

Physical Activity Among West Virginia's Youth: A Review of the Data



August 2010



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A REVIEW OF THE DATA**

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August 2010

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REPORT HIGHLIGHTS

Physical activity has been associated with reducing the risk for obesity and overweight, enhancing social well being by reducing anxiety and stress, developing and maintaining healthy bones and joints, and providing protection against cardiovascular disease and its risk factors. Physical activity in childhood and adolescence can help prevent the development of chronic diseases such as heart disease, osteoporosis, and arthritis later in life, laying the groundwork for a lifetime of enjoyment of better health.

The current report examines the status of physical activity and sedentary lifestyle among West Virginia's children and adolescents, using data from four sources; the Youth Risk Behavior Surveillance System (YRBSS), the National Survey of Children's Health, the FITNESSGRAM® Program, and the first year evaluation of the implementation of the West Virginia Healthy Lifestyles Act. The major findings are summarized below:

PHYSICAL ACTIVITY

YRBSS: 2007

- The YRBSS found that male high school students in West Virginia were significantly more likely than their national counterparts to report being physically active (53.1% vs. 43.7%, respectively).
- In West Virginia, male students in grades 9, 10, and 11 were significantly more likely than the female students in those grades to report being physically active.
- West Virginia students in the 10th, 11th, and 12th grades were significantly less likely than students nationally to attend physical education classes at least one day in an average school week.
- In West Virginia, physically active students were significantly less likely to report feeling sad or hopeless than other students. Female students who were physically active were significantly less likely than other female students to report episodic heavy drinking.
- Both male and female students who reported being physically active were significantly more likely to have exercised to lose or keep from gaining weight; physically active students of both sexes were also significantly more likely to report eating at least five servings of fruits and vegetables daily.

FITNESSGRAM® Data: 2008/2009

- West Virginia students were assessed in four categories of fitness: aerobic capacity, body composition, muscular strength and endurance, and flexibility: Across the state, 65.7% of students scored in the Healthy Fitness Zone for aerobic capacity, 67.8% in the Healthy Fitness Zone for body composition, 78.9% in the Healthy Fitness Zone for muscular strength, and 79.5% in the Health Fitness Zone for flexibility. Slightly higher percentages of elementary and middle school students scored in each of the healthy zones than did high school students.
- Three-fourths (75.3%) of West Virginia's students scored in the Overall Healthy Fitness Zone calculated from the combination of the four individual categories.

Healthy Lifestyles Act Evaluation Data: Year One (2007/2008)

- Thirty-nine percent (39.0%) of parents of students in grades 2, 4, 5, 7, and 9 reported that their children met the CDC recommendation of at least 60 minutes of daily physical activity.
- Twenty-six percent (26.3%) of students in grades 5, 7, and 9 reported that they were physically active for at least 60 minutes daily.

SEDENTARY ACTIVITY

YRBSS: 2007

- Thirty-two percent (32.0%) of West Virginia high school students reported watching TV for three or more hours a day. Twenty-eight percent (27.7%) reported using a computer for non-school purposes for three or more hours a day.

National Survey of Children's Health: 2007

- Nearly two-thirds (64.0%) of parents in West Virginia reported that their children aged one through five spent more than one hour watching TV or videos on an average weekday, a significantly higher percentage than the national average of 54.4%.
- Forty-seven percent (46.6%) of parents of children aged six through 17 reported their children spent between one and four hours watching TV or videos or playing video games on an average weekday. This was significantly higher than the national average of 39.3% of parents.

Healthy Lifestyles Act Evaluation Data: Year One (2007/2008)

- The percentage of students in West Virginia who spend more than two hours per day in screen-time activity ranged from 14.6% among kindergarteners to 31.6% among 9th graders, according to parental reporting.
- Over 80% of state parents of children in kindergarten, 2nd, and 4th grades set limits on their children's screen time, compared with 53.2% of parents of children in the 9th grade.

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Physical Activity among West Virginia Youth: A Review of the Data

Introduction

Regular physical activity provides both physical and emotional benefits to participants of all ages. Exercise has been associated with reducing the risk for obesity and overweight, enhancing social well being by reducing anxiety and stress, developing and maintaining healthy bones and joints, and providing protection against cardiovascular disease and its risk factors. Physical activity in childhood and adolescence can help prevent the development of chronic diseases such as heart disease, osteoporosis, and arthritis later in life. Participation in physical activities at a young age not only provides immediate health benefits, it lays the groundwork for a lifetime of enjoyment of better health. Literature reviews have identified certain correlates of physical activity among children and adolescents, including male sex, program/facility access, active parents, and time spent outdoors (1,2).

Physical Activity and Cardiovascular Risk Factors. The American Heart Association warns that, while heart attack and stroke are rare among children, the cardiovascular risk factors that contribute to these events such as high LDL levels, hypertension, and diabetes, are becoming more common at younger ages (3). Research has shown that atherosclerosis, i.e., the buildup of plaque in arteries, begins in childhood, progressing slowly during an individual's life until frequently resulting in coronary heart disease in adulthood (4). There is evidence that habitual physical activity, especially intense activity, can reduce levels of "bad" low-density lipoprotein cholesterol, or LDL, among children as young as eight years old (5,6).

Although not common, elevated blood pressure can be seen in children, especially overweight and obese children, and continues into adulthood (7). Data from the Avon Longitudinal Study of Parents and Children were used to study the association between physical activity in children and blood pressure; researchers found that higher levels of physical activity were associated with lower blood pressure, with results suggesting that the amount of activity was more important than the intensity of the activity (8). When children with elevated LDL were studied as part of the Dietary Intervention Study in Childhood, it was found that those children who led a more physically active life not only showed a trend toward reduction in LDL levels but reported lower systolic blood pressure readings as well (9).

Type 2 diabetes, once considered primarily an adult disease, is now being diagnosed with much greater frequency among children and adolescents. The Centers for Disease Control and Prevention (CDC) estimate there are as many as 206,000 cases in the United States among youth aged six through 19 (10). The sudden and marked increase in childhood Type 2 diabetes is recognized as a result of an increase in obesity and sedentary lifestyle. An estimated 85% of children with Type 2 diabetes are overweight or obese when diagnosed (11); becoming less sedentary is essential to both weight loss and the control of diabetes. Insulin resistance associated with Type 2 diabetes is linked to increased fat and decreased muscle mass; exercise increases muscle mass. In addition, during physical activity, glucose moves more efficiently from the bloodstream into muscle cells, which use insulin more effectively than fat cells, aiding in the reduction of blood glucose levels. Increased physical activity has also been shown to produce better glycemic control among children with Type 1 diabetes (12). Being active in childhood can help young people maintain healthy blood sugar levels throughout their lives.

