.0
>17	≤35.3	35.4-38.5	≥38.6	≤16.4	16.5-31.3	31.4	≥38.6	≤17.7	17.8-24.9	25.0	≥30.0

	Curl-up # completed	Trunk Lift inches		90⁰ Push-up # completed	Modified Pull-up # completed	Flexed Arm Arm Hang seconds	Back Saver Sit & Reach** inches	Shoulder Stretch
5	≥2	6	12	≥3	≥2	≥2	9	Healthy Fitness Zone = Touching fingertips together behind the back on both right and left sides
6	≥2	6	12	≥3	≥2	≥2	9	
7	≥4	6	12	≥4	≥3	≥3	9	
8	≥6	6	12	≥5	≥4	≥3	9	
9	≥9	6	12	≥6	≥4	≥4	9	
10	≥12	9	12	≥7	≥4	≥4	9	
11	≥15	9	12	≥7	≥4	≥6	10	
12	≥18	9	12	≥7	≥4	≥7	10	
13	≥18	9	12	≥7	≥4	≥8	10	
14	≥18	9	12	≥7	≥4	≥8	10	
15	≥18	9	12	≥7	≥4	≥8	12	
16	≥18	9	12	≥7	≥4	≥8	12	
17	≥18	9	12	≥7	≥4	≥8	12	
17+	≥18	9	12	≥7	≥4	≥8	12	

**Test scored Yes/No; must reach this distance on each side to achieve the HFZ.

Appendix B
Wellness School Assessment Tool 2.0 (Rudd Center, n.d.)

SCHOOL WELLNESS POLICY EVALUATION TOOL

WellSAT 2.0

The Wellness School Assessment Tool 2.0 provides a standard method for the quantitative assessment of school wellness policies. Such policies have been required since 2006 in all school districts participating in the National School Lunch Program. This tool offers a consistent and reliable means of assessing the comprehensiveness and strength of school wellness policies within or among states. It was developed in 2010 and updated in 2014 by researchers funded by the Robert Wood Johnson Foundation.

How to use the School Wellness Policy Evaluation Tool

Rating Guidance

1

How to Rate Policy Statements

School wellness policies are evaluated based on the degree to which they address 78 policy items, which are categorized into six sections. The sections include Nutrition Education, Standards for USDA Child Nutrition Programs and School Meals, Nutrition Standards for Competitive and Other Foods and Beverages, Physical Education and Physical Activity, and Implementation, Evaluation and Communication.

For each of the 78 policy items, school wellness policy statements are to be rated "0," "1," or "2," using the definitions below. This evaluation tool lists each policy item followed by an explanation of the item and examples of "1" and "2" statements.

Rating		Explanation
0	**= Not Mentioned**	The item is not included in the text of the policy.
1	**= Weak Statement**	Assign a rating of "1" when the item is mentioned, *but*: • The policy will be hard to enforce because the statement is *vague*, *unclear*, or *confusing*. • Statements are listed as *goals*, *aspirations*, *suggestions*, or *recommendations*. • There are *loopholes* in the policy that weaken enforcement of the item. • The policy mentions a *future plan to act* without specifying when the plan will be established. Words often used include: *may, can, could, should, might, encourage, suggest, urge, some, partial, make an effort,* and *try*.
2	**= Meets / Exceeds Expectations**	Assign a rating of "2" when the item is mentioned, and it is clear that the policy makers are committed to making the item happen because: • The item is described using specific language (e.g., a concept followed by concrete plans or strategies for implementation). • Strong language is used to indicate that action or regulation is required, including: *shall, will, must, have to, insist, require, all, total, comply* and *enforce*. • A district is unable to enforce an item (e.g., teachers role modeling healthy behaviors), but the goal is clearly stated (e.g., "shall encourage teachers to role model healthy behaviors").

Evaluating Hint: One method for deciding between a rating of "1" and a "2" is to consider the scenario of a parent approaching a school district's board of education to discuss an issue. If the policy is ambiguous on how the school should handle the issue at hand, rate the item as "1." If the written policy gives clear guidance about how to decide whether the school complies with the policy, rate the item as "2."

Note: Many districts have policies in place that may impact or overlap with the district wellness policy. For example, many school boards have a stand-alone policy addressing student transportation that may address biking to school. If biking to school is also covered in the wellness policy, it is important to align the content of the two policies to avoid sending contradictory messages to the school community.

How to Score School Wellness Policies

The WellSAT 2.0 will give you two scores: a **comprehensiveness** score, which reflects the extent to which recommended content areas are covered in the policy; and a **strength** score, which describes how strongly the content is stated. Both scores range from 0-100, with lower scores indicating less content and weaker language, and higher scores indicating more content and use of specific and directive language.

Score	Explanation
Comprehensiveness Score by section	Comprehensiveness is calculated by counting the number of items in each section rated as "1" or "2," dividing this number by the number of policy items in the section, and multiplying this number by 100.
Strength Score by section	Strength is calculated by counting the number of items in each section rated as "2," dividing this number by the number of policy items in the section, and multiplying this number by 100.
Total Comprehensiveness	Total comprehensiveness is calculated by counting the number of items rated as "1" or "2," dividing this number by the total number of policy items (78) in all five sections, and multiplying this number by 100.
Total Strength	Total strength is calculated by counting the number of items rated as "2," dividing this number by the total number of policy items (78) in all five sections, and multiplying this number by 100.

The example below shows the calculation of sample scores for Section 1.

	Section 1. Nutrition Education		Rating
NEWP1	Nutrition curriculum provided for each grade level.		0
NEWP2	Links nutrition education with the school food environment.		1
NEWP3	Nutrition education teaches skills that are behavior-focused.		2
NEWP4	Encourages staff to be role models for healthy behaviors.		1
NEWP5	Specifies district using Centers for Disease Control and Prevention's (CDC) Coordinated School Health Program (CSHP) model or other coordinated/comprehensive method.		0
NEWP6	Specifies how district will engage parents, students or community to provide information and hear feedback to meet district wellness goals.		0
NEWP7	Specifies marketing to promote healthy choices.		1
	Subtotal for Section 1 *Nutrition Education*	Comprehensiveness Score *Count the number of items rated as "1" or "2" and divide this number by 7. Multiply by 100. Do not count an item if the rating is "0."*	57
		Strength Score *Count the number of items rated as "2" and divide this number by 7. Multiply by 100.*	14

Comprehensiveness Score = Three items are rated as "1" and one items is rated as "2," for a total of 4 items. Four divided by 7 equals 0.57, multiplied by 100 for a score of 57.
Strength Score= One item is rated as "2." One divided by 7 equals 0.14, multiplied by 100 for a score of 14.

In Section 3, item responses may vary if regulations are specific to elementary, middle and high schools. You can assign a score for each grade level. The final score for the item will be the average of the three responses given. Averages should be rounded up.

Section 1. Nutrition Education

NEPE1: There is a standards-based nutrition curriculum, health education curriculum or other curriculum that includes nutrition

0: Not mentioned

1: Vague and/or suggested

> Example: "Enable students, through a comprehensive curriculum, to acquire the knowledge and skills necessary to make healthy lifestyle choices."

2: Clear that district has a nutrition curriculum or health education curriculum that includes nutrition

> Example: "Nutrition lessons are integrated into the curriculum and the health education program."

NEPE2: All elementary school students receive nutrition education

0: Not mentioned

1: Suggested. It is unclear if all elementary school students will receive nutrition education.

> Example: "Nutrition lessons will be designed for integration into the curriculum and the health education program."

2. Required. It is clear that all elementary students will receive nutrition education

> Example: "Nutrition topics shall be integrated within the comprehensive health education curriculum and taught at every grade level (K-12)."

NEPE3: All middle school students receive nutrition education

0: Not mentioned

1: Suggested. It is unclear if all middle school students will receive nutrition education.

> Example: "Nutrition and physical activities lessons will be designed for integration into the curriculum and the health education program."

2. Required. It is clear that students in every grade will receive nutrition education

> Example: "Nutrition topics shall be integrated within the comprehensive health education curriculum and taught at every grade level (K-12)."

NEPE4: All high school students receive nutrition education

0: Not mentioned

1: Suggested. It is unclear if all high school students will receive nutrition education.

Example: "Nutrition and physical activities lessons will be designed for integration into the curriculum and the health education program."

2. Required. It is clear that students in every grade will receive nutrition education

Example: "Nutrition topics shall be integrated within the comprehensive health education curriculum and taught at every grade level (K-12)."

NEPE5: Links nutrition education with the school food environment

0: Not mentioned

1: Vague and/or suggested

Example: "The entire school environment, not just the classroom, shall be aligned with healthy school goals to positively influence a student's understanding, beliefs, and habits as they relate to good nutrition and regular physical activity."

2: Requires that nutrition education be integrated into the larger school environment in concrete ways.

Examples:

"The nutrition education program shall work with the school meal program to develop school gardens and use the cafeteria as a learning lab."
"Field trips: Children will have an opportunity to visit local farms where produce is purchased for school meals."

NEPE6: Nutrition education teaches skills that are behavior-focused

0: Not mentioned

1: Nutrition education for development of behavioral skills is suggested.

Examples:

"All students should have the skills necessary to make nutritious food choices."
"Students will receive nutrition education that fosters the adoption and maintenance of healthy eating behaviors."

2: Statement that skill-based nutrition education is required OR specific skills are identified and required (e.g., media awareness, menu planning, reading nutrition facts labels).

