

Physical Activity

Definition: Physical activity is bodily movement that expends energy. For adults, the Department of Health and Human Services¹ recommends 150 minutes of moderate (such as brisk walking, bicycling, vacuuming, or gardening) or 75 minutes of vigorous (such as running, aerobics, or heavy yard work) physical activity weekly and muscle strengthening activity two or more days a week. This chapter uses questions from the Behavioral Risk Factor Surveillance System to determine the proportion of Washington residents meeting recommendations for moderate and vigorous physical activity. Respondents meet recommendations during leisure time if the minutes of moderate physical activity plus minutes of vigorous physical activity times two equals at least 150. They also meet recommendations if they report mostly walking or heavy labor while at work. (See [Technical Notes](#).)

Summary

Physical activity improves health for people of all ages. For adults, regular physical activity lowers risk of early death, coronary heart disease and stroke, high blood pressure, diabetes, and colon and breast cancers. Physical activity also prevents weight gain, helps with weight loss, reduces depression and improves cognitive functioning in older adults.¹

Based on the 2012 Behavioral Risk Factor Surveillance System, 69% ($\pm 1\%$) of Washington adults met the guidelines for moderate or vigorous physical activity during leisure time or while at work. (See definition box.) Men were more likely than women to meet guidelines. The percentages meeting guidelines decreased with decreasing household income.

Youth should be physically active for at least 60 minutes on most days.¹ On the 2012 Healthy Youth Survey, the percent of students reporting 60 minutes of physical activity on at least five days in the past week decreased from 58% ($\pm 2\%$) in grade 6 to 47% ($\pm 3\%$) in grade 12. Boys were more likely than girls to report 60 minutes of physical activity on at least five days.

Individual, social and environmental factors influence physical activity. Successful strategies to increase physical activity include community-wide campaigns, behavior change programs that include social support, designing communities and streets to facilitate physical activity, and providing access to places where people can engage in physical activity. For youth, opportunities for physical activity in school are also important.

Time Trends

The Centers for Disease Control and Prevention's (CDC) [Behavioral Risk Factor Surveillance System](#) (BRFSS) has measured leisure time physical activity since the survey began in 1984. Specific questions, survey methods and guidelines for physical activity, however, have changed over time making it difficult to determine whether levels of physical activity are increasing or decreasing. (See [Technical Notes](#).)

For adults, the 2008 Physical Activity Guidelines for Americans include 150 minutes of moderate-intensity physical activity, 75 minutes of vigorous-intensity physical activity, or an equivalent combination weekly.¹ Washington 2012 BRFSS data showed that 69% ($\pm 1\%$) of Washington adults met this guideline either through leisure time physical activity or while at work. [Age-adjusted](#) and crude rates are the same. There is no national comparison, because national data no longer include work-related physical activity.

Based on BRFSS data from 2001 to 2009, 62%–64% ($\pm 1\%$ – 2%) of Washington adults met prior guidelines for moderate or vigorous physical activity during leisure time or at work, with no overall increase or decrease during this time period. The prior guidelines included at least 30 minutes of moderate physical activity on at least five days a week or 20 minutes of vigorous physical activity on at least three days a week. The proportion of people meeting recommendations in Washington was higher than the national proportion of 57%–59% ($\pm <1\%$) from 2001 to 2009.

Because of changes in recommendations, BRFSS questions and survey methods, the 2001–2009 and 2012 data are not comparable. We will likely not be able to determine whether we are becoming more or less physically active for several years.

2010 and 2020 Goals

Healthy People 2010. The national *Healthy People 2010* set goals for both moderate and vigorous leisure time physical activity. The goals were the same for adults and youth: 30% (age-adjusted) engage in moderate physical activity for 30 minutes or more on at least five days per week and 30% (age-adjusted) engage in vigorous physical activity for 20 minutes or more on at least three days per week.

Based on 2009 BRFSS data for leisure time physical activity, Washington adults met both goals: 41% ($\pm 1\%$) met the goal for moderate and 31% ($\pm 1\%$) met the goal for vigorous physical activity (age-adjusted).