Physical Activity and Bone Development. Research supports the beneficial effects of physical activity on bone development in children. The Iowa Bone Development Study found a statistically significant association between physical activity and bone measures in the 368 children aged four to six years old who participated in the study (13). The researchers suggest that increased physical activity in young children could contribute to optimal bone development.

Physical Activity and Cognitive Control. The results of a 2009 study conducted at the Illinois Neurocognitive Kinesiology Laboratory indicated that physical activity aids in increasing students' cognitive control, the ability to pay attention (14). Nine-year-old children were tested on the effects of moderate exercise on their cognitive function. Researchers noted positive outcomes linking physical activity, attention span, and subsequent academic achievement.

Physical Activity and Adolescent Risk Behaviors. Two recent studies produced findings showing positive associations between physical activity and decreased risk behaviors among adolescents. Data from the National Longitudinal Study of Adolescent Health indicated that participation in a range of physical activities, in particular those with high parental involvement, resulted in higher self-esteem and higher grades in school and lower incidence of risky behaviors such as truancy, cigarette smoking, sexual intercourse, and delinquency (15). A 2009 Finnish study suggested that higher levels of physical activity, coupled with high parental socioeconomic position, were related to higher overall academic performance and plans for future higher education (16).

Lack of Physical Activity among America's Youth. While the positive health benefits of physical activity are well recognized, as well as the risks incurred by a sedentary lifestyle, research published in 2008 in the *Journal of the American Medical Association* showed that moderate to vigorous physical activity declines as children age, decreasing by more than one-third between the ages of nine and 15 (17). A 2002 national survey conducted by the CDC of children aged nine through 13 years found that 61.5% of the children did not participate in any organized physical activity during nonschool hours and 22.6% did not engage in any free-time physical activity (18). Non-Hispanic black and Hispanic children were less likely to be involved in organized physical activity than were non-Hispanic white children, as were children whose parents had lower incomes and education levels.

2008 CDC Physical Activity Guidelines. The CDC recommends that children and adolescents should do 60 minutes (one hour) or more of physical activity every day (19). The 60 minutes of exercise should include three types of activity: (1) aerobic activity that is either moderate intensity such as brisk walking or vigorous intensity such as running; (2) muscle-strengthening activity such as gymnastics or push-ups at least three days per week, and (3) bone-strengthening activity such as jumping rope or running at least three days per week. For a more detailed explanation of the guidelines, and additional examples of activities, see Appendix A.

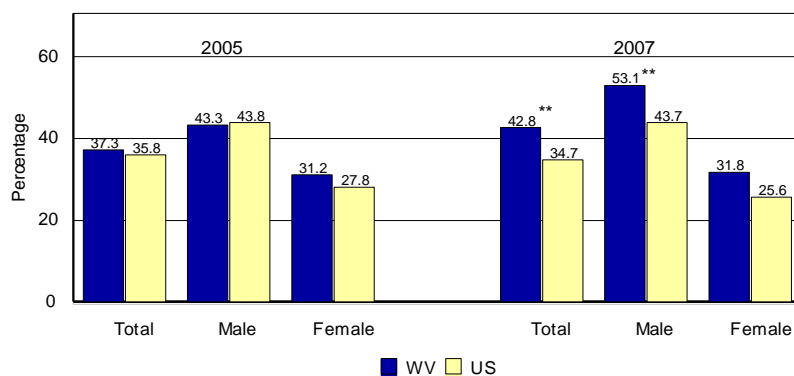
Review of the Data

The current document examines the status of physical activity and sedentary activities among West Virginia's children and adolescents, using data from four sources: the West Virginia Youth Risk Behavior Surveillance System, the National Survey of Children's Health, the FITNESSGRAM® Program utilized in the state's schools since 2007, and the first year evaluation of the implementation of the West Virginia Healthy Lifestyles Act.

Youth Risk Behavior Surveillance System. The Youth Risk Behavior Surveillance System (YRBSS), established by the CDC, has been collecting data since 1991 to monitor six categories of health-related behaviors, including physical inactivity, among the nation's youth and young adults (20). The YRBSS includes a national school-based survey conducted by the CDC every two years in grades 9 through 12, as well as additional state and local school-based surveys. West Virginia has participated in the YRBSS since 1993.

In 2005 and 2007, the YRBSS included a question designed to determine the level of physical activity of students, asking if they had done any kind of physical activity that increased their heart rate and made them breathe hard some of the time for a total of at least 60 minutes per day on five or more of the seven days before the survey. Figure 1 compares West Virginia and United States rates of students who answered that they had been physically active according to the definition. While no significant differences were noted between state and national students in 2005, total students and male students in West Virginia were more likely than their national counterparts to report being physically active in 2007.

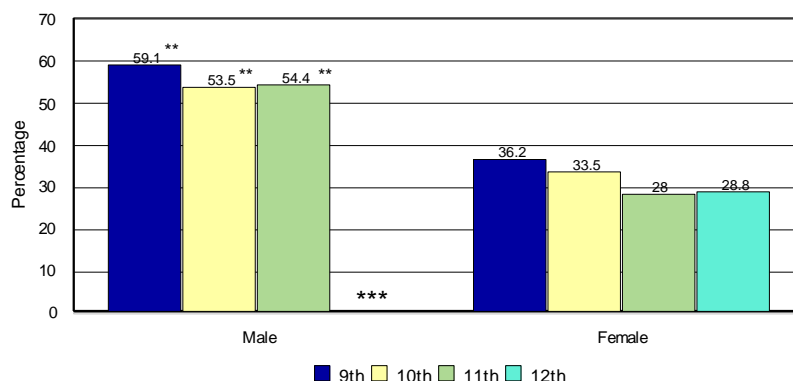
Fig. 1. Percentage of Physically Active* Students by Gender
WV and US YRBSS, 2005 and 2007



*Students in grades 9-12 who engaged in physical activity that increased their heart rate and made them breathe hard for at least 60 minutes per day on 5 or more of the 7 days before the survey.
**WV rate is significantly higher than US rate.

Figure 2 presents 2007 data on the percentage of West Virginia students who reported being physically active by gender and grade. While there were no significant differences by grade among either male or female students, there were statistically significant differences between the sexes. Males were significantly more likely to report being physically active than females in grades 9 through 11. (No rate was calculated for 12th grade males due to small sample size.)