Examples:

"Nutrition education will incorporate lessons helping children acquire skills for reading food labels and menu planning."
"Schools will provide nutrition education lessons that cover topics such as reading a Nutrition Facts label."

NEPE7: Nutrition education is sequential and comprehensive in scope

0: Not mentioned

1: It is suggested that nutrition education is comprehensive and/or sequential

Examples:

"...should provide high quality nutrition education."

2: Statement that nutrition education is sequential OR is grade-appropriate

Examples:

"Nutrition education curriculum is aligned with state and federal learning objectives and standards."

Section 2. Standards for USDA Child Nutrition Programs and School Meals

SM1: Addresses access to the USDA School Breakfast Program

0: Not mentioned

1: Encourages or suggests participation in the School Breakfast Program.

Examples:

"The district shall make every effort to offer school breakfast."
"The district shall operate under USDA regulations for all of its school food programs."

2: Includes language to institutionalize the School Breakfast Program (e.g., specific reference to USDA, School Breakfast Program or CFR Part 220).

Example: "All schools will provide breakfast through the USDA School Breakfast Program."

SM2: Addresses compliance with USDA nutrition standards for reimbursable meals.

0: Not mentioned

1: Vague and/or suggested.

Examples:

"Meals offered are nutrient-dense and include whole grains, fruits, and vegetables."

"...all foods sold/served on campus will meet USDA Dietary Guidelines" (and no other mention about school meal programs in the policy that would alter the coding for this item)

2: Policy states that school meals are required to meet or are in compliance with USDA nutrition standards

Example:

"... shall ensure that all reimbursable school meals meet current USDA nutrition standards."

SM3: School meals meet standards that are more stringent than those required by the USDA.

0: Not mentioned

1: Suggested or recommended

"Schools are encouraged to serve fruit instead of juice and to phase out juice during the coming year."

2: Exceed USDA standards in some way

Examples:

"School meals will meet all current USDA nutrition standards. In addition, only unflavored, white milk will be sold with school breakfast and lunch."
"Juice will not be served as a substitute for fruit and vegetables."
"Fish is on the menu at least one time per week."

SM4: District takes steps beyond those required by federal law/regulation to protect the privacy of students who qualify for free or reduced priced meals.

NA: All schools qualify for community eligibility

0: Not mentioned

1: Vague/suggested

Example: "The district will consider whether additional steps should be taken to ensure that students qualifying for free or reduced priced meals are not overtly identified in any way."

2: District has implemented plans to protect student privacy (in addition to following relevant regulations)

Examples:

"The cafeterias are cashless—all students, regardless of the type of payment they make for school meals, or the food being purchased (meal or a la carte) are given a code to enter at the cash register."

"Competitive foods are sold from the same lines as reimbursable meals."

"Competitive foods are not sold during lunch periods."

SM5: USDA National School Lunch Program and School Breakfast Program standards are described in full (or a link to the standards is provided in the wellness policy)

0: Not mentioned

1: Some, but not all of the standards are outlined in the wellness policy

> Example: "Only fat-free and low-fat, unflavored milk will be available for purchase with breakfast and lunch." (no other standards described)

2: USDA standards are included in the policy or a working link to the USDA website is provided.

SM6: Specifies strategies to increase participation in school meal programs

0: Not mentioned

1: Mentions vague and/or suggested strategies

> Examples:
>
> "School meals shall be made attractive to students by appealing to their taste preferences."
> "To the extent possible, school and transportation schedules shall be designed to encourage participation in school meal programs."

2: Requires specific strategies such as limiting access to competitive foods in the cafeteria, requiring that all high school students have a scheduled lunch period, prohibiting students from promotional mailings or events, use of Smarter Lunchroom strategies, altered bus schedules, student input on the menu, "Grab and Go" or Breakfast in the Classroom.

> Examples:
>
> "Students will have the opportunity to provide input on local, cultural, and ethnic favorites."
> "Shall provide periodic food promotions to encourage taste testing of healthy new foods being introduced on the menu."
> "Morning bus routes will be scheduled to allow students to arrive at school in time to eat breakfast."
> "Tutoring, club or organizational meetings will not be scheduled during the lunch period unless students are allowed to purchase lunch to be consumed during meetings"
> "The district shall use the USDA's Smarter Lunchroom tools and other resources available on the USDA website."
> "The district discourages consumption of competitive foods *in place of* school meals by limiting competitive food choices during mealtimes in the cafeteria."
> "Items meeting Smart Snack standards, but traditionally served as dessert, such as cookies and ice cream, shall not be sold to students during the lunch period"
> "Snack foods may not be purchased during meals."

SM7: Addresses students leaving school during lunch periods

0: Not mentioned

1: Closed campus is recommended or suggested

Example: "High school administrative staff will strive to manage the lunch period schedule in a way that ensures adequate space and time for all students to eat, with the goal of eliminating the need for an "open campus" policy."

2: Students are prohibited from leaving campus for lunch/there is a "closed campus" policy in place

Example: "The district has a closed campus policy. School staff may not provide permission for students to leave campus for the purpose of obtaining lunch."

SM8: Ensures adequate time to eat.

0: Not mentioned

1: Vague and/or suggests a specific amount of time

Examples:

"Schools are encouraged to permit all full-day students a daily lunch period of not less than 20 minutes."
"Personnel will schedule enough time so students do not have to spend too much time waiting in line."

2: Requires meal periods to include at least 20 minutes of "seat time" for lunch and/or at least 10 minutes of "seat time" for breakfast.

Examples: "After obtaining food, students will have at least 20 minutes to eat lunch."

SM9: Ensures annual training for food and nutrition services staff in accordance with USDA Professional Standards

(Available: http://www.fns.usda.gov/sites/default/files/CN2014-0130.pdf)

0: Not mentioned

1: Training suggested, but unclear if USDA requirement is met

Example: "All food service personnel will have adequate training in food service operations."

2: It is clear that USDA requirement for training and/or continuing education is being met.

Example: "The USDA Professional Standards for State and Local Nutrition Programs are followed to ensure that professional development in the area of food and nutrition is provided for food service directors, managers and staff."

SM10: Addresses school meal environment

0: Not mentioned

1: Vague or suggested.

Example:"...will strive to make the cafeteria a pleasant environment for meals."

2: Requires specific strategies (ensures adequate space/seating, supervision, a clean, pleasant environment, etc.)

Example: "Appropriate supervision shall be provided in the cafeteria and rules for safe behavior shall be consistently enforced."

SM11: Nutrition information for school meals (e.g., calories, saturated fat, sodium, sugar) is available to students and parents.

0: Not mentioned

1: Available, but not disseminated widely

Example: "Will provide nutrition information to parents upon request."

2. Specific and required

Examples:

"Will share and publicize information about the nutritional content of meals with students and parents."

"Nutrition information for meals is made available in the cafeteria at the point of sale."

SM12: Specifies how families are provided information about determining eligibility for free/reduced priced meals.

NA: All schools qualify for community eligibility

0: Not mentioned

1: Vague/suggested

Example: "Parents should be informed that the application is available online and should be completed by..."

2: Clear procedure for providing information is in place

Example: "Applications for free/reduced priced meals are sent home to all families at the beginning of the school year. The application is also available on the district website."

SM13: Recess (when offered) is scheduled before lunch in elementary schools

0: Not mentioned

1: Recommended or weakened by principal discretion

Example: "Schools will be encouraged to schedule recess before the lunch period"

2: Required

Example: "All children will participate in daily recess which will be scheduled prior to the lunch period."

SM14: Free drinking water is available during meals.

0: Not mentioned

1: Drinking water is available, but not easily accessible

Examples:

"Drinking water is available in the cafeteria upon request."
"Students will be permitted to leave the cafeteria during meals to obtain water from a drinking fountain."

2: Free drinking water is available for self-service in the cafeteria

Example: "Students will be made aware of the availability of water during meals. Water jugs and cups will be present in the cafeteria and supervisory staff will allow students to access water throughout the meal period"

Section 3. Nutrition Standards for Competitive and Other Foods and Beverages

Note: This section relates to sale or service of foods **outside USDA school meals** (competitive foods) only. If a district wellness policy contains a statement regulating "all foods" at school, and it is unclear from the context of the policy whether the statement applies to competitive foods or USDA school meals, apply the statement to this section and to Section 2 (Standards for USDA School Meals).

- Some policies regulate foods "served" at school, while others only regulate foods "sold." "Served" foods include both those that are "sold" and those distributed for free, such as foods served at birthday parties

Definitions:

School Day: The period from the midnight before, to 30 minutes after the end of the official school day.

Extended School Day: After-school activities like clubs, sports practices, band, yearbook, after-care, etc.

View Smart Snacks Standards Here http://www.fns.usda.gov/sites/default/files/allfoods_flyer.pdf

Note: In this section you will be asked to specify whether policy items apply to all grade levels, or are specific to elementary (ES), middle (MS) or high school (HS).

Provide a response for each of the three levels (ES, MS, HS) for items NS—NS3, NS5-NS7 and NS11.

NS1 Addresses compliance with USDA nutrition standards for all FOODS sold to students during the school day (commonly referred to as Smart Snacks)

0: Not mentioned

1: Either of the following:

- Vague and/or suggested.
- Specifies meeting nutrition standards for competitive foods, but does not show specific standards that document compliance OR specify USDA Smart Snacks OR specify federal requirements.
- Lists some, but not all standards/ implies partial compliance

  Example: "All foods sold to students outside of school meals shall meet district nutrition standards"

2: All foods sold to students during the school day are required to meet or are in compliance with USDA Smart Snacks federal nutrition standards (or stronger standards such as the Institute of Medicine nutrition standards) or specific standards are named that imply compliance.