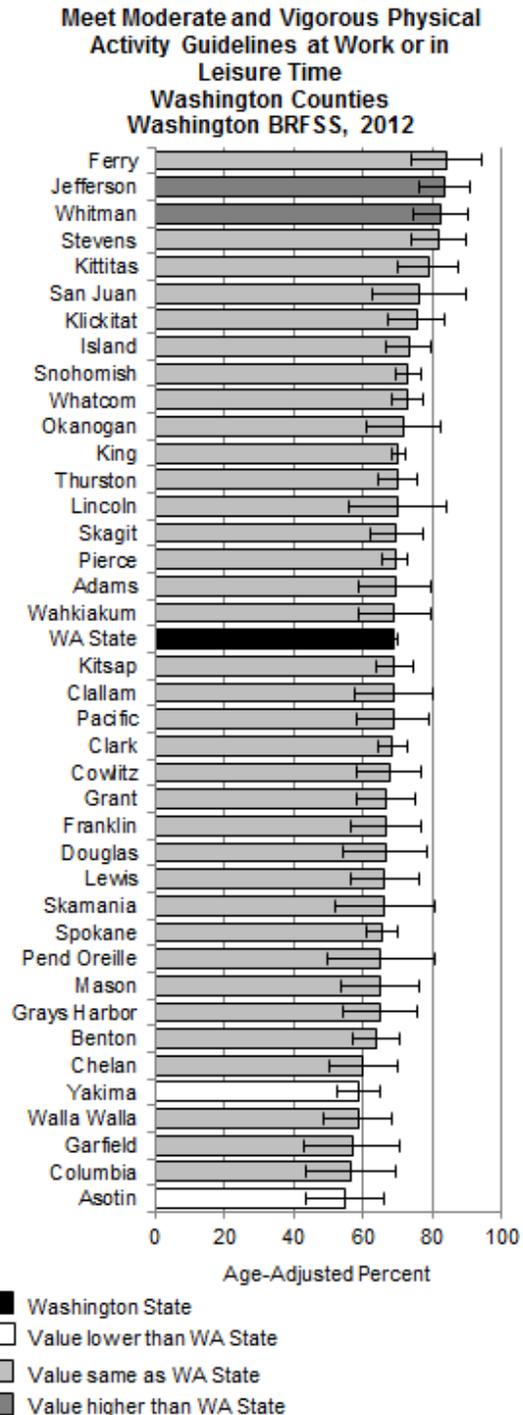
Healthy Youth Survey (HYS) data show that Washington youth in grades 9–12 met the goal for moderate physical activity in 2004 and 2006. They did not meet the goal for vigorous physical activity.² HYS stopped collecting data to measure these goals because recommendations for youth physical activity changed in 2008.

Healthy People 2020. The *Healthy People 2020* goals for adult and youth physical activity are consistent with the Department of Health and Human Services (DHHS) Physical Activity Guidelines for Americans.¹ For adults, however, the *Healthy People 2020* goal is measured through leisure time activity only, even though the guidelines do not specify where the activity takes place. (Thus, other sections of this document measure physical activity during both leisure time and while at work, as described in the [Definition box](#).) The 2020 goal for adults is that during leisure time, 20.1% will engage in moderate-intensity physical activity for at least 150 minutes per week, vigorous-intensity physical activity for at least 75 minutes per week or an equivalent combination, and in muscle-strengthening activities on two or more days a week. The 2011 BRFSS showed that 21% ($\pm 1\%$) of Washington adults met this goal during leisure time and so Washington has already achieved the *Healthy People 2020* goal.

The 2020 goal for youth is that 18.4% in grades 9–12 will be physically active for at least 60 minutes daily. On the 2012 HYS, 28% ($\pm 2\%$) of 8th graders, 23% ($\pm 2\%$) of 10th graders and 21% ($\pm 2\%$) of 12th graders reported at least 60 minutes of physical activity on seven of the past seven days. Thus, Washington youth have achieved the *Healthy People 2020* goal.

Geographic Variation

The 2012 Washington BRFSS showed age-adjusted percentages of adults meeting guidelines for moderate and vigorous physical activity during leisure time or work as ranging from 55% ($\pm 12\%$) in Asotin County to 84% ($\pm 10\%$) in Ferry County.

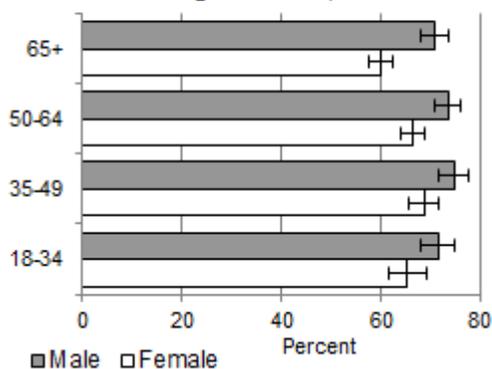


Wide margins of error for smaller counties make the data difficult to interpret. Nonetheless, Jefferson and Whitman counties had higher percentages meeting recommendations than the state; Yakima and Asotin counties had lower percentages.