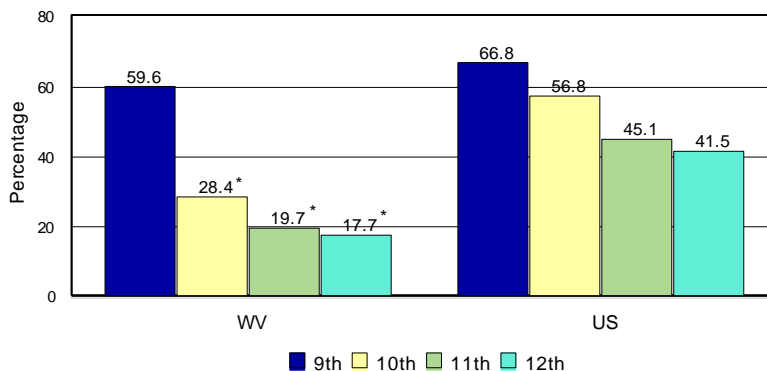
Fig. 2. Percentage of Physically Active* Students by Gender and Grade
WV YRBSS, 2007



*Students in grades 9-12 who engaged in physical activity that increased their heart rate and made them breathe hard for at least 60 minutes per day on 5 or more of the 7 days before the survey.
Male rate is significantly higher than female rate. *Fewer than 100 responses

According to 2007 YRBSS data, West Virginia students in 10th, 11th, and 12th grades were significantly less likely to attend physical education (PE) classes at least one day in an average week when they were in school than were students nationwide (Figure 3). Only 28.4% of 10th graders, 19.7% of 11th graders, and 17.7% of 12th graders in the state reported attending at least one PE class weekly, compared with 56.8%, 45.1%, and 41.5%, respectively, of students in the United States as a whole.

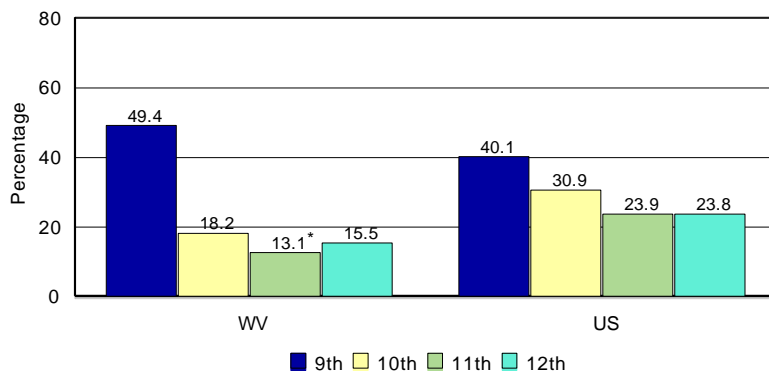
Fig. 3. Percentage of Students Who Went to PE Classes On at Least One Day in an Average School Week by Grade WV and US YRBSS, 2007



*WV rate is significantly lower than US rate.

Nationally, 10th, 11th, and 12th grade students were more likely to attend PE classes five days in an average week when they were in school than were students in those grades in West Virginia (Figure 4). While 30.9% of U.S. students in 10th grade, 23.9% of those in 11th grade, and 23.8% of those in 12th grade attended PE classes daily, only 18.2%, 13.1%, and 15.5% of state students did so. However, only the difference between 11th grade students was found to be statistically significant.

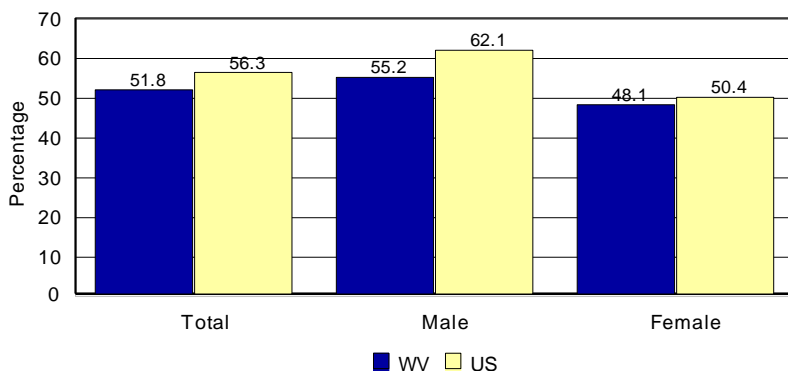
Fig. 4. Percentage of Students Who Went to PE Classes Five Days in an Average School Week by Grade WV and US YRBSS, 2007



*WV rate is significantly lower than US rate.

In 2007, 51.8% of West Virginia's high school students (grades 9-12) reported that they had played on at least one team run by their school or a community group during the 12 months prior to the survey, compared with 56.3% of students nationwide. Both male and female students in the state had slightly lower participation rates in a team sport than their national counterparts, but these differences were not statistically significant.

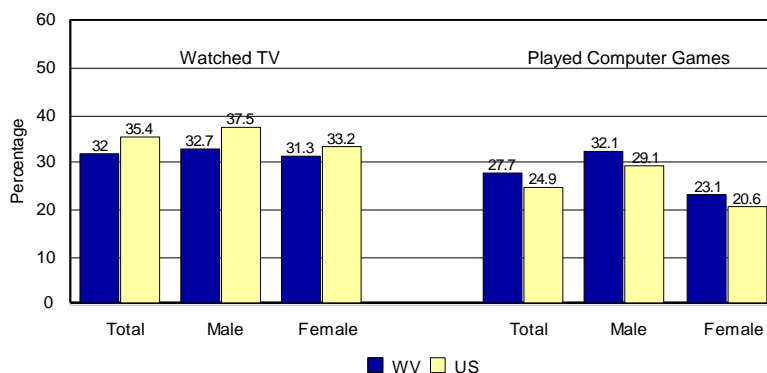
Fig. 5. Percentage of Students Who Played on at Least One Sports Team* by Gender WV and US YRBSS, 2007



*Students in grades 9-12 who played on at least one team (run by their school or community groups) during the 12 months before the survey

The YRBSS has included questions on non-school-related screen activities (i.e., watching TV or playing video or computer games) since 2003. Figure 6 presents results from 2007 for West Virginia and the United States. West Virginia students reported watching TV slightly less frequently and playing video or computer games slightly more frequently than students nationally, but these results were not statistically significant.

Fig. 6. Percentage of Students Who Watched TV or Used A Computer for Non-School Purposes* for 3+ Hours/Day by Gender WV and US YRBSS, 2007



*Played video or computer games

The West Virginia Health Statistics Center performed additional analyses of 2007 state YRBSS data to determine if any significant associations existed between certain other youth risk behaviors monitored by the survey and physical activity¹ (24). The following associations were found:

- **Depression:** Students were asked if they had felt so sad or hopeless almost every day for two or more weeks in a row at some point during the 12 months preceding the survey that they had stopped doing some of their usual activities. The percentage of physically active students who reported feeling sad or hopeless (24.2%) was significantly lower than the percentage of other students who had felt sad or hopeless (35.6%).
- **Episodic heavy drinking:** Episodic heavy drinking was defined as having had five or more drinks of alcohol in a row within a couple of hours on at least one day during the month before the survey. While no significant difference was found among male students, female students who were physically active were significantly less likely to report episodic heavy drinking (17.1%) than were their counterparts who were not physically active (31.2%).
- **Exercising to lose weight:** Students were asked if they had exercised to lose weight or to keep from gaining weight during the 30 days before the survey. Overall, 67.9% of students who reported being physically active had exercised to lose or keep from gaining weight, compared with 54.8% of other students. Sixty percent (60.2%) of physically active male students and 82.4% of physically active female students had exercised to lose or maintain weight, compared with 42.9% and 63.6% of other male and female students, respectively. All differences were found to be statistically significant.
- **Consuming five fruits and vegetables daily:** Students who reported being physically active were more likely to eat five fruits and vegetables daily than students who were not physically active. The overall prevalence of consuming the recommended servings of fruits and vegetables was 26.4% among physically active students; only 14.7% of students who were not physically active ate the recommended amounts, a significant difference. Among physically active males, 27.2% ate five or more servings daily, compared with 14.8% of other males. Among females, 23.9% of those who were physically active ate the recommended amounts of fruits and vegetables; only 14.6% of other female students did so. These gender differences were also found to be statistically significant.