Examples:

"All snacks sold in vending machines, school stores, concession stands, and a la carte will be fruits, vegetables, whole grain products, low-fat dairy or protein foods that contain ≤ 200 calories, ≤ 35% sugar by weight, ≤ 35% calories from total fat, <10% of calories from saturated fat, zero transfat and <200mg of sodium."

"The district is in compliance with all federal and state nutrition standards for all foods served in schools."

NS2 Addresses nutrition standards for all FOODS sold to students during the EXTENDED school day (includes regular school day plus after school programming and clubs. Do not count snacks provided in before/aftercare (child care) programs)

0: Not mentioned

1: Either of the following:

- Addresses nutrition standards or Smart Snacks, but does not mention extended day.
- Nutrition standards apply to extended day, but they are weaker than Smart Snack standards

  Examples:
  "Only healthy snacks will be sold to children participating in on-site programs after school ends."

  "Snacks sold to students during after school programs must be less than 200 calories and be low in sugar and sodium."

2. Requires that foods sold during the extended school day meet or exceed Smart Snacks nutrition standards. Policy must either state that Smart Snacks or federal nutrition standards are used OR document compliance by providing a list of the nutrition standards.

Examples:

"Snacks sold to children participating in on-site programs after school ends will meet USDA Smart Snack nutrition standards."

"All snacks sold to students during after school programs will meet the same nutrition standards as foods sold during the school day."

"Nutrition standards apply to all foods sold to children before, during, after school and on evenings and weekends. All snacks will be fruits, vegetables, whole grain products, low-fat dairy or protein foods that contain < 200 calories, < 35% sugar by weight, < 35% calories from total fat, <10% of calories from saturated fat, zero transfat and <200mg of sodium."

NS3 Addresses nutrition standards for all FOODS AND BEVERAGES served to students while attending before/aftercare on school grounds

NA: Before/aftercare are not provided on school grounds

0: Not mentioned

1: Either of the following:

- Addresses nutrition standards or Smart Snacks, but does not mention before/aftercare/childcare.
- Nutrition standards apply to before/aftercare, but they are weaker than CACFP or Smart Snack standards

2. Requires that foods and beverages served to students in before/aftercare, whether run by the school or an outside party (e.g., YMCA) will meet CACFP nutrition standards OR Smart Snacks standards. Policy may state that one of these specific nutrition standards are followed, or may list the specific standards, providing evidence that they are followed.

Example: "Snacks in aftercare are served via the Child and Adult Care Food Program."

NS4 Regulates food served at class parties and other school celebrations in elementary schools.

0: Not mentioned

1: Any of the following:

- Foods served at class parties must meet Smart Snack standards
- An umbrella statement saying "all (competitive) foods" served at school must meet Smart Snack standards. Regulations for class parties are required but weakened (e.g., by allowing one traditional party food).
- Provide a specific and restricted list of food items allowed to be served/distributed/available at class parties or at all times (e.g., limiting to fruits and whole grains).

Examples:

"The district shall provide parents with a list of allowable party foods that meet the Smart Snack standards

"The district will regulate all food and beverages served during classroom activities."

"Classroom parties, celebrations, etc. shall be limited to one snack and one beverage from a list of Smart Snack allowable items."

2: No food is served during class celebrations.

Exception: food may be brought into the classroom no more than twice per year for activities related to curriculum (e.g.,Thanksgiving traditions are being studied).

Examples:

"Classroom celebrations will focus on activities, rather than food. No food will be served."

"Due to concerns about food safety and food allergies, children will be recognized on their birthdays by being given special privileges, such as being line leader or teacher's helper for the day. No food will be brought into the classroom."

NS5 Addresses compliance with USDA minimum nutrition standards for all BEVERAGES sold to students during the school day (commonly referred to as Smart Snacks)

0: Not mentioned

1: Either of the following:

- Vague and/or suggested.
- Specifies meeting nutrition standards for beverages sold in school, but does not specify USDA Smart Snacks standards OR list standards to indicate compliance.
- List some, but not all, Smart Snacks standards for beverages

Example: "All beverages sold in vending machines, school stores, etc. shall meet district nutrition standards for allowable beverages"

2: All beverages sold to students during the school day are required to meet or are in compliance with USDA Smart Snacks nutrition standards, or specific standards are named that imply compliance.

Example: "Vending machines will contain only beverages that meet Smart Snack standards including plain or carbonated water in any portion size, and 100% juice and low-fat unflavored milk or fat-free flavored or unflavored milk in portion sizes up to 8 ounces for elementary schools and 12 ounces for middle and high schools."

NS6 Addresses nutrition standards for all BEVERAGES sold to students during the EXTENDED school day (includes regular school day plus after school programming and clubs)

0: Not mentioned

1: Either of the following:

- Addresses nutrition standards or Smart Snacks, but does not mention extended day.
- Nutrition standards apply to extended day, but they are weaker than Smart Snack standards
- Suggests compliance by listing some, but not all Smart Snack nutrition standards for beverages

2. Requires that beverages sold during the extended school day meet or exceed Smart Snacks nutrition standards. Policy may specifically refer to Smart Snacks or federal nutrition standards OR may list the specific standards, providing evidence that they are followed.

Example:

- "Beverages served to children participating in after school programs will meet USDA Smart Snack nutrition standards."
- "Students participating in after school programs will be allowed to purchase snacks and beverages…. Beverages sold after school include: plain or carbonated water in any portion size, and 100% juice and low-fat unflavored milk or fat-free flavored or unflavored milk in portion sizes up to 8 ounces for elementary schools and 12 ounces for middle and high schools."

NS7 Addresses foods and beverages containing non-nutritive sweeteners.

0: Not mentioned

1: Recommends or suggests schools not sell foods and beverages with non-nutritive sweeteners

Example: "Schools are encouraged to limit the sale of beverages to water, 100% juice and milk."

2: Prohibits the sale of foods and/or beverages containing non-nutritive sweeteners during the school day

Example: "No beverages with non-nutritive sweeteners (artificial or natural), such as diet iced tea, diet soda, etc. will be sold to students during the school day"

NS8 Addresses foods and beverages containing caffeine at the high school level*

*As of 2014, USDA Smart Snacks standards prohibit the sale of foods and beverages containing caffeine in elementary and middle schools.

0: Not mentioned

1: Recommends or suggests high schools not sell foods and/or beverages with caffeine

"High school principals are encouraged to limit the sale of beverages to those that meet USDA Smart Snack standards for middle schools."

2: Either of the following:

- Prohibits the sale of foods and/or beverages containing caffeine (with the exception of trace amounts of naturally occurring caffeine) at all grade levels, during the school day
- Requires high schools to follow the stricter Smart Snack beverage standards for middle schools

Examples:

"USDA Smart Snack standards for beverages sold in elementary and middle schools shall also be applied in high schools."

"Beverages containing caffeine will not be sold on the high school campus."

NS9 USDA Smart Snack standards are described in full (or a link to the standards is provided in the wellness policy)

0: Not mentioned

1: Some, but not all of the standards are outlined in the wellness policy

Example: "A snack food item sold individually shall contain no more than 200milligrams of sodium per serving and no more than 35% of total calories from fat." (no other standards described)

2: The complete Smart Snack standards are included in the policy or an active web link is provided that includes the complete Smart Snack standards.

(Available: http://www.fns.usda.gov/sites/default/files/allfoods_flyer.pdf)

NS10 Addresses availability of free drinking water throughout the school day.

0: Not mentioned or only mentions water availability where meals are served.

1: Availability of free water is suggested or encouraged

Examples:

"Water shall be accessible during hours of school operation through choices such as drinking fountains or vending machines."
"Schools are encouraged to provide drinking fountains throughout the school campus."
"Students are allowed to bring in bottled water from home."

2: Free water is always available

Example:

"Students and staff will have access to free, safe, and fresh drinking water throughout the school day."
"Drinking water fountains will be made available to students and staff throughout the school building."
"Students will be provided access to drinking water throughout the day."

NS11 Regulates food sold for fundraising at all times (not only during the school day).

Note: Must specifically address "fundraising" for a rating of a "1" or "2." Regulating "all foods" during "the school day" or "at all times on school grounds" does NOT qualify for a rating of "1" or "2" because fundraising can occur off school grounds (e.g., catalogue orders for candy or cookie sales).

0: Not mentioned

1: Either of the following:

- Regulations of food sold for fundraising are vague, suggested, time- or location-specific, subject to principal's discretion, or weakened by exemptions.
- Regulates food sold for fundraising only during school day

Examples:

"...strongly encouraging the use of only non-food items to raise funds."

"...requiring administrative approval for all fundraisers."

"The district shall provide the PTA/PTO with a list of foods that meet the Smart Snacks nutrition standards

"Fundraising activities will strive to support healthy eating and wellness."

2: There are no exemptions for fundraisers OR any of the following:

- Regulate nutritional quality of each individual item sold for fundraising at all times; items must meet Smart Snacks nutrition standards.
- Provide a specific and restricted list of food items allowed to be sold for fundraising that meet Smart Snacks standards (e.g., limiting sales to water, fruits, vegetables, whole grains, and nuts).
- Provide a comprehensive list of prohibited unhealthy foods (e.g., baked goods, sweetened beverages, and candy) from being sold for fundraising.
- Prohibits the sale of food for fundraising during the regular and extended school day.