Age and Gender

On the 2012 Washington BRFSS, more men (73% ±2%) than women (65% ±2%) met the DHHS guidelines for moderate and vigorous physical activity. Women ages 65 and older were less likely to meet the recommendations than women in all of the younger age groups. Men ages 65 and older were less likely to meet guidelines than men ages 35–49 years.

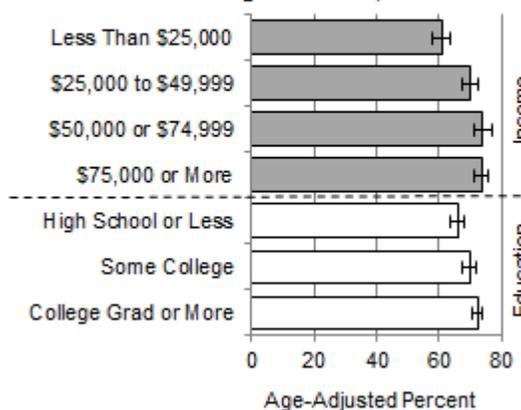
**Meet Moderate and Vigorous Physical Activity Guidelines at Work or in Leisure Time
Age and Gender
Washington BRFSS, 2012**



Economic Factors and Education

The 2012 Washington BRFSS showed that the age-adjusted percentage of adults meeting DHHS guidelines for moderate and vigorous physical activity increased as household income increased up to \$50,000 annually. The percentages in the two highest income groups were the same. Similarly, those with no formal education after high school were less likely to meet the guidelines than those with higher levels of formal education. The relationship with education, however, did not continue after taking income, gender, race and ethnicity, and age into account.

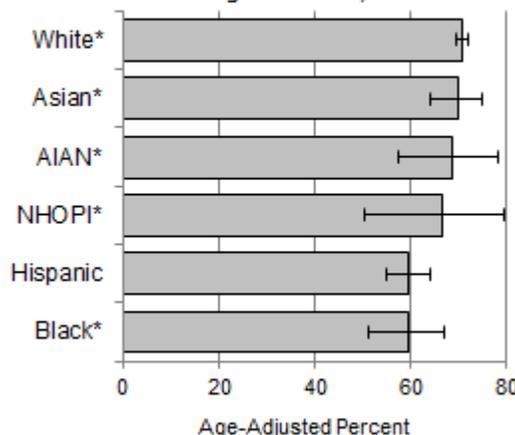
**Meet Moderate and Vigorous Physical Activity Guidelines at Work or in Leisure Time
Income and Education
Washington BRFSS, 2012**



Race and Hispanic Origin

Based on the 2012 BRFSS, Washington’s white and Asian residents were more likely to meet guidelines for moderate and vigorous physical activity than black or Hispanic residents. These relationships, however, did not continue after taking education, income, gender and age into account.

**Meet Moderate and Vigorous Physical Activity Guidelines at Work or in Leisure Time
Race and Hispanic Origin
Washington BRFSS, 2012**



* Non-Hispanic
AIAN: American Indian/Alaska Native
NHOPI: Native Hawaiian/Other Pacific Islander

Health Effects

Physical activity provides health benefits across the life span. The 2008 Physical Activity Guidelines for

Americans conclude that there is strong scientific evidence that for children physical activity improves cardiorespiratory and muscular fitness and bone health. For adults, there is strong evidence that physical activity lowers risk of early death, coronary heart disease, stroke, high blood pressure, type 2 diabetes, and colon and breast cancers. It also improves blood lipid profiles, prevents weight gain and falls, assists with weight loss, reduces depression and improves cognitive functioning in older adults. The 2008 guidelines also note that some physical activity is better than none; most health benefits occur with at least 150 minutes a week of moderate intensity physical activity, such as brisk walking; and additional benefits occur with more physical activity.¹

Barriers and Motivations for Change

Physical activity has been gradually engineered out of our daily lives.³ For example, there has been increased automation at work and at home, and cars are often the most convenient manner of travel for all but the shortest distances. Thus, for most people being physically active requires both motivation and overcoming environmental and personal barriers.