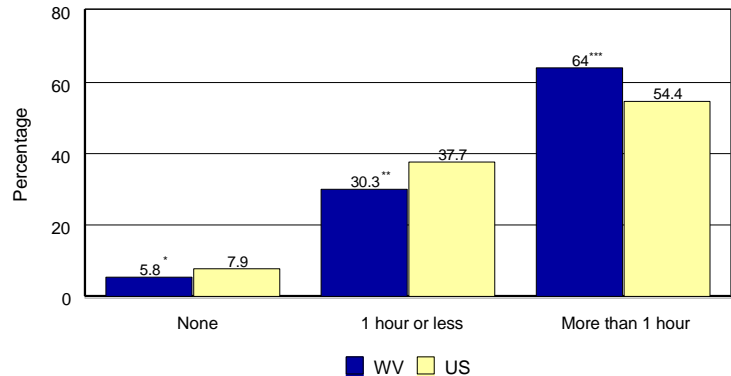
¹ Defined by the YRBSS as activity that increased the student's heart rate and made them breathe hard for a total of at least 60 minutes on 5 or more of the 7 days before the survey.

National Survey of Children's Health. The National Survey of Children's Health, sponsored by the Maternal and Child Health Bureau of the U.S. Department of Health and Human Services, was conducted in 2003 and 2007. Over 91,000 households were interviewed in 2007, with a minimum of 1,700 completed surveys in each state. The survey is designed to provide information on a broad range of topics about the health and well being of children aged 17 and under and includes questions on sedentary lifestyle among young children and adolescents. Results from the 2007 survey are presented in this report (21).

Nearly two-thirds (64.0%) of parents in West Virginia reported that their children aged one through five spent more than one hour watching TV or videos on an average weekday, compared with only 54.4% of parents nationally (Figure 7). This was a statistically significant difference.

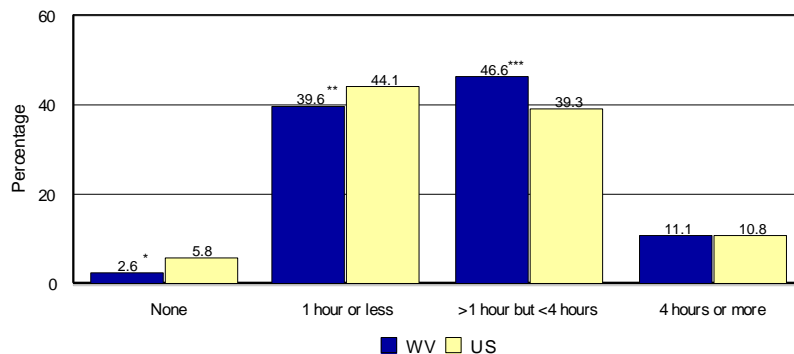
In West Virginia, 46.6% of parents of children aged six through 17 reported that their children spent more than one hour but less than four hours either watching TV or videos or playing video games (Figure 8). This was significantly higher than the 39.3% of parents in the nation as a whole who reported one to four hours of sedentary screen time by their children.

Fig. 7. Time Spent Watching TV or Videos on an Average Weekday
By Children Aged 1-5
WV and US, National Survey of Children's Health, 2007



*Fewer than 50 in cell; use caution in interpreting rate.
**WV rate is significantly lower than US rate.
***WV rate is significantly higher than US rate.

Fig. 8. Time Spent Watching TV or Videos or Playing Video Games
On an Average Weekday by Children Aged 6-17
WV and US, National Survey of Children's Health, 2007



*Fewer than 50 in cell; use caution in interpreting rate.
**WV rate is significantly lower than US rate.
***WV rate is significantly higher than US rate.

Children aged six through 17 in West Virginia were also significantly more likely to have a television in their bedroom than children nationally. Two-thirds (66.7%) of the state's children had a TV in their room, compared with a national average of 50.2%.

FITNESSGRAM® Program Data. FITNESSGRAM® is a physical fitness assessment program developed by the Cooper Institute in Dallas, Texas, to aid physical education teachers by providing standard assessment tools with which to measure health-related fitness among their students and facilitate communicating those results to parents. The assessments are divided into three major components: aerobic capacity, body composition, and muscular strength, endurance, and flexibility. The fitness items in each component of the assessment are scored according to criterion-referenced standards and are age and gender specific. A student's score determines whether he or she is in a "Healthy Fitness Zone" for each activity, or assessment item. Multiple test items are offered within each of the components for selection for use by the physical education teachers. FITNESSGRAM® has been used by all West Virginia schools since 2006 to assess students' fitness and track their progress. Assessments are conducted on students in 4th through 8th grades and in one year of high school. A listing of the individual assessment items is provided in Appendix B.

For the purposes of this report, FITNESSGRAM® data were grouped into four categories (aerobic activity, body composition, muscular strength and endurance, and flexibility) and three grade levels (elementary, middle, and high school). Data for 2006 were partial-year data; because of this, only data for school years 2007/2008 and 2008/2009 are included in this analysis (22).

Figure 9 below presents aggregated 2007/2008 and 2008/2009 data on the percentage of students in the state who scored in the Healthy Fitness Zone for each of the four categories by grade level. The percentage of students scoring in the Healthy Fitness Zone for aerobic capacity can be seen to decline with student age. Seventy-one percent (70.7%) of West Virginia's elementary school students tested in the aerobic healthy zone, compared with 66.2% of students in middle school and only 58.2% of students in high school. Less marked differences are evident in the other categories, with high school students slightly less likely to score in the Healthy Fitness Zones for body composition, muscular strength, and flexibility than elementary and middle school students.