Example:

"Foods purchased to raise funds must meet the USDA's Smart Snacks standards."

"School fundraisers will include only non-food items such as gift wrap, light bulbs, plant sales, books, etc."

Section 4. Physical Education and Physical Activity

Districts may list national physical education standards, AAHPERD physical education standards, state physical education standards or National Association for Sport & Physical Education (NASPE) standards (note: NASPE is now known as SHAPE America yet standards are referenced in many school wellness documents). Only rate a "2" for items with reference to the above standards if district actually requires schools to follow all of the standards (either state or national). If above standards are suggested, or generic "standards-based" statement is made, rate as "1."

To view national physical education standards: http://www.shapeamerica.org/standards/pe/

To view physical education standards by state: http://www.shapeamerica.org/standards/pe/statestandards.cfm

PEPA1: There is a written physical education curriculum for grades K-12

0: Not mentioned

1: Vague and/or suggested

Example: "Physical education will enable students to acquire the knowledge and skills necessary to maintain physical fitness, participate in physical activities and make healthy lifestyle choices."

2: Clear that school district has a written physical education curriculum for each grade K-12 (e.g., policy describes a comprehensive physical education curriculum- for "K-12," "all levels," or "all students").

Example: "The school district's comprehensive, standards-based physical education curriculum identifies the progression of skill development in grades K-12. Physical education curriculum revision will follow a formally established periodic review cycle congruent to other academic subjects."

PEPA 2: The written physical education curriculum is aligned with national and/or state physical education standards.

0: Not mentioned

1: Vague and/or suggested

Example: "The physical education curriculum should follow existing standards."

2. Required. School district requires the written physical education curriculum to be aligned with state and/or national physical education standards.

Example: "The physical education curriculum for grades K-12 will be aligned with established state physical education standards."

PEPA 3: Addresses time per week of physical education instruction for all elementary school students.

0: Not mentioned

1: Vague and/or suggested

Example: "Elementary schools should provide 150 minutes per week of physical education instruction."

2: Required. School district requires 150 minutes/week of physical education instruction for all elementary school students through the entire school year.

Example: "All elementary school students shall receive 150 minutes per week of physical education instruction throughout the school year."

PEPA 4: Addresses time per week of physical education instruction for all middle school students.

0: Not mentioned

1: Vague and/or suggested

Example: "Middle schools should provide 225 minutes per week of physical education instruction."

2: Required. Clear that school district requires 225 minutes/week of physical education instruction for all middle school students through the entire school year.

Example: "All middle school students shall receive 225 minutes per week of physical education instruction throughout the school year."

PEPA5: Addresses time per week of physical education instruction for all high school students.

0: Not mentioned

1: Vague and/or suggested: Suggests but does not require 225 minutes/week of physical education instruction for all high school students.

Example: "High schools should provide 225 minutes per week of physical education instruction."

2: Required. Clear that school district requires 225 minutes/week of physical education instruction for all high school students through the entire school year.

Example: "All high school students shall receive 225 minutes per week of physical education instruction throughout the school year."

PEPA6: Addresses teacher-student ratio for physical education classes.

0: Not mentioned

1: Vague and/or suggested: Suggests that physical education classes will have student/teacher ratios similar to those used in other classes.

Example: "Schools are encouraged to maintain student/teacher ratios for physical education classes, similar to those used in other classes."

2. Required. Clear that school district requires that physical education classes will have student/teacher ratios similar to those used in other classes.

Example: "Physical education classes will have the same student/teacher ratios used in other classes."

PEPA7: Addresses qualifications for physical education teachers for grades K-12.

0: Not mentioned

1: Vague and/or suggested

Example: "Physical education shall be taught by a licensed teacher."

2. Required

Example: "Physical education for grades K-12 is required to be taught by a certified/licensed teacher who is endorsed to teach physical education."

PEPA8: District provides physical education training for physical education teachers.

0: Not mentioned

1: Vague and/or suggested

Example: "All staff involved in physical education should be provided with opportunities for professional development."

2: Required. Clear that all physical education teachers are required to receive annual professional development specific to physical education/physical activity content.

Example: "The school district shall provide all physical education teachers with annual professional development opportunities that are focused on physical education/physical activity topics and competencies specifically for physical education teachers."

PEPA9: Addresses physical education waiver requirements for K-12 students (e.g., substituting physical education requirement with other activities).

0: School district has applied for/received a state waiver for physical education requirements for K-12 students.

Example: "Students will not be required to fulfill the state mandated physical education requirements for the current school year."

1: Vague or unclear that district does not waiver state physical education requirements.

Example: "All students will fulfill the state mandated physical education requirements for the current school year. The district reserves the right to apply for a state waiver in future school years."

2. Required. Clear that school district does not waiver state physical education requirements for K-12 students.

Example: "All students in grades K-12 shall be required to take physical education class."

PEPA10: Addresses physical education exemptions for K-12 students.

0: Not mentioned

1: Vague and/or suggested: School district discourages students from applying for an exemption from physical education class time or credit.

Example: "Exemptions from physical education class time or credit are allowed but discouraged."

2 Required. Clear that school district does not allow any student to receive an exemption from physical education class time or credit.

Example: "Schools will not allow students to be exempted from required physical education."

PEPA11: Addresses physical education substitution requirements for K-12 students (e.g., substituting physical education requirement with other activities).

0: Not mentioned

1: Vague and/or suggested: School district discourages students from substituting other school or community activities for physical education class time or credit.

Example: "The school district discourages students from substituting other school or community activities for physical education class time or credit in place of required physical education."

2. Required. Clear that school district prohibits students from substituting other school or community activities for physical education class time or credit.

Example: "Schools may not allow students to substitute other school or community activities for required physical education class time or credit."

PEPA 12: District addresses the development of a comprehensive school physical activity program (CSPAP) plan at each school.

0: Not mentioned

1: Vague and/or suggested

Examples:" Schools should develop a plan that provides physical activity throughout the school day."

"Schools are encouraged to create a culture of physical activity."

2. Required. Clear that school district requires school to develop and implement a plan for CSPAP.

Examples: "Each school is required to develop a comprehensive written physical activity plan to be included in the annual school improvement plan."

"Schools are required to develop and implement a comprehensive school physical activity program that provides physical activity throughout the school day and addresses the needs of students, staff, and school community."

PEPA 13: District addresses active transport for all K-12 students.

0: Not mentioned

1: Vague and/or suggested

Example: "Schools should promote walking and biking to school."

2. Required. Clear that school district requires school to develop an active transport program.

Example: "Each school shall partner with local government and community-based agencies to support active transport to school to implement a comprehensive active transport program (i.e. Safe Routes to School Program)."

PEPA 14: District addresses before and after school physical activity for all K-12 students.

0: Not mentioned

1: Vague and/or suggested

Example: "Students should have the opportunity to be physically active before and after school."

2. Required. Provision of physical activity classes, clubs, intramurals or interscholastic activities is required.

Example: "Schools shall provide physical activity opportunities for all students before and after school in all elementary, middle and high schools."

"Physical activity clubs and intramurals shall be available to all students during before and after-school hours."

PEPA 15: District addresses recess for elementary school students.

0: Not mentioned

1: Vague and/or suggested: School district suggests that recess be provided daily.

Example: "Elementary schools should provide students with opportunities for play when weather permits."

2: Required. School district requires that all elementary school students be provided with 20 minutes of recess per day.

Example: "Schools shall provide at least 20 minutes of active recess daily to all elementary school students."

"All schools are required to schedule 20 minutes of recess daily for every class in the school master schedule."

PEPA 16: Addresses physical activity breaks for all K-12 students.

0: Not mentioned

1: Vague and/or suggested: School district suggests that physical activity breaks be provided daily.

Example: "Teachers should provide students with a physical activity break."

2: Required. School district requires that all K-12 school students be provided with regular daily physical activity breaks throughout the school day.

Example: "Each school shall provide at least one physical activity break for every 60 minutes of academic instruction daily. Moving between classes shall not be counted as a physical activity break."

"Middle schools must schedule a twenty minute mid-morning break each day to provide students with physical activity opportunities."

PEPA 17: Addresses staff involvement in physical activity opportunities at all schools.

0: Not mentioned

1: Vague and/or suggested

Example: "Each school should provide physical activity opportunities at the school to all students and staff."

2. Required.

Example: "Each school is required to develop a comprehensive school physical activity program which allows staff to participate in or lead physical activity opportunities throughout the school day. In addition, an employee wellness program will be implemented in each building to meet the unique wellness needs of school staff."

PEPA 18: Addresses family and community engagement in physical activity opportunities at all schools.

0: Not mentioned

1: Vague and/or suggested

Example: "Physical activity opportunities should be provided at the school for families and community members."

2. Required.

Example: "All schools are required to develop comprehensive school physical activity programs that address family and community engagement in physical activity, and provide a wide-variety of offerings."

PEPA 19: District provides physical activity training for all teachers.

0: Not mentioned

1: Vague or suggested

Example: "All staff should be provided with opportunities for professional development about physical activity."

2: Required. Policy requires all teachers to receive professional development specific to integration of physical activity content into class time and/or curriculum. Policy requires training for teachers on activities that incorporate physical activity throughout the day.

Example: "The school district shall provide all teachers with professional development opportunities that are focused on the integration of physical activity into classroom academic content and schedule throughout the school day."

PEPA 20: Joint or shared-use agreements for physical activity participation at all schools.

