

# Physical Activity

## Summary

The benefits of regular physical activity include reduced rates of heart disease, high blood pressure, colon cancer, type 2 diabetes, falls and fractures, and obesity.<sup>1,2</sup> Physical activity also reduces the negative impact of heart disease, diabetes, obesity, osteoarthritis, high blood pressure, depression, and anxiety. It helps people maintain a healthy body weight and improves the quality of life.<sup>1</sup>

The U.S. Centers for Disease Control and Prevention (CDC) recommends that adults engage in 30 minutes of moderate-intensity physical activity on five or more days of the week, or in 20 minutes of vigorous activity on three or more days of the week.<sup>3</sup> In 2005, 64% ( $\pm 1\%$ ; [age-adjusted](#) and [crude rates](#) are the same) of Washington adults met one or both recommendations for physical activity. This rate is significantly higher than the U.S. age-adjusted rate of 59% ( $\pm 3\%$ ). In 2006, from 39% to 47% of 8<sup>th</sup>, 10<sup>th</sup>, and 12<sup>th</sup> graders met the recommendation of the U.S. Dietary Guidelines for Americans for 60 minutes of physical activity on most days of the week.

Many social and environmental factors influence the decision to be active. Successful strategies to promote physical activity educate the individual and develop policies that create environments to support active lifestyles.

## Time Trends

In 2005, 64% ( $\pm 1\%$ ) of Washington adults met or exceeded the CDC recommendations for moderate or vigorous physical activity at work or during leisure time. This share was the same for both 2001 and 2003, indicating no changes over the past five years. Compared to the United States as a whole, a greater percentage of

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**Definition:** Physical activity is bodily movement that expends energy. The U.S. Centers for Disease Control and Prevention (CDC) recommends that adults engage in moderate-intensity physical activity for 30 minutes on five or more days of the week *or* engage in vigorous-intensity physical activity on three or more days of the week. The CDC uses the Behavior Risk Factor Surveillance System to measure the average frequency and duration of moderate physical activities (such as brisk walking, bicycling, vacuuming, or gardening) and vigorous physical activities (such as running, aerobics, or heavy yard work) during leisure time, and it also measures the general level of physical activity during work. This chapter focuses on vigorous and moderate physical activity during both work and leisure time.

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Washington adults have consistently met or exceeded CDC recommendations for moderate or vigorous physical activity. In 2005, 59% ( $\pm 1\%$ ) of adults in the United States met recommendations.

## Year 2010 Goals

The national *Healthy People 2010* includes separate goals for leisure time moderate-intensity and vigorous-intensity physical activity. These are 1) increase to 30% (age-adjusted) the proportion of adults who engage regularly, preferably daily, in moderate physical activity for at least 30 minutes a day, and 2) increase to 30% (age-adjusted) the proportion of adults who engage in vigorous physical activity three or more days per week for 20 minutes or more per occasion. Based on 2003 and 2005 BRFSS data for leisure time physical activity, Washington adults met both goals: 54% ( $\pm 1\%$ ) met the goal for moderate physical activity, and 31% ( $\pm 1\%$ ) met the goal for vigorous physical activity (age-adjusted).

*Healthy People 2010* also sets goals for moderate and vigorous physical activity among youth in grades 9-12. For moderate activity, the goal is that at least 35% of students participate in moderate physical activity for at least 30 minutes on five or more days of the week. Based on estimates for grades 9-12 from the Healthy Youth Survey (HYS), Washington met this goal in both 2004 and 2006, with about 34% ( $\pm 1\%$ ) of students in these grades participating in moderate physical activity at the recommended level.<sup>4</sup> In 2005, only 27% of students nationwide met the goal.<sup>5</sup> For vigorous physical activity, the goal is that 85% of students in grades 9-12 participate in vigorous physical activity for at least 30 minutes on five or more days of the week. Washington students need to become more physically active to achieve this goal. In both 2004 and 2006, an estimated 68% ( $\pm 2\%$ ) of Washington students in grades 9-12 met this goal, compared to 64% of students nationwide in 2005. Overall, in both 2004 and 2006, 74% ( $\pm 2\%$ ) of 9<sup>th</sup>-12<sup>th</sup> graders met