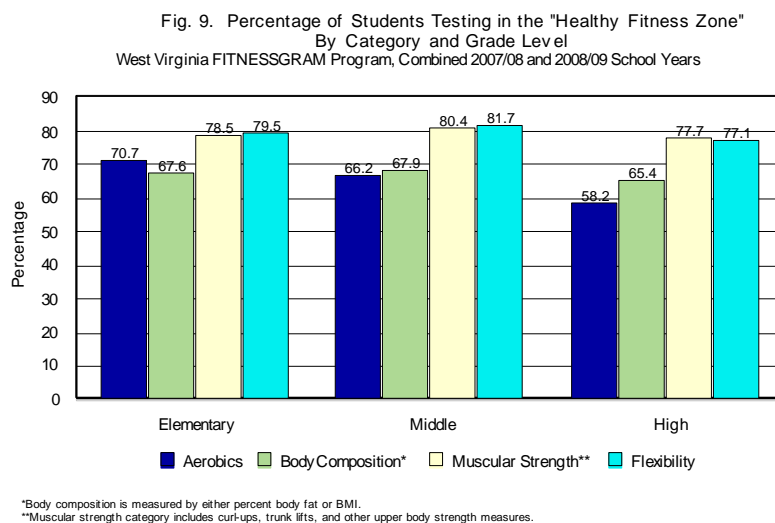
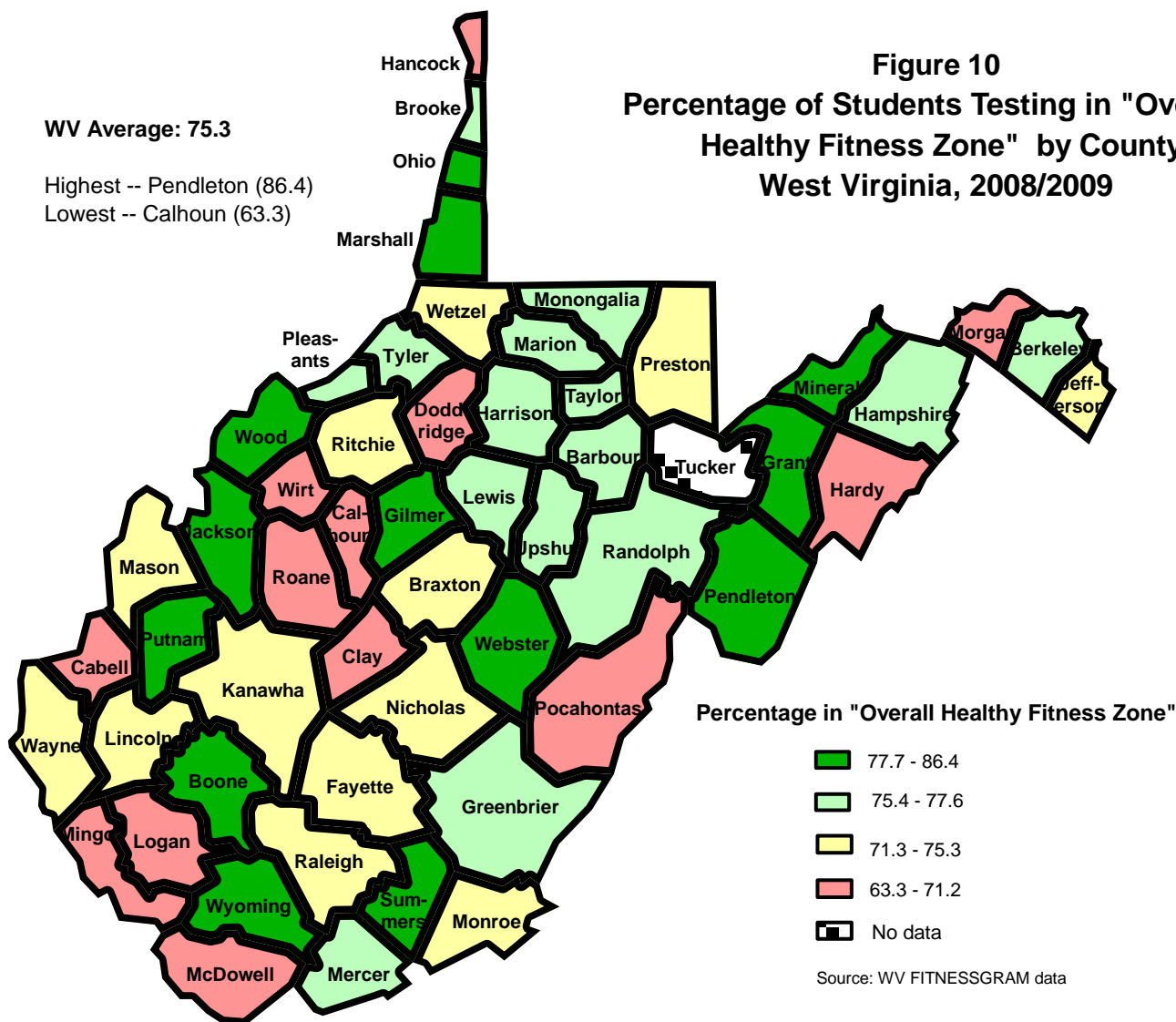


Table 1 and Figure 10 on the following pages present the percentages of students who scored in the Healthy Fitness Zones for each of the four categories by county. Percentages for all students in a county are provided for the individual school years 2007/2008 and 2008/2009 in Table 1, as well as the percentage calculated for an "Overall Healthy Fitness Zone" (all categories combined) for 2008/2009. The map depicted in Figure 10 shows the state's counties grouped around West Virginia's average Overall Healthy Fitness Zone percentage of 75.3%.