0: Not mentioned

1. Vague or suggested: District encourages schools to enter into joint-use agreements for community use of school facilities and school use of community facilities for physical activity programming.

Example: "Schools should develop joint-use agreements in order to provide physical activity opportunities for community members at the school."

2. Required. District requires schools to enter into joint-use agreements for community use of school facilities and school use of community facilities for physical activity programming.

Example: "All schools will develop joint-use agreements with community partners in order to provide expanded physical activity opportunities for all students and community members."

Section 5. Wellness Promotion and Marketing

In 2005 the Institute of Medicine recognized marketing to children as a problem. Since then research documenting the detrimental effects of food marketing to children has emerged. Since the launch of the original WellSAT, the Rudd Center, Center for Science in the Public Interest, American Heart Association's Voices for Healthy Kids Food Marketing

Workgroup, and others have brought greater attention to this issue. Thus, this WellSAT 2.0 update brings more attention to issues of food marketing in schools.

WPM1: Encourages staff to model healthy eating/drinking behaviors

0: Not mentioned

1: Suggests that staff is encouraged to model healthy eating

Example: "Principals should encourage staff to model..."

2: Staff model healthy eating/drinking behavior in concrete ways

Example: "Staff model healthy behavior; for example, teachers are provided with water bottles and encouraged to drink water in the classroom."

WPM2: Addresses staff not modeling unhealthy eating/drinking behaviors

0: Not mentioned

1: Suggests that staff is discouraged from consuming unhealthy food and beverages in front of students

Example: "Principals should request that their staff refrain from eating and drinking in the classroom"

2: Staff prohibited from consuming food/beverages that may not be sold to students during the school day.

Example: "Teachers wishing to consume snack or lunch alongside their students must ensure that only healthy food/beverages are present. The staff is provided with break/lunch periods and are not required to eat with students."

WPM3: Encourages staff to model physical activity behaviors

0: Not mentioned

1: Suggests that staff is encouraged to model physical activity

Example: "To the extent feasible, staff should model healthy behaviors for students, including healthy eating and physical activity"

2: Staff model physical activity in concrete ways

Examples:

"Teachers model physical activity by participating in exercise breaks during class time with their students."
"Teachers share their positive experiences with physical activity with their students."

WPM4: Addresses food not being used as a reward.

0: Not mentioned

1: Discourages food as a reward

Examples:

"...strongly discourage the use of food/beverages as a reward or punishment."
"...will encourage non-food alternatives as rewards."
"Food should not be used as a reward."

2: Prohibits food as a reward

Prohibition of food as a reward with the exception of Individual(ized) Academic Plans (IAP) or Individual(ized) Education Plans (IEP) still qualifies for a rating of "2."

Examples:

"Food rewards or incentives shall not be used in classrooms to encourage student achievement or desirable behavior."
"The use of food or candy as a classroom reward in any school is prohibited."

WPM5: Addresses using physical activity as a reward

0: Not mentioned

1: Suggests that staff is encouraged to use extra physical activity when rewards are used

Examples:

"Teachers may use non-food alternatives as rewards. For example, extra recess may be provided when time allows."

2: Staff is encouraged to use physical activity as a reward

"Food rewards are prohibited and teachers are provided with a list of alternative ideas. We strongly recommend staff use physical activity as a reward when feasible."

WPM6: Addresses physical activity not being used as a punishment

0: Not mentioned

1: Discourages using physical activity as a punishment.

Example: "Teachers are discouraged from assigning physical activity as student punishment."

2: Prohibits using physical activity as a punishment.

Examples:

"Physical activity may not be assigned to students as a consequence of poor behavior or punishment for any reason. (Example: running laps or jogging around a playground)"

"Students shall not be required to engage in physical activity as punishment. For example, students may not be singled out to run extra laps, or perform other physical activities that the entire class is not engaged in, as a behavioral consequence."

"Recess shall not be withheld from a student as punishment for poor behavior or to make up class work."

WPM7: Addresses physical activity not being withheld as a punishment

0: Not mentioned

1: Discourages withholding PA as a punishment

Example:

"The administration believes that recess and other opportunities for physical activity are an essential part of the school day. Teachers are encouraged to find alternatives to withholding recess or other physical activities as a punishment."

2: Prohibits withholding PA as a punishment

Example:

"Recess or other physical activities shall not be withheld from students as a consequence of poor behavior or punishment for any reason."

WPM8: Specifies marketing/ways to promote healthy food and beverage choices

0: Not mentioned

1: Vague or suggested

Example: "Marketing strategies, such as taste tests and signage in the cafeteria, should be used to promote healthy food and beverages throughout the school."

2. Required

Examples:

"Schools shall promote healthy food items including fruits, vegetables, whole grains and low-fat dairy products. Promotions will include monthly taste tests, posters and signage, highlighting healthy items on the menu during morning announcements, etc."

"The healthiest choices, such as salads and fruit, will be prominently displayed in the cafeterias to encourage students to make healthy choices."

"Healthy food options will be comparably priced."

WPM9: Specifies ways to promote physical activity

0: Not mentioned

1: Vague or suggested

Example: "Opportunities for physical activity should be promoted throughout the school."

2. Specific strategies named

Examples:

"Schools shall encourage participation in after-school sports, intramurals and other, non-competitive physical activity programs via in school announcements, school newsletters, posters…Schools aim to promote physical activity opportunities for all students."

"Students are encouraged to incorporate small bouts of activity into their daily schedules; for example, they are encouraged to walk to school, take the stairs, etc."

WPM10: Specifies that family wellness activities will be planned and will include nutrition and physical activity components.

0: Not mentioned

1: Suggests that family wellness may be addressed, or it will be addressed without specifying that there will be nutrition and PA components.

Example: "Schools are encouraged to include families and the wider community in school sponsored wellness activities."

2: It is required that schools will provide nutrition/PA promotion activities for families OR community use of school facilities for nutrition/PA related activities is guaranteed

Examples:

"Families will be invited to participate in an annual nutrition/PA open house. A dietitian will be available to answer questions, demonstrate simple healthy food preparation and cooking methods and to facilitate taste tests. Parents and students will have an opportunity to participate in planned physical activity and may provide feedback on school meals and other food available on campus."

"Nutrition and physical activity will be incorporated into family events provided throughout the school year."

The following 5 questions refer to food and beverage advertising/marketing.

Note: School marketing includes food and beverage advertising and other marketing, such as the name or depiction of products, brands, logos, trade marks, or spokespersons or characters, on any property or facility owned or leased by the school district or school (such as school buildings and campus, outside and areas adjacent to school buildings, athletic fields, school buses, parking lots, or other facilities) and used at any time for school-related activities.

WPM11-WPM15 address restriction of marketing of food and beverages that cannot be sold to students during the school day (do not meet USDA Smart Snack nutrition standards).

Rate whether restrictions are in place for the following:

WPM11: On signs, scoreboards, sports equipment

0: Not mentioned

1: Restrictions are vague, suggested or weakened by exceptions such as time, location, or a principal's discretion.

Example:

"Display and advertising of unhealthful foods is strongly discouraged on school grounds."

"It is recommended that schools limit food and beverage marketing to the promotion of items that meet the USDA Smart Snacks nutrition standards."

2: Prohibits ALL advertising of food and beverages that cannot be sold during the school day/do not meet Smart Snack nutrition standards **or** prohibits this advertising on signs, banners, scoreboards, etc. **or** will prohibit at time of renewal of sponsorship agreements.

Examples:

"Busses, building exteriors, score boards, etc. on and around school property shall be free of brands and illustrations of unhealthful foods"

"The advertising of foods and beverages that are not available for sale in district schools will not be advertised on any school property."

WPM12: In curricula, textbooks, websites used for educational purposes, or other educational materials (both printed and electronic)

0: Not mentioned

1: Restrictions are vague, suggested or weakened by exceptions

Examples:

"A review of the advertising content of all classroom and online materials/websites used for teaching should be made prior to selection of materials. Use of materials depicting food brands or logos is discouraged."

2: Ensures advertising of food and beverages will be considered in the selection of curricular/educational materials.

Example: "Criteria for selecting educational materials for the classroom shall be expanded to include review of advertising content. Every effort will be made to select materials free of brand names/logos and illustrations of unhealthy foods."

WPM13: On exteriors of vending machines, food or beverage cups or containers, food display racks, coolers, trash and recycling containers, etc.

0: Not mentioned

1: Restrictions are suggested or weakened by exceptions such as time, location, or a principal's discretion.

Example: "An effort will be made to remove advertising from the cafeteria. Existing vending machines and coolers with logos will be replaced when possible."

2: Prohibits ALL advertising of food and beverages that cannot be sold at school/do not meet Smart Snack nutrition standards or prohibits this advertising on food displays, vending machines, food and beverage containers and coolers.

Example: "Advertising of any food or beverage that may not be sold on campus during the school day is prohibited. Advertising of any brand on containers used to serve food or in areas where food is purchased is prohibited."

WPM14: On advertisements in school publications, on school radio stations, in-school television, computer screen savers and/or school-sponsored Internet sites, or announcements on the public announcement (PA) system

0: Not mentioned

1: Restrictions are vague/suggested or weakened by exceptions

Example: "Schools will attempt to limit advertising of unhealthy products in school publications. All ads should be approved by the principal before being printed or included on the school website."

2: Prohibits ALL advertising of food and beverages that cannot be sold to students during the school day/ do not meet Smart Snack nutrition standards OR prohibits this advertising in school media.