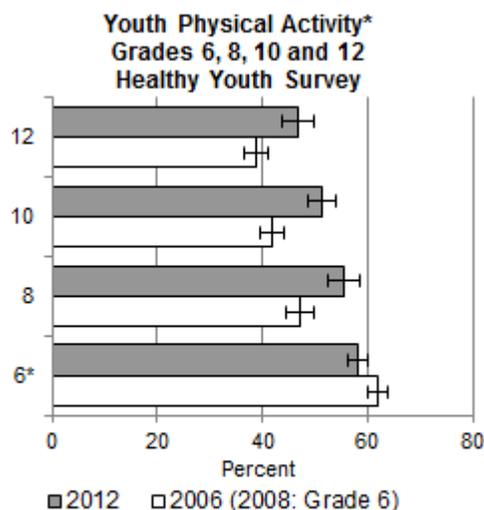
Environmental factors. Many environmental barriers to physical activity arise from how we design communities, such as street design and housing developments that favor automobile use rather than walking or biking, and lack of public transit. A lack of parks, sidewalks, paths for safe walking or bicycling, and interesting places to walk to also make it difficult to be physically active.^{3,4,5,6} Heavy vehicle traffic, lack of affordable recreational centers and concerns about crime can also create barriers.^{3,6} Inclement weather can make it difficult to be physically active, especially for people with no access to affordable indoor facilities.⁴ For adolescents, lack of physical education in school also plays a role.⁶

Personal factors. Personal factors include confidence that one can engage in regular physical activity (self-efficacy), enjoyment of physical activity, support from others, believing that physical activity has benefits, and a lack of barriers.³ Among personal barriers, CDC notes lack of time, social influence, energy, willpower,^{4,5} skill and resources, as well as a fear of injury.^{4,5}

Other Measures of Impact and Burden

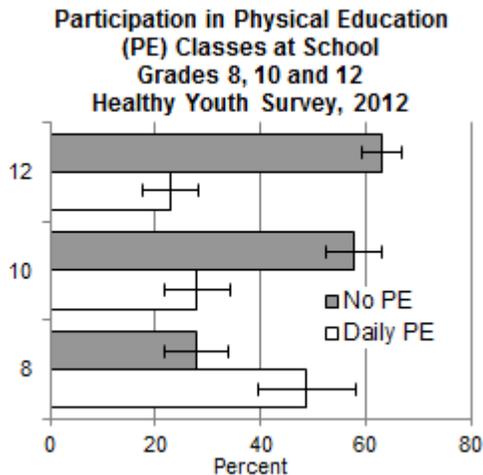
Adults. The 2008 Physical Activity Guidelines for Americans recommend muscle strengthening activities on at least two days a week.¹ The 2011 BRFSS added a question on muscle strengthening during leisure time. Based on this question, 31% ($\pm 1\%$) of Washington adults met the guideline for muscle strengthening in 2011. On the same survey, 54% ($\pm <1\%$) met guidelines for moderate and vigorous physical activity during leisure time. Twenty-one percent ($\pm 1\%$) met guidelines for both muscle-strengthening and moderate and vigorous physical activity. People with higher levels of income were most likely to meet both guidelines after accounting for age, gender, race and ethnicity, and education. People with higher levels of education were also most likely to meet both guidelines after accounting for age, gender, race and ethnicity, and income.

Youth. The 2008 Physical Activity Guidelines for Americans recommend that children ages 6–17 years have 60 minutes or more of physical activity on most days, preferably daily.¹ Nationally, CDC measures this as at least 60 minutes of physical activity on at least five of the past seven days. The HYS began collecting data on the number of days students are physically active for at least 60 minutes in 2006 for grades 8, 10 and 12 and in 2008 for grade 6. The percent of students meeting the CDC measure has consistently decreased as grade increased. In 2012 the percent meeting the CDC measure was higher than the percent in 2006 for grades 8, 10 and 12. For grade 6, a smaller percentage reported meeting the measure in 2012 compared to 2008.



* Reporting at least 60 minutes of physical activity on at least 5 of the past 7 days.

Consistent with levels of physical activity decreasing as grade increases, students in higher grades report less participation in physical education classes during an average week at school than do students in lower grades.



Larger proportions of boys than girls consistently report at least 60 minutes of physical activity on at least five of the past seven days. For example, in 2012, 57% ($\pm 3\%$) of boys in grade 10 reported 60 minutes on at least five days compared to 47% ($\pm 3\%$) of girls.