Table 1. Percent of Students Scoring in “Healthy Fitness Zones” by Category* and County West Virginia FITNESSGRAM® Program, School Years 2007/2008 and 2008/2009 and “Overall Healthy Fitness Zone” Percent for 2008/2009									
County	Aerobic Capacity		Body Composition		Muscular Strength		Flexibility		Overall
	2007/08	2008/09	2007/08	2008/09	2007/08	2008/09	2007/08	2008/09	2008/09
	%	%	%	%	%	%	%	%	%
Barbour	63.5	63.7	64.0	59.4	77.8	81.8	81.2	83.3	76.1
Berkeley	71.4	63.8	66.1	66.2	80.5	79.9	85.2	83.0	75.5
Boone	71.0	64.4	66.1	77.2	85.0	84.8	87.8	89.3	81.2
Braxton	65.8	73.1	58.1	57.1	78.0	74.8	79.7	79.9	74.2
Brooke	76.7	61.7	77.9	66.7	87.5	83.3	89.6	78.3	77.3
Cabell	67.7	65.9	64.8	66.1	75.8	70.2	79.1	70.2	70.2
Calhoun	38.2	48.6	46.6	68.6	60.0	64.6	68.6	68.8	63.3
Clay	72.4	62.0	79.5	61.4	80.3	65.2	73.4	62.1	63.5
Doddridge	65.6	74.4	70.8	54.8	76.2	69.7	88.6	77.8	70.4
Fayette	66.5	66.9	65.5	68.2	76.5	77.3	81.4	80.5	74.6
Gilmer	76.0	84.0	79.2	66.0	63.1	87.6	62.3	77.7	81.7
Grant	70.0	68.7	61.3	59.8	85.8	87.2	89.6	76.1	77.7
Greenbrier	55.1	62.9	62.0	69.1	75.7	81.0	79.4	78.7	75.8
Hampshire	60.7	63.9	62.0	61.5	79.3	82.4	77.6	88.5	77.0
Hancock	55.9	65.1	67.6	63.0	82.0	71.9	82.5	77.2	70.2
Hardy	60.6	59.5	64.9	60.0	75.4	75.0	83.8	79.8	70.9
Harrison	61.9	67.2	63.0	71.6	76.6	79.7	72.7	80.5	76.5
Jackson	69.2	74.7	62.7	75.3	86.5	91.2	83.8	86.8	86.1
Jefferson	68.7	68.2	71.1	66.0	76.3	76.5	79.2	75.2	73.2
Kanawha	68.5	65.5	69.5	67.8	79.4	76.7	78.8	78.8	74.1
Lewis	73.6	72.5	70.4	71.5	79.2	78.7	75.8	79.3	76.6
Lincoln	62.4	53.6	68.9	64.4	78.4	77.3	78.1	81.6	71.9
Logan	66.4	62.7	67.2	60.4	75.9	75.6	79.9	68.3	69.7
McDowell	64.3	60.4	58.4	70.8	76.5	71.2	80.0	75.8	70.1
Marion	58.5	63.6	66.0	66.4	81.3	81.2	80.8	82.6	76.6
Marshall	64.3	71.9	71.5	72.7	79.8	87.5	81.4	90.0	82.8
Mason	67.3	70.5	71.3	65.9	78.0	78.0	87.9	81.7	75.4
Mercer	64.2	63.7	67.0	67.1	80.7	80.2	84.2	86.5	77.3
Mineral	76.6	73.7	70.3	67.6	85.0	81.7	92.0	90.8	81.0
Mingo	62.4	70.0	58.7	61.3	70.5	72.1	76.8	77.5	71.2
Monongalia	63.0	66.5	52.1	73.7	77.8	80.1	78.8	78.9	77.1
Monroe	67.7	66.8	72.0	N/A	74.6	72.7	78.3	82.8	73.5
Morgan	71.9	66.1	71.4	57.8	66.2	67.9	81.3	61.7	65.6
Nicholas	69.9	67.0	73.2	68.5	82.0	77.3	81.4	78.4	74.6
Ohio	76.5	72.6	74.3	72.7	86.9	87.7	84.2	80.4	82.5
Pendleton	76.8	84.2	65.9	67.2	80.2	87.8	92.6	93.5	86.4
Pleasants	71.2	58.8	69.9	75.0	84.1	76.8	91.1	88.9	75.5
Pocahontas	61.9	66.8	74.0	71.4	71.6	71.1	70.6	70.5	70.3
Preston	67.0	62.7	70.3	62.9	77.4	76.5	78.2	83.9	73.6
Putnam	75.7	73.7	73.2	71.6	82.0	81.5	79.1	76.7	77.8
Raleigh	61.9	54.5	59.8	67.9	80.0	78.4	73.7	71.4	72.0
Randolph	58.5	66.0	66.3	68.7	85.6	82.0	84.8	81.0	77.1
Ritchie	73.1	62.0	63.4	71.9	82.1	71.2	93.6	86.4	72.4
Roane	74.2	68.5	59.0	58.7	78.5	70.7	66.8	66.2	67.5
Summers	71.4	66.7	63.1	75.6	84.5	83.5	85.1	91.1	81.4
Taylor	57.0	54.7	63.0	64.6	85.2	84.7	92.3	81.2	75.9
Tucker	71.4	N/A	N/A	N/A	89.6	N/A	87.0	N/A	N/A
Tyler	67.9	64.4	66.0	67.4	82.4	78.6	95.4	90.1	76.2
Upshur	64.6	54.8	70.3	69.9	85.0	82.9	81.5	83.2	76.0
Wayne	59.2	68.3	65.9	69.3	78.0	79.3	73.7	75.3	75.2
Webster	67.9	86.1	78.6	77.2	83.3	80.6	70.8	77.2	80.4
Wetzel	63.8	58.1	67.9	67.2	77.2	78.4	74.6	76.4	72.9
Wirt	70.8	68.0	69.8	76.0	76.5	70.5	52.4	65.7	70.0
Wood	71.0	65.9	73.6	77.1	85.9	85.2	86.3	83.0	80.4
Wyoming	75.5	72.9	61.1	74.7	85.2	82.9	91.1	88.0	81.3
WV Total	66.8	65.7	66.9	67.8	79.7	78.9	80.8	79.5	75.3
*See Appendix B for assessment items in each category.									



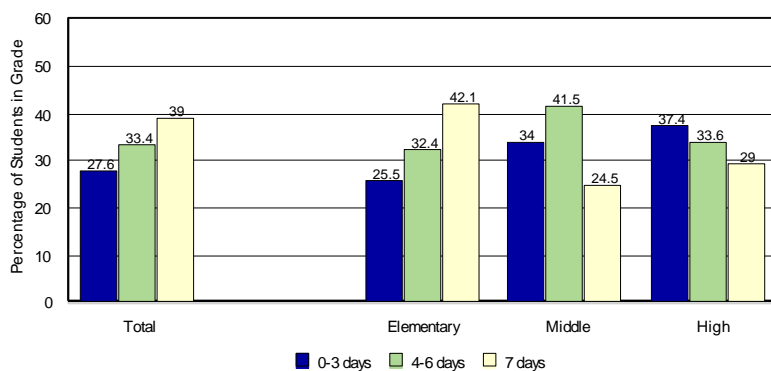
*Average of percentages from aerobic capacity, body composition, muscular strength, and flexibility fitness zones

West Virginia Healthy Lifestyles Act Evaluation Data. The “Healthy Lifestyles Act” (House Bill 2816) was passed in 2005 to address obesity and weight-related health problems found among the state’s students. The Act’s components include policy direction for physical education, guidelines for health education instruction, and student BMI and fitness assessments and reflect the state’s goal to promote healthy eating habits and regular physical activity. An overview of the Act’s mandates and the implementation plan by the Department of Education is found in Appendix C. A multi-agency team from the West Virginia University Health Sciences Center, the West Virginia Office of Healthy Schools, and the West Virginia Office of Healthy Lifestyles has completed two annual evaluations of the impact of the Act on West Virginia’s schools and students, supported by the Robert Wood Johnson Foundation. Findings from the first annual evaluation (2007/2008) are presented in this report (23); those from the second year will be released later in 2010.