Examples

"The district will not expose students to food marketing of any kind. All advertising in school publications and school media outlets must be approved by the principal."

WPM15: On fundraisers and corporate-sponsored programs that encourage students and their families to sell, purchase or consume products and/or provide funds to schools in exchange for consumer purchases of those products

0: Not mentioned

1: Restrictions are vague/suggested or weakened by exceptions such as time, location, or principal's discretion.

Example: "It is recommended that schools avoid participation in fundraising or corporate incentive programs that promote a message inconsistent with our goals for a healthy school community."

2: Prohibits ALL advertising of food and beverages that cannot be sold to students during the school day/do not meet Smart Snack nutrition standards OR prohibits school participation in fundraising programs promoting brands or food and beverage companies.

Example: "Given concerns about student exposure to marketing, district schools will no longer participate in incentive programs that promote brands or provide children with free or discounted foods or beverages. PTA's will be asked to research new fundraising opportunities to replace programs such as *McTeacher's night and Box Tops for Education.*"

Section 6. Implementation, Evaluation & Communication

IEC1. Establishes an ongoing district wellness committee

0: Not mentioned

1: Mentions a wellness committee, but it is unclear that it is active

Example: "The wellness committee met in September of 2012 to develop plans for policy implementation at the school level. School specific implementation plans can be found on each school's website."

2: Makes clear that the committee is ongoing/regular meetings are occurring

Examples:

"The district wellness committee meets on the 2nd Monday of each month, from 7-9 pm at Central Office."
"The wellness committee meets bimonthly throughout the school year."

IEC2. District wellness committee has community-wide representation

0: Not mentioned

1: Mentions that membership is open to the community

Example: "Students, parents, staff and/or community members are welcome to join the committee."

2: States a plan to actively recruit some or all of the following: parents, students, PE teachers, school food authority representatives, school health professionals, SNAP Ed coordinators, school board members, administrators, members of community-based organizations and members of the general public.

Example: "A letter will be sent to the school community via email, and will be posted in a central area in all school buildings inviting members of the community to join the wellness committee. Teachers, student, parents, administrators and allied health professionals are encouraged to attend."

IEC3. Designates one district level official accountable for ensuring each school is in compliance (ensuring that there is reporting up)

0: Not mentioned

1: It is suggested, but not required, that a district level official be responsible for monitoring school-level compliance

Example: "School principals should periodically update the superintendent on school level compliance with the district wellness policy."

2: It is clear that a district level official will be in charge of ensuring compliance at the building level.

Example: "The assistant superintendent shall be responsible for ensuring that the wellness policy is implemented throughout district schools."

Example: "Schools that are not in compliance with district wellness policies will be provided with a specified period of time to institute appropriate changes and will be provided with assistance, as needed. School principals will be required to report to the superintendent and district wellness committees on progress toward compliance until goals are reached."

IEC4. Designates a leader in each school accountable for ensuring compliance within the school.

0: Not mentioned

1: It is suggested, but not required that each school have a leader in charge of building level compliance.

Example: "Principals may choose to assemble school level wellness committees to work on implementation issues that may be unique to their schools."

2: Designates a leader in each school accountable for school level compliance

Example: "Each school in the district shall have at least one staff member responsible for ensuring compliance within the school and for reporting progress to the district wellness committee. A PTO representative will also be identified for ensuring compliance within PTO programs. Schools are encouraged to assemble wellness teams to work on implementation issues."

IEC5. Addresses annual assessment of SWP implementation/progress towards wellness goals

0: Not mentioned

1: Either:

It is suggested that policy implementation will be assessed

Implementation will be assessed, but less than annually

Example: "Representatives from each school should track compliance with the district SWP within their school."

2: Annual assessment is required/certain

Examples:

"The Advisory Council shall conduct a quantitative assessment of policy implementation every two years using the Wellness School Assessment Tool-Implementation (WellSAT-I). Additional surveys such as the School Health Index may be used."

"Every two-three years, the wellness committee will undertake an evaluation of policy implementation and will report on outcomes that may be influenced by the policy (e.g., student fitness tests, meal participation rates, etc.)

IEC6. Progress report on compliance/implementation is made to the school community (Board of Education, superintendent, principals, staff, students and parents)

0: Not mentioned

1: Audience is specified, but does not include entire school community, or encourages reporting to school community

Example: "The wellness committee will discuss ways to present their progress to the Superintendent."

2: It is clear that a report will be made to the entire school community

Example: "The advisory council shall prepare a report annually for the Superintendent, school staff, students and parents, evaluating the implementation of the policy and regulations and including any recommended changes or revisions."

IEC7. Progress report on compliance/implementation is made to the public

0: Not mentioned

1: Unclear that report will be shared with public or encourages district to report to the public

"An annual progress report will be shared with the superintendent and school board; it is recommended that it then be made available to the public."

2: Requires district to report to the public

"Progress reports will be shared with the public using the following channels of communication…"

IEC8. Progress report ensures transparency by including: the web address of the wellness policy, a description of each school's activities and progress towards meeting wellness goals, contact details for committee leadership and information on how to join the committee

0: Not mentioned

1: Specifies inclusion of some, but not all, annual progress report elements

Example:

"An annual progress report with information about each school's wellness related activities will be shared with the entire school community."

2. Includes a statement making it clear that all elements listed above will be included in the annual progress report.

Example:

"The annual progress report will be posted on the district website every September. The report will include a link to the SWP, a progress report for each school in the district that includes a summary of wellness activities and contact information for wellness committee members. The report will include an open invitation for interested parties to join the committee."

IEC9. Addresses a plan for updating policy based on best practices.

0: Not mentioned

1: Plans for updating policy are implied, but not certain, OR timing is unclear.

Example: "The district wellness committee will revise the policy as needed"

2: Revisions /updates are required (or need for updates assessed) at specified intervals

Examples:

"Every two-three years, the wellness committee will review the latest national recommendations pertaining to school health and will update the wellness policy accordingly."

IEC10. Addresses methods for communicating with the public

0: Not mentioned

1: Communication with the public is mentioned, but no specifics are provided about the methods, frequency or expected content of the communications

Example: "The wellness committee will determine how best to share wellness policy information with the school and general community."

2: There is a clear plan for communication that includes specific communication methods

Example: "The SWP and annual progress reports will be shared with the public via any or all of the following: the district website, direct mailings to families, presentations to the PTA, press release to local news media."

IEC11. Specifies how district will engage families to provide information and/or solicit input to meet district wellness goals (e.g., through website, e-mail, parent meetings, or events)

0: Not mentioned

1: Methods for reaching families are suggested or vague.

Examples:

"Nutrition information and links to relevant resources in the community should be provided to families through newsletters, publications, health fairs, and other channels."
"Feedback from parents should be encouraged through stakeholder meetings."

2: Specific methods for engaging families are mentioned.

Examples:

"Nutrition education, particularly as it relates to the new nutrition standards, will be provided to parents in the form of handouts, the school website, articles and information provided in district or school newsletters, presentations that focus on nutrition and healthy lifestyles, and through any other appropriate means available to reach parents."

"The food service director will be available to speak with parents during open house."

School Wellness Policy Score Sheet

District ID _____

The following tables include wellness policy statement numbers and item descriptions broken down by section. Please rate the level to which each policy item is addressed in the school wellness policy.
0 = Not mentioned
1 = Weak Statement
2= Meets/Exceeds Expectations

Section 1. Nutrition Education		
Rating	#	Item
	NEWP1	There is a standards-based nutrition curriculum/health education or other curriculum includes nutrition
	NEWP2	All elementary school students receive nutrition education
	NEWP3	All middle school students receive nutrition education

	NEWP4	All high school students receive nutrition education
	NEWP5	Links nutrition education with the school food environment
	NEWP6	Nutrition education teaches skills that are behavior-focused
	NEWP7	Nutrition education is sequential and comprehensive in scope
Section 2. Standard for USDA Child Nutrition Programs and School Meals		
Rating	#	Item
	SM1	Addresses access to the USDA School Breakfast Program
	SM2	Addresses compliance with USDA nutrition standards for reimbursable meals
	SM3	School meals meet standards that are more stringent than those required by the USDA
	SM4	District takes steps beyond those required by federal law/regulation to protect the privacy of students who qualify for free or reduced priced meals
	SM5	USDA National School Lunch Program and School Breakfast Program standards are described in full (or a link to the standards is provided in the wellness policy)
	SM6	Specifies strategies to increase participation in school meal programs
	SM7	Addresses students leaving school during lunch periods
	SM8	Ensures adequate time to eat
	SM9	Ensures annual training for food and nutrition services staff in accordance with USDA Professional Standards
	SM10	Addresses school meal environment
	SM11	Nutrition information for school meals (e.g., calories, saturated fat, sodium, sugar) is available to students and parents.
	SM12	Specifies how families are provided information about determining eligibility for free/reduced priced meals.
	SM13	Recess (when offered) is scheduled before lunch in elementary schools
	SM14	Free drinking water is available during meals
Section 3. Nutrition Standards for Competitive and Other Foods and Beverages		
Rating	#	Item
	NS1	Addresses compliance with USDA minimum nutrition standards for all FOODS sold to students during the school day
	NS2	Addresses nutrition standards for all FOODS sold to students during the EXTENDED school day
	NS3	Addresses nutrition standards for all FOODS AND BEVERAGES served to students while attending before/aftercare on school grounds
	NS4	Regulates food served at class parties and other school celebrations in elementary schools
	NS5	Addresses compliance with USDA minimum nutrition standards for all BEVERAGES sold to students during the school day
	NS6	Addresses nutrition standards for all BEVERAGES sold to students during the EXTENDED school day
	NS7	Addresses foods and beverages containing non-nutritive sweeteners
	NS8	Addresses foods and beverages containing caffeine (High School
	NS9	USDA Smart Snack standards are described in full
	NS10	Addresses availability of free drinking water throughout the school day
	NS11	Regulates food sold for fundraising at all times