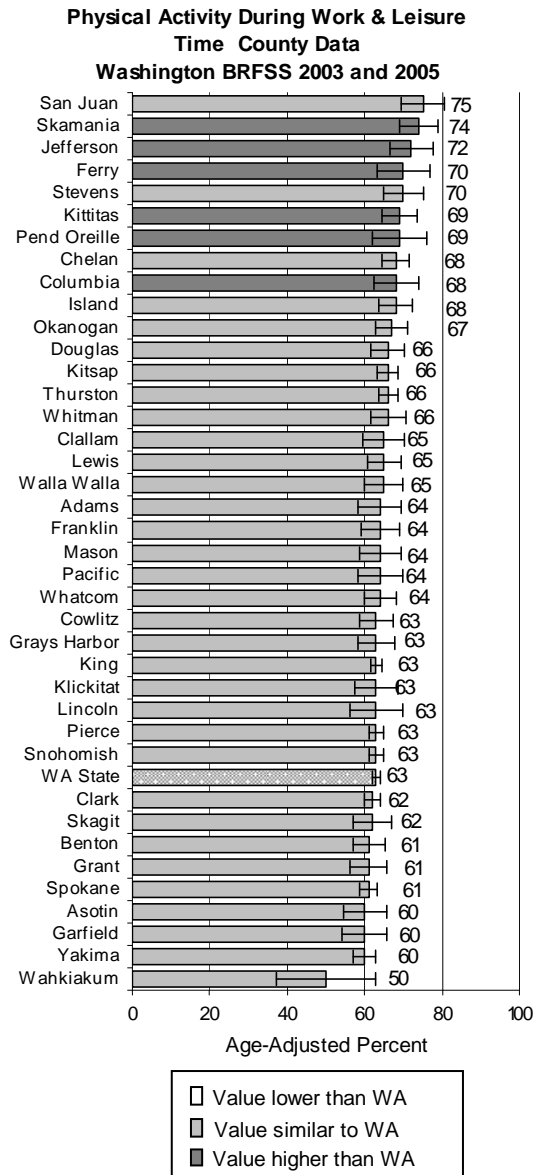
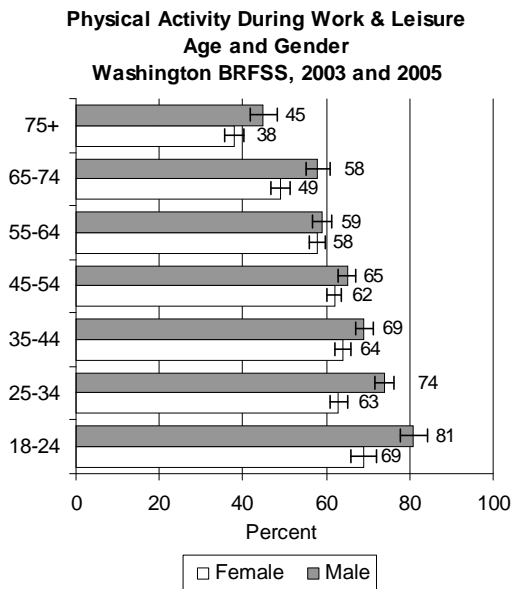
the goal for either moderate or vigorous physical activity.

### Geographic Variation

For 2003 and 2005 combined, the age-adjusted percent of adults who reported meeting recommendations for moderate physical activity at work or during leisure time ranged from 60% ( $\pm 3\%$ ) in Yakima County to 75% ( $\pm 5\%$ ) in San Juan County. Six counties had higher percents than the state percent of 63% ( $\pm 1\%$ ). These were San Juan, Skamania, Jefferson, Stevens, Kittitas, and Chelan counties. No counties had rates that were significantly lower than the state rate.

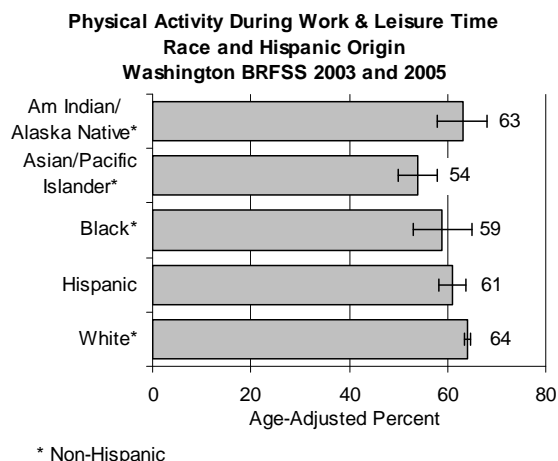
### Age and Gender

Based on 2003 and 2005 combined BRFSS data, men reported meeting recommendations for moderate or vigorous physical activity more often than women. Washington adults in younger age groups reported meeting the recommendations more often than those in older age groups. These patterns persisted after race, Hispanic origin, income, and education were taken into account.



### Race and Hispanic Origin

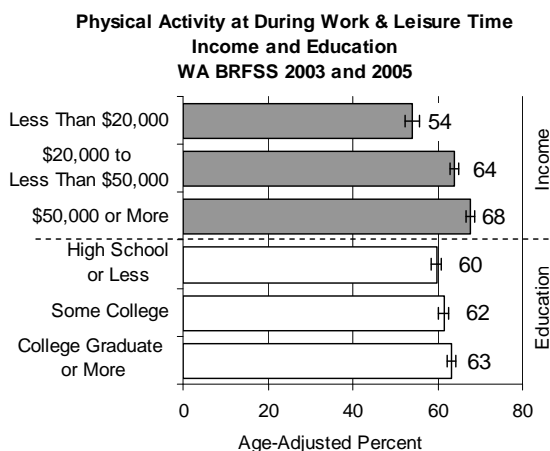
Whites and American Indians and Alaska Natives were significantly more likely to meet recommendations for physical activity at work and during leisure time than Asian and Pacific Islanders. These relationships persisted after taking education, income, and gender, along with age, into account.