As part of the evaluation, parents of students in kindergarten and grades 2, 4, 5, 7, and 9 and students in grades 5, 7, and 9 were interviewed about school policies concerning physical activity and their own participation in physical activities. Each evaluation year, a total of 1,500 parents (250 parents/grade) and 420 students (140 students/grade) were interviewed. The responses of parents who were interviewed were not matched one on one with those of their children, so direct comparisons between responses from parents and children are not possible.

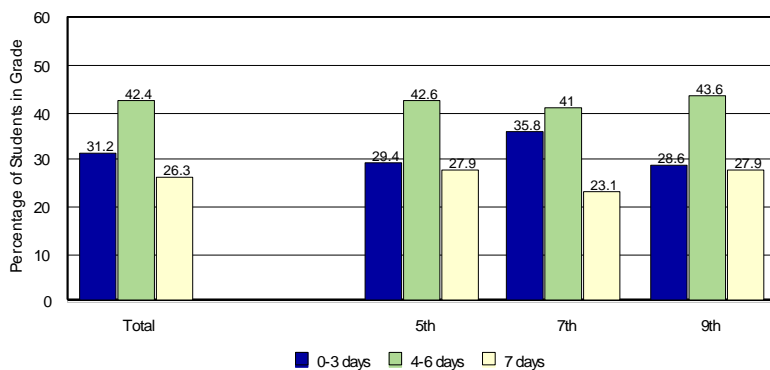
Participation in Physical Activity. Parents and students were asked how many days in a typical week the student met the CDC guidelines for physical activity, i.e., was physically active for at least 60 minutes

Figure 11. Number of Days in a Typical Week That Parents Reported Their Child Being Physically Active for at Least 60 Minutes* by Grade Level
WV Healthy Lifestyles Act Year One Evaluation Data



*CDC guidelines recommend 60 minutes or more of physical activity every day.
NOTE: Unknowns excluded.

Figure 12. Number of Days in a Typical Week That Students Self-Reported Being Physically Active for at Least 60 Minutes* by Grade
WV Healthy Lifestyles Act Year One Evaluation Data



*CDC guidelines recommend 60 minutes or more of physical activity every day.
NOTE: Unknowns excluded.

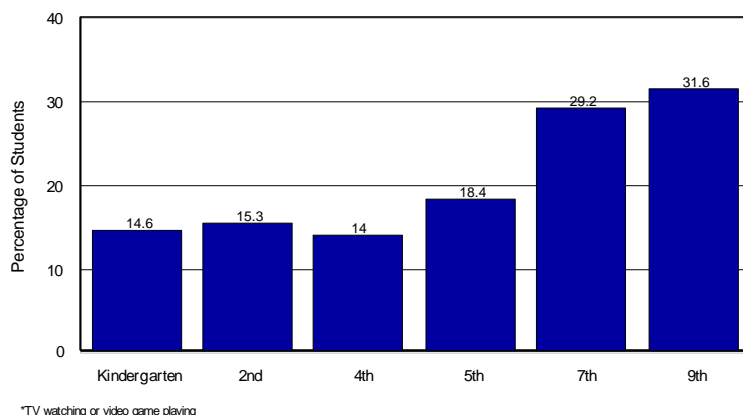
every day. Parents were more likely to report their children had met the guidelines than were the students who were interviewed. Overall, 39.0% of parents reported their child had been active for at least 60 minutes each day, compared with 26.3% of self-reporting students (Figures 11 and 12). Parents of elementary school students were the most likely to overestimate the physical activity of their children, compared with that reported by the students. Little difference between parental estimations and student reporting was noted at the middle school level. The 9th grade, or high school, students reported they participated in physical activity more frequently than parents estimated.

Boys were more likely than girls to meet the CDC guidelines for daily physical activity. Thirty percent (30.0%) of the boys interviewed said they met the CDC guidelines for at least 60 minutes of daily exercise, compared with 22.3% of the girls. Again, parents were more likely to report daily physical activity by their children. Forty-two percent (42.4%) of the parents of boys reported that their child met the guidelines; 35.3% of the parents of girls believed their child was physically active every day.

Participation in Sedentary Activities. Parents were asked if their child had a TV or computer in his or her bedroom, the amount of time their child spent watching TV or engaged in another screen-time activity on a typical school day, and whether or not they limited their child's screen time. Overall, 46.7% of parents reported their child had a TV in the bedroom, 3.1% reported a computer in the bedroom, while 11.6% reported their child had both a TV and a computer.

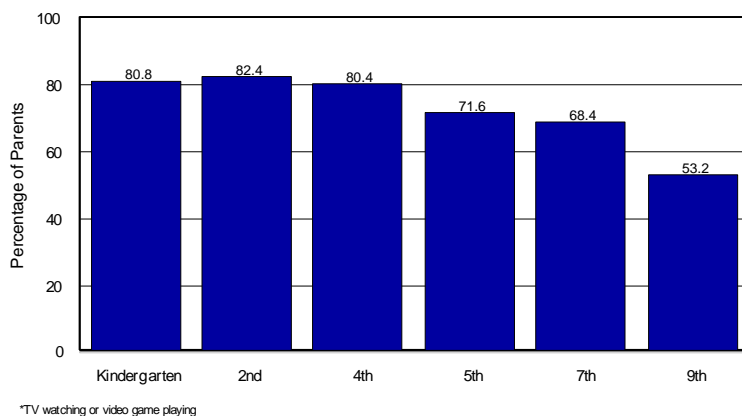
The amount of time spent in sedentary leisure-time activity on a typical school day increased with the age of the child. Fifteen percent (14.6%) of parents of a child in kindergarten reported their child spent more than two hours in screen-time activity, increasing to 31.6% of parents of children in 9th grade (Figure 13). The largest increase in screen-time activity occurred between the 5th and 7th grades.

Fig. 13. Percentage of Students Who Spend More Than 2 Hours Per Day In Screen Time Activity* per Parental Reporting by Grade
WV Healthy Lifestyles Act Year One Evaluation Data



The percentage of parents who set limits on their child's screen-time activities decreased with the age of the child. While more than eight out of every 10 parents of children in kindergarten, 2nd, and 4th grades reported limiting their child's screen time, only a little over half (53.2%) of parents of 9th graders did so. Figure 14 illustrates the decrease in parental supervision of sedentary leisure-time activity as the child's age increases.

Fig. 14. Percentage of Parents Who Set Limits on Screen Time Activities* by Their Children by Grade
WV Healthy Lifestyles Act Year One Evaluation Data



DISCUSSION

Reduced obesity and increased physical activity are essential to improving the health of West Virginia's children and adolescents and increasing their potential for good health in adulthood. This report provides an examination of currently available data sources on physical activity and, conversely, sedentary activity among the state's youth. It is hoped this document can contribute to the ongoing evaluation of the present situation by health professionals, teachers and school administrative personnel, and policymakers, as well as providing useful information to parents and others interested in addressing the problem of inadequate physical activity among our young people.