Section 4. Physical Education and Physical Activity		
Rating	#	Item
	PEPA1	There is a written physical education curriculum for grades K-12
	PEPA2	The written physical education curriculum is aligned with national and/or state physical education standards.
	PEPA3	Addresses time per week of physical education instruction for all elementary school students
	PEPA4	Addresses time per week of physical education instruction for all middle school students.
	PEPA5	Addresses time per week of physical education instruction for all high school students
	PEPA6	Addresses teacher-student ratio for physical education classes
	PEPA7	Addresses qualifications for physical education teachers for grades K-12.
	PEPA8	District provides physical education training for physical education teachers.
	PEPA9	Addresses physical education waiver requirements for K-12 students
	PEPA10	Addresses physical education exemptions for K-12 students
	PEPA11	Addresses physical education substitution requirements for K-12 students
	PEPA12	District addresses the development of a comprehensive school physical activity program (CSPAP) plan at each school
	PEPA13	District addresses active transport for all K-12 students
	PEPA14	District addresses before and after school physical activity for all K-12 students
	PEPA15	District addresses recess for elementary school students
	PEPA16	Addresses physical activity breaks for all K-12 students
	PEPA17	Addresses staff involvement in physical activity opportunities at all schools
	PEPA18	Addresses family and community engagement in physical activity opportunities at all schools
	PEPA19	District provides physical activity training for all teachers
	PEPA20	Joint or shared-use agreements for physical activity participation at all schools
Section 5. Wellness Promotion and Marketing		
Rating	#	Item
	WPM1	Encourages staff to model healthy eating/drinking behaviors
	WPM2	Addresses staff not modeling unhealthy eating/drinking behaviors
	WPM3	Encourages staff to model physical activity behaviors
	WPM4	Addresses food not being used as a reward.
	WPM5	Addresses using physical activity as a reward
	WPM6	Addresses physical activity not being used as a punishment
	WPM7	Addresses physical activity not being withheld as a punishment
	WPM8	Specifies marketing/ways to promote healthy food and beverage choices
	WPM9	Specifies ways to promote physical activity
	WPM10	Specifies that family wellness activities will be planned and will include nutrition and physical activity components
	WPM11	Addresses the restriction of marketing of food and beverages that cannot be sold to students during the school day on signs, scoreboards, sports equipment
	WPM12	Addresses the restriction of advertising or marketing of food and beverages that cannot be sold to students during the school day in curricula, textbooks, websites used for educational purposes, or other educational materials
	WPM13	Addresses the restriction of advertising or marketing of food and beverages that cannot be sold to students during the school day on exteriors of vending machines, food or beverage cups or containers, food display racks, coolers, trash, etc
	WPM14	Addresses the restriction of marketing of food and beverages that cannot be sold to students during the school day on advertisements in school publications, school radio stations, in-school television, computer screen savers and/or school-sponsored Internet sites, or announcements on the PA system

	WPM15	Addresses the restriction of marketing of food and beverages that cannot be sold to students during the school day on fundraisers and corporate-sponsored programs that encourage students and their families to sell, purchase or consume products and/or provide funds to schools in exchange for consumer purchases of those products
Section 6. Implementation, Evaluation and Communication		
Rating	#	Item
	IEC1	Establishes an ongoing district wellness committee
	IEC2	District wellness committee has community-wide representation
	IEC3	Designates one district level official accountable for ensuring each school is in compliance (ensuring that there is reporting up)
	IEC4	Designates a leader in each school accountable for ensuring compliance within the school
	IEC5	Addresses annual assessment of SWP implementation/progress towards wellness goals
	IEC6	Progress report on compliance/implementation is made to the school community (Board of Education, superintendent, principals, staff, students and parents)
	IEC7	Progress report on compliance/implementation is made to the public
	IEC8	Progress report ensures transparency by including: the web address of the wellness policy, a description of each school's activities and progress towards meeting wellness goals, contact details for committee leadership and information on how to join the committee
	IEC9	Addresses a plan for updating policy based on best practices
	IEC10	Addresses methods for communicating with the public
	IEC11	Specifies how district will engage families to provide information and/or solicit input to meet district wellness goals (e.g., through website, e-mail, parent meetings, or events

Review scoring information on page 3.

Section 1: Comprehensiveness= (total # of items in Section 1 receiving a "1" or "2" /7) x 100=_____

Strength= (total number of items in Section 1 receiving a "2" /7) x 100=_____

Section 2: Comprehensiveness= (total # of items in Section 2 receiving a "1" or "2" /14) x 100=_____

Strength= (total number of items in Section 2 receiving a "2" /14) x 100=_____

Section 3: Comprehensiveness= (total # of items in Section 3 receiving a "1" or "2" /11) x 100=_____

Strength= (total number of items in the Section 3 receiving a "2" /11) x 100=_____

Section 4: Comprehensiveness= (total # of items in Section 4 receiving a "1" or "2" /20) x 100=_____

Strength= (total number of items in Section 4 receiving a "2" /20) x 100=_____

Section 5: Comprehensiveness= (total # of items in Section 5 receiving a "1" or "2" /15) x 100=_____

Strength= (total number of items in Section 5 receiving a "2" /15) x 100=_____

Section 6: Comprehensiveness= (total # of items in Section 5 receiving a "1" or "2" /11) x 100=_____

Strength= (total number of items in Section 5 receiving a "2" /11) x 100=_____

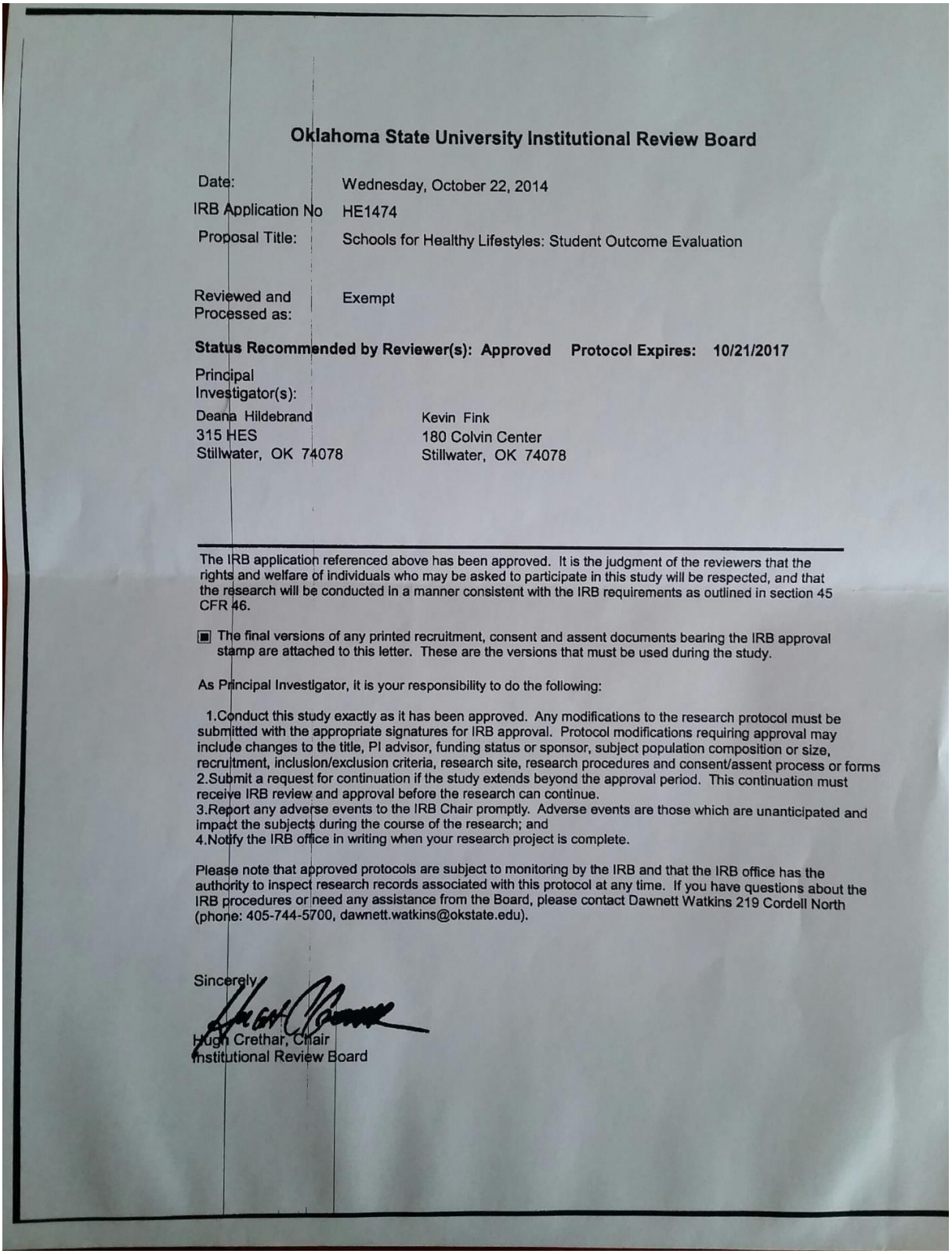
Total Comprehensiveness= (total number of items in ALL sections receiving a "1"or "2" /78) x 100=_____