Intervention Strategies

The Community Preventive Services Task Force systematically reviews evidence for population-based interventions to improve health. The task force publishes official findings in [The Community Guide](#).⁷ The Community Guide recommends community-wide campaigns, behavioral and social approaches, and environmental and policy approaches for increasing physical activity. In 2010, CDC published a resource to assist professionals and volunteers to implement The Community Guide recommendations in diverse community settings.³ The CDC publication also updated evidence for interventions recommended in The Community Guide where new studies were available. The new evidence supported the original Community Guide recommendations.

Community-wide campaigns. The Community Guide recommends large-scale community-wide campaigns to promote physical activity. Key characteristics of successful campaigns include:

- Using a variety of mass media outlets such as television, billboards, radio, movie

trailers, and newspaper columns and inserts.

- Delivering messages in multiple settings, such as in schools and senior centers, at community events and in places where people work.
- Using individual-level strategies such as self-help groups and risk factor screening, and environmental change such as building trails or sidewalks or providing showers at work.
- Being highly visible to community residents.
- Having a plan to sustain the effort after initial engagement.

The Community Guide could not evaluate the individual components of these multi-component activities. Based on the 10 studies included in The Community Guide's review, The Community Guide noted that community-wide campaigns effectively increased levels of physical activity, energy expenditure, knowledge about exercise and physical activity, and the intention to be physically active.⁸

Behavioral and social approaches. The Community Guide recommends:

- Individually adapted health behavior change programs. Effective programs include goal setting, monitoring progress, creating social support, using self-generated rewards to reinforce progress, problem solving, and developing strategies to maintain physical activity.
- Developing community-based social networks to support individuals in being physically active. These approaches include developing buddy systems to encourage physical activity in community or work settings and developing social support for group exercise classes in diverse settings.
- Enhanced school-based physical education (PE) to increase physical activity in school. This can be accomplished by policy and curriculum changes to increase the amount of time students are physically active during PE, the number of days students attend PE and the length of PE classes. One component of these interventions is teacher training to provide strategies to maximize physical activity during class.

Environmental and policy approaches.

Environmental and policy approaches include:

- Increasing access to places for physical activity combined with informational outreach.

Building trails or new recreational facilities, reducing fees or increasing operating hours of existing facilities, and introducing opportunities for physical activity in community centers or worksites are examples of activities that increase access to places for physical activity. Informational outreach helps people to know about new places for physical activity.

- Changing street and community design to support physical activity. Street-level approaches include improving lighting, increasing safety at crosswalks, and using landscaping to slow traffic. Community-level approaches include urban design that integrates housing with commercial, educational and occupational opportunities.
- Posting signs by elevators and escalators to encourage people to use stairs. The signs may inform people about the health or weight control benefits of using stairs and can be used alone or with stairwell improvements to make the stairs an attractive alternative.

The Washington State Department of Health works to improve physical activity by working with partners to implement policy and environmental changes. Two such projects are Complete Streets and Safe Routes to School, approaches recommended in the National Physical Activity Plan.⁹

The department works with community advocates and local health jurisdictions to encourage their local governments to adopt Complete Street Ordinances. Complete Streets are designed to consider the needs of all users, including pedestrians, cyclists and those using mass transit. Adopting an ordinance is a sustainable way to ensure walking and biking are incorporated into the built design of a community.

Washington State has a growing Safe Routes to Schools Program (SRTS). SRTS improves safety of walking and biking to school and increases physical activity for children.¹⁰ State and local agencies, nongovernmental organizations and schools work together to implement the program. SRTS programs can include changing the physical infrastructure, educating kids and communities on safety, implementing a walking school bus—a program

where volunteers lead groups of children to school—and enforcing school zones and laws.

See Related Chapters: [Obesity and Overweight](#), [Nutrition](#), [Falls Among Older Adults](#), and the [Chronic Disease Section](#).

Data Sources (For additional detail, see [Appendix B](#))

Washington State Behavioral Risk Factor Surveillance System (BRFSS) Data: 2001–2012. Olympia, Washington: Washington State Department of Health, under federal cooperative agreement numbers: U58/CCU002118 (1987-2003), U58/CCU022819 (2004-2008), U58 DP001996 (2009-2010), or U58/SO000047 (2011–2013); data prepared by Washington State Department of Health, Office of Healthy Communities.

National BRFSS: United States Behavioral Risk Factor Surveillance System: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC). Atlanta, Georgia; data prepared by Washington State Department of Health, Office of Healthy Communities.

Washington Healthy Youth Survey: Healthy Youth Survey. Washington State Department of Health, Office of the Superintendent of Public Instruction, Department of Social and Health Services, Department of Commerce, Family Policy Council and Liquor Control Board; data prepared by Washington State Department of Health, Office of Healthy Communities.