The Youth Risk Behavior Surveillance System (YRBSS) provides valuable insight into the rate of participation in physical activity among high school students. YRBSS data confirm the positive benefits of physical activity in terms of feelings of well being and decreased participation in certain risky behaviors. While more likely than their national counterparts to engage in physical activity, however, only slightly more than half of the state's male students and less than one-third of female students report being physically active. Female students are less likely to engage in sports or other physical activity than male students at every grade level. From 10th grade through 12th grade, West Virginia's students are less likely to attend physical education classes than those students in the United States as a whole. Examination of FITNESSGRAM® data reveal that, while, overall, three-fourths of the state's students are fit according to assessment criteria, only approximately two-thirds of students are aerobically fit or have a healthy body composition. A third data source showed a tendency for parents to overestimate the amount of time in which their children are engaged in physical activity.

Data from the National Survey on Children's Health on sedentary activities, i.e., TV or video watching or video game playing, suggest that youth in the state are significantly more likely than youth nationwide to spend their time engaged in screen-time activities. YRBSS data show similar rates among the state's and nation's adolescents in time spent on sedentary activities. Even so, nearly one-third of the state's students report watching TV in excess of three hours daily, and over one-fourth report using a computer for game playing and other non-school activity for three hours or more daily.

Looked at as a whole, the data sources analyzed in this report confirm the inadequate lack of participation in either organized or individual physical activity and the excess of time spent in sedentary activity by the youth in our state. The increase in chronic disease and risk factors such as diabetes, hypertension, and high levels of LDL cholesterol at younger ages noted earlier is symptomatic of the rising epidemic of obesity and sedentary lifestyle among West Virginia's children and adolescents. The future costs to West Virginia's health care system, as well as to individuals and their families, will be staggering if the rising burden of chronic illness is not addressed.

Need Keri's and Kristy's input here on state initiatives, etc., and the need for ongoing monitoring of various data sources over time. Just a paragraph or two.

APPENDIX A
2008 PHYSICAL ACTIVITY GUIDELINES FOR AMERICANS
KEY GUIDELINES FOR CHILDREN AND ADOLESCENTS
(www.health.gov/paguidelines)

Children and adolescents should do 60 minutes (one hour) or more of physical activity daily.

- **Aerobic:** Most of the 60 or more minutes a day should be either moderate- or vigorous-intensity aerobic physical activity, and should include vigorous-intensity physical activity at least three days a week.
- **Muscle-strengthening:** As part of their 60 or more minutes of daily physical activity, children and adolescents should include muscle-strengthening physical activity on at least three days a week.
- **Bone-strengthening:** As part of their 60 or more minutes of daily physical activity, children and adolescents should include bone-strengthening physical activity on at least three days a week.

Aerobic activities are those in which young people rhythmically move their large muscles. Running, hopping, skipping, jumping rope, swimming, dancing, and bicycling are all examples of aerobic activities. Aerobic activities increase cardiovascular fitness.

Muscle-strengthening activities make muscles do more work than usual during activities of daily life. This is called “overload,” and it strengthens the muscles. Muscle-strengthening activities can be unstructured and part of play, such as playing on playground equipment, climbing trees, and playing tug-of-war. Or these activities can be structured, such as lifting weights or working with resistance bands.

Bone-strengthening activities produce a force on the bones that promotes bone growth and strength. This force is commonly produced by impact with the ground. Running, jumping rope, basketball, tennis, and hopscotch are all examples of bone-strengthening activities.

APPENDIX B
FITNESSGRAM® ASSESSMENT ITEMS
(<http://wvde.state.wv.us/osshp/section6/PhysicalEducationNew.html#Fitnessgram>)

Aerobic Capacity

- PACER test (20-meter progressive, multi-stage shuttle run set to music)
- One-mile run/walk
- Walk test (ages 13 or greater)

Body Composition (may select one option)

- Percent body fat (calculated from triceps and calf skinfolds or entered from an alternative measuring device)
- Body mass index (calculated from height and weight)

Muscular Strength and Endurance

- Abdominal strength and endurance (curl-up)
- Trunk extensor strength and endurance (trunk lift)
- Upper body strength and endurance (choose from push-up, modified pull-up, and flexed arm hang)

Flexibility (choose from back-saver sit-and-reach and shoulder stretch)

APPENDIX C
WV HEALTHY LIFESTYLES ACT YEAR ONE EVALUATION REPORT:
OVERVIEW OF THE HEALTHY LIFESTYLES ACT MANDATES
AND STATE GUIDANCE FOR IMPLEMENTATION
(<http://www.hsc.wvu.edu/som/hrc>)

	Healthy Lifestyles Act Mandates	Department of Education Implementation
Healthy Beverages	<ul style="list-style-type: none"> Soft drinks may not be sold in elementary and middle schools during the school day Only healthy beverages (defined as water, 100% fruit and vegetable juice, low fat milk, and juice beverages with at least 20% juice) High schools may sell soft drinks (except during breakfast and lunch) when permitted by the county board of education. If high schools sell vended soft drinks, 50% of the beverages offered must be healthy beverages. 	<ul style="list-style-type: none"> Recommended that schools sell only water, low fat milk, and 100% juices Prohibited the sale of other beverages in elementary and middle schools Encouraged county boards of education to prohibit the sale of soft drinks
Physical Education	<ul style="list-style-type: none"> Elementary school students must participate in PE not less than 30 minutes at least 3 times per week Middle school students must participate in PE not less than one full period each school day for one semester High school students must complete one PE course credit and be offered a lifetime physical education class 	<ul style="list-style-type: none"> Elementary students will receive 90 minutes of PE per week Middle school students will receive 2700 minutes of PE per year High school students will receive one full course credit of PE and be offered a course in lifetime physical education
Fitness Testing	<ul style="list-style-type: none"> Fitness testing and reporting must be conducted in 4th through 6th grades and the required high school course 	<ul style="list-style-type: none"> PE teachers are required to administer FITNESSGRAM® to PE students in 4th through 8th grades and the required high school PE course.
Body Mass Index Measurements	<ul style="list-style-type: none"> BMI data must be collected on a scientifically drawn sample of students The BMI data must be reported to state agencies to use as an indicator of progress in promoting healthy lifestyles 	<ul style="list-style-type: none"> The Coronary Artery Risk Detection in Appalachian Communities project (CARDIAC) was charged with collecting BMI data BMI data were collected with parent permission in kindergarten, 2nd, and 5th grades with individual reports provided to parents and aggregate reports provided to the state
Health Education Instruction and Assessment	<ul style="list-style-type: none"> Schools must teach the importance of healthy eating and physical activity to maintain a healthy weight Health education assessments must be conducted to measure student health knowledge and program effectiveness 	<ul style="list-style-type: none"> Testing through the Health Education Assessment Program (HEAP) was required for health students in 6th and 8th grades and the required high school course Health education courses continued to teach the importance of physical activity and healthy eating

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