Total Strength= (total number of items in ALL sections receiving a "2" "/78) x 100=_____

Appendix C
WellSAT Evaluation Sheet (Berg, 2015)

DISTRICT		0= Not mentioned				
SCHOOL YEAR / POLICY DATE		1= Weak statement				
DISTRICT ID		2= Meets/exceeds expectations				
EVALUATOR						
REVIEW DATE						
ELEMENT	LABEL	SCORE			NOTES	
1. Nutrition Education (Score: 0-2)						
NEPE1	Nutrition / Health Education curriculum					
NEPE2	Elementary: Receive Nutrition Education					
NEPE3	Middle School Receive Nutrition Education					
NEPE4	High School Receive Nutrition Education					
NEPE5	Links Nutrition Education with Food Environment					
NEPE6	Nutrition Education teaches Behavior-Focused Skills					
NEPE7	Nutrition Education is Sequential/Comprehensive					
Comprehensive	(total # of 1 or 2 in section 1 /7) x 100					
Strength	(total # of 2 in section 1 /7) x 100					
2. Standards for USDA Child Nutrition Programs and School Meals (Score: 0-2)					NOTES	
SM1	Access to USDA Breakfast Program					
SM2	USDA Nutr Standards for Reimbursable Meals					
SM3	School Meals More Stringent than USDA					
SM4	Protect Privacy of FRP Participants					
SM5	USDA Ntl Lunch/Breakfast Described in Full					
SM6	Strategies to Increase School Meal participation					
SM7	Students Leaving During School Lunch Periods					
SM8	Adequate Time to Eat					
SM9	Annual Training for Food/Nutr Staff: USDA Standards					
SM10	Addresses School Meal Environment					
SM11	Nutrition Info is Available to Students & Parents					
SM12	FRP Meals Eligibility Specified					
SM13	Elementary: Recess (when offered) Before Lunch					
SM14	Free Drinking Water Available during Meals					
Comprehensive	(total # of 1 or 2 in section 2 / 14) x 100					
Strength	(total # of 2 in section 2 / 14) x 100					
3. Standards for Competitive Foods (Score: 0-2)			ES	MS	HS	
NS1	USDA Nutrition Standards for All Foods Sold (Smart Snacks)					
NS2	Foods Sold During Extended School Day					
NS3	Foods & Beverages Served Before/Aftercare					
NS4	Elementary: Food at Class Parties/Celebrations					
NS5	Beverages Sold During School Day (Smart Snacks)					
NS6	Beverages Sold During Extended School Day					
NS7	Foods & Beverages: Non-nutritive Sweeteners (High School) *NA if No HS					
NS8	High School: Food & Beverages Sold with Caffeine *NA if No HS					
NS9	Smart Snack Standards Described in Full/SWP Link					
NS10	Free Drinking Water throughout School Day					
NS11	Food Sold for Fundraising at All Times					
Comprehensive	(total # of 1 or 2 in section 3 / 11) x 100					
Strength	(total # of 2 in section 3 / 11) x 100					
					NOTES	
4. Physical Education and Activity (Score: 0-2)			ES	MS	HS	
PEPA1	Written PE Curriculum K-12					
PEPA2	Written PE Curriculum: National, State PE Standards					
PEPA3	Elementary: PE Time per Week					
PEPA4	Middle School: PE Time per Week					
PEPA5	High School: PE Time per Week					
PEPA6	PE Teacher-Student Ratio					
PEPA7	PE Teacher Qualifications K-12					
PEPA8	PE Training for PE Teachers					
PEPA9	PE Waiver K-12					
PEPA10	PE Exemptions K-12					
PEPA11	PE Substitutions K-12					
PEPA12	CSPAP Plan per School					
PEPA13	Active Transport K-12					
PEPA14	Physical Activity Before and After School K-12					
PEPA15	Elementary: Recess					
PEPA16	Physical Activity Breaks K-12					
PEPA17	Staff Involved in Physical Activity Opportunities					
PEPA18	Family/Community Engagement in Physical Activity					
PEPA19	Physical Activity Training for All Teachers					
PEPA20	Joint/Shared-Use at All Schools					
Comprehensive	(total # of 1 or 2 in section 4 / 20) x 100					
Strength	(total # of 2 in section 4 / 20) x100					
5. Wellness Promotion and Marketing (Score: 0-2)						
WPM1	Model Healthy Eating/Drinking Behaviors					
WPM2	Not Model Unhealthy Eating/Drinking Behaviors					
WPM3	Model Physical Activity Behaviors					
WPM4	Food Not Used as Reward					
WPM5	Physical Activity Encouraged as Reward Encouraged					
WPM6	Physical Activity Not Used as Punishment					
WPM7	Physical Activity Not Witheld as Punishment					
WPM8	Marketing to Promote Healthy Food/Beverages					
WPM9	Promotion of Physical Activity					
WPM10	Family Wellness Activities: Nutrition & Physical Activity					
WPM11	Restrictions: Signs, Scoreboards, Equipment					
WPM12	Restrictions: Curricula, Textbooks, Websites					
WPM13	Restrictions: Vending, Cups/Containers, Displays, Trash					
WPM14	Restrictions: Publications, Radio, TV, Computer Screen, PA					
WPM15	Restrictions: Fundraisers, Sponsors					
Comprehensive	(total # of 1 or 2 in section 5 / 15) x 100					
Strength	(total # of 2 in section 5 / 15) x 100					
6. Implementation, Evaluation, Communication (Score: 0-2)					NOTES	
IEC1	Ongoing District Wellness Committee (DWC)					
IEC2	DWC: Community-wide Representation					
IEC3	District-Level Official Accountable for Compliance					
IEC4	Designated School Leader Accountable for Compliance					
IEC5	Annual Assessment of SWP Implemenation/Progress					
IEC6	Progress Report is Made for School Community					
IEC7	Progress Report is Made for Public					
IEC8	Progress Report is Transparent					
IEC9	Plan for Updating Policy Elements					
IEC10	Communication Methods with Public					
IEC11	Solicit/Engage Families to Meet Wellness Goals					
Comprehensive	(total # of 1 or 2 in section 6 / 11) x 100					
Strength	(total # of 2 in section 6 / 11) x 100					
Total Comprehensiveness	(total # items in ALL sections with 1 or 2 / 78) x 100					
Total Strength	(total # in ALL sections with "2" / 78) x 100					
ADDITIONAL OBSERVATIONS:						

Appendix D
Schools for Healthy Lifestyles Institutional Review Board Approval (2014)



Oklahoma State University Institutional Review Board

Date:	Wednesday, October 22, 2014
IRB Application No	HE1474
Proposal Title:	Schools for Healthy Lifestyles: Student Outcome Evaluation
Reviewed and Processed as:	Exempt

Status Recommended by Reviewer(s): Approved Protocol Expires: 10/21/2017

Principal Investigator(s):

Deana Hildebrand
315 HES
Stillwater, OK 74078

Kevin Fink
180 Colvin Center
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

▣ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1.Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval. Protocol modifications requiring approval may include changes to the title, PI advisor, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms
2.Submit a request for continuation if the study extends beyond the approval period. This continuation must receive IRB review and approval before the research can continue.
3.Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of the research; and
4.Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Dawnett Watkins 219 Cordell North (phone: 405-744-5700, dawnett.watkins@okstate.edu).

Sincerely,

Hugh Crethar, Chair
Institutional Review Board

Appendix E
Putnam City Schools Institutional Review Board Approval (2014)

Dear Dr. Hildebrand,

IRB #: HE-14-73
Title: Putnam City Physical Education Program (PEP) Grant Evaluation

Recently you submitted an IRB application form to the IRB office. Based on the information provided in this application and subsequent communications, the OSU-Stillwater IRB has determined that your project is program evaluation and does not qualify as research as defined in 45 CFR 46.102 (d) and (f) and is not subject to oversight by the OSU IRB. Should you have any questions or concerns, please do not hesitate to contact the IRB office at 405-744-3377 or irb@okstate.edu.

Best of luck with your project,

Whitney McAllister, M.S.
IRB Coordinator

Oklahoma State University
Office of University Research Compliance
219 Cordell North, Stillwater, OK 74078

Office: 208 Cordell North
Website: Human Subjects Research at OSU
Lync: Instant Message Me (Application Queue Updates Given as Status Message)

405-744-3377 | Fax: 405-744-4335| whitney.mcallister@okstate.edu

Note: There is a new IRB application dated December 2013. All applications need to be submitted on the most current form.
New IRB Application

VITA

Dean Michael Seidman

Candidate for the Degree of

Master of Science

Thesis: STRENGTH AND COMPREHENSIVENESS OF MANDATED SCHOOL DISTRICT WELLNESS POLICIES IN RELATION TO HEALTH-RELATED STUDENT FITNESS MEASURED BY FITNESSGRAM®

Major Field: Nutritional Sciences

Biographical:

Education:

Completed the requirements for the Master of Science in Nutritional Sciences in your major at Oklahoma State University, Stillwater, Oklahoma in December, 2015.

Completed the requirements for the Bachelor of Science in Dietetics at Syracuse University, Syracuse, New York in 2014.

Experience: Graduate Research Assistant for Dr. Deana Hildebrand at Oklahoma State University

Professional Memberships: Academy of Nutrition and Dietetics
Graduate Students in Nutritional Sciences