For More Information

Washington State Department of Health, Nutrition and Physical Activity website:
<http://www.doh.wa.gov/YouandYourFamily/NutritionandPhysicalActivity.aspx>.

U.S. Centers for Disease Control and Prevention, Division of Nutrition and Physical Activity, www.cdc.gov/nccdphp/dnpa/.

The Guide to Community Preventive Services: a comprehensive review of published community-based interventions to increase physical activity.

Technical Notes

Physical activity at work. Although Centers for Disease Control and Prevention and Healthy People focus on leisure time physical activity, the 2008 Physical Activity Guidelines for Americans do not specify where the activity needs to take place. This chapter includes physical activity while at work (unless otherwise specified), because those who are physically active at work can meet guidelines without being active during leisure time. For example, a national report showed that including occupational physical activity increased the percent of adults meeting guidelines by about seven percentage points. For Hispanic men, the increase was about 14 percentage points and for men with less than a high school education, the increase was about 16 percentage points.¹¹

Changes to the Behavioral Risk Factor Surveillance System (BRFSS). Prior to 2011, BRFSS included adults living in households with landlines only. Beginning in 2011, BRFSS began to include adults with cell phones, but no landlines. In the same year, BRFSS changed its method of weighting participant responses so that they represent the state as a whole. (See Caveats in [Appendix B: Primary Data Sources](#), Behavioral Risk Factor Surveillance System.) The change of BRFSS methods alone creates makes it difficult to track changes over time. For physical activity, additional discontinuities arise because BRFSS changed the physical activity questions in 2011 and national recommendations for physical activity changed in 2008.

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Endnotes

¹ U.S. Department of Health and Human Services. *Physical Activity Guidelines for Americans*. Washington, DC: U.S. Department of Health and Human Services; 2008. <http://www.health.gov/paguidelines/guidelines/intro.aspx>. Accessed January 13, 2014.

² The Washington State Department of Health developed an estimate for grades 9–12 based on Healthy Youth Survey respondents from grades 8, 10, and 12. For more information, contact the Washington State Department of Health, Maternal and Child Health Assessment Office, 360-236-3533.

³ Brown DR, Heath GW, Martin SL, eds. *Promoting Physical Activity, A Guide for Community Action*. 2nd ed. Champaign, IL: Human Kinetics; 2010.

⁴ Centers for Disease Control and Prevention. *Overcoming Barriers to Physical Activity*. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Nutrition, Physical Activity and Obesity; 2011. <http://www.cdc.gov/physicalactivity/everyone/getactive/barriers.html>. Accessed January 16, 2014.

⁵ Centers for Disease Control and Prevention. *Barriers to Physical Activity Quiz*. Atlanta, GA: Centers for Disease Control and Prevention; 2011.

http://www.ucd.ie/t4cms/BarriersToBeingActiveQuestionnaire_Section7_Q4.pdf.

⁶ U.S. Department of Health and Human Services. *Healthy People 2020*. Washington, DC: U.S. Department of Health and Human Services; 2013. <http://www.healthypeople.gov/2020/default.aspx>. Accessed January 13, 2014.

⁷ The Guide to Community Preventive Services. *The Community Guide*. Atlanta, GA: Centers for Disease Control and Prevention; 2014. <http://www.thecommunityguide.org/index.html>. Accessed on January 16, 2014.

⁸ The Guide to Community Preventive Services. *Campaigns and Informational Approaches to Increase Physical Activity: Community-Wide Campaigns*. Atlanta, GA: Centers for Disease Control and Prevention; 2014. <http://www.thecommunityguide.org/pa/campaigns/community.html>. Accessed on January 16, 2014.

⁹ National Physical Activity Plan Alliance. *The Plan*. Columbia, SC: National Physical Activity Plan Alliance, 2010. <http://www.physicalactivityplan.org/theplan.php>. Accessed January 16, 2014.

¹⁰ McMillan TE. *Walking and Biking to School, Physical Activity and Health Outcomes*. San Diego, CA: Active Living Research; 2009. http://activelivingresearch.org/files/ALR_Brief_ActiveTransport_0.pdf.

¹¹ Centers for Disease Control and Prevention. Contribution of occupational physical activity toward meeting recommended physical activity guidelines: United States 2007. *MMWR Morb Mortal Wkly Rep*. 2011;60(20):656-660.