## Income and [Education](#)

Based on 2003 and 2005 combined Washington BRFSS data, the age-adjusted percent of adults meeting recommendations for moderate or vigorous physical activity during work or leisure increased with more years of formal education. The differences were small, however, and the association did not persist after accounting for gender, income, race, and Hispanic origin, along with age.

Higher income was associated with increasing the age-adjusted percent of adults meeting recommendations for physical activity. The difference between those with annual household incomes of less than \$20,000 and those with annual household incomes of more than \$50,000 is relatively large (54% ±2% compared to 68% ±1%) and remained after taking gender, race, Hispanic origin, education, and age into account.



## Health Effects

Physical activity reduces the risk for heart disease, high blood pressure, colon cancer, and type 2 diabetes.<sup>6,7</sup> It also helps maintain proper body weight, reduces the risk of falls and fractures among older people, reduces problems with osteoarthritis and low back pain, reduces the symptoms of depression and anxiety, and improves overall quality of life.<sup>6</sup> Physically inactive and irregularly active lifestyles result in premature deaths, hospitalizations, and avoidable hospital charges—some of which might be averted through regular physical activity and exercise.<sup>1</sup>

## Barriers and Motivations

**Environmental factors.** Environmental barriers to physical activity include television watching, playing video games, lack of physical education in school, lack of sidewalks and paths for safe walking or bicycling, automation in the workplace and at home, and automobile travel for all but the shortest distances.<sup>8,9,10</sup> Additional community characteristics that create barriers to physical activity include a lack of parks and affordable recreational centers, street design and housing development that favor automobile use rather than walking or biking, and lack of public transit.<sup>10</sup> In some communities, there might also be important environmental barriers to physical activity from water and air pollution, crime, and dangerous automobile traffic.<sup>11</sup> Inclement weather can also make it difficult to be physically active, especially for people with no access to indoor facilities. The change from physical labor to knowledge-based work and commute time to and from work contribute to sedentary lifestyles and obesity.<sup>12,13,14</sup>

**Personal barriers.** In addition to environmental barriers, personal factors affect people's ability to be physically active. In the early 1990s, the most common personal reasons adults cited for not adopting more physically active lifestyles were lack of time, inconvenience, low motivation, not enjoyable, exercise boring, low self esteem, fear of injury, lack of self-management skills, and lack of encouragement.<sup>15</sup> These are similar to factors identified in the mid-1990s.<sup>16</sup> Many of these barriers persist today.

## Other Measures of Impact and Burden

**Measures of physical activity for youth.** In general, people tend to be most active in childhood. In the United States, however, children are becoming less active. According to a 2000 report, the nation experienced a 40% decline in biking and

walking from 1977 to 1995 among children ages five to 15. The report also indicated a drop in the percent of high school students participating in daily physical education classes from 42% in 1991 to 29% in 1999.<sup>17</sup>

In 2005, the U.S. Dietary Guidelines for Americans recommended that children and adolescents participate in at least 60 minutes of physical activity most days of the week and preferably daily.<sup>2</sup> Based on the 2006 HYS, having at least 60 minutes of physical activity on at least five days a week decreases throughout adolescence. The 2006 HYS found that 39% ( $\pm 2\%$ ) of 12<sup>th</sup> graders, 42% ( $\pm 2\%$ ) of 10<sup>th</sup> graders, and 47% ( $\pm 3\%$ ) of 8<sup>th</sup> graders met the recommendations. Part of the difference between students in higher and lower grades might be related to participation in physical education classes at school: 29% ( $\pm 6\%$ ) of 12<sup>th</sup> graders, 35% ( $\pm 7\%$ ) of 10<sup>th</sup> graders, and 49% ( $\pm 9\%$ ) of 8<sup>th</sup> graders reported attending daily physical education.

Historical data for the 2005 recommendation are not available. Data using previous guidelines for sufficient levels of vigorous or moderate physical activity<sup>18</sup> show small improvements since 2002 for 8<sup>th</sup> graders only.

### **Intervention Strategies**

**Best practices.** The CDC's Guide to Community Preventive Services systematically reviews the evidence for population-based interventions to increase physical activity.<sup>19</sup> The guide recommends several informational, behavioral, and environmental approaches. The informational approach includes large-scale, intense, community-wide campaigns with messages directed at large audiences through multiple media outlets such as television, billboards, radio, and mailings. These campaigns include other activities such as self-help groups, risk factor screening, health fairs, and policy and environmental change such as developing walking trails. The guide could not evaluate the individual components of these multi-component activities. The multi-component programs resulted in a 5% increase in physical activity.

For behavioral approaches, the guide recommends increasing physical education time at school and increasing levels of activity during physical education classes. It also recommends strengthening the social network in the family

and workplace to support physical activity. Examples include developing walking groups or having a buddy system to support physical activity.

Environmental approaches include creating or improving access to places for physical activity and 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. There was insufficient evidence for the guide to determine the effectiveness of transportation change in increasing physical activity, pointing to the need for additional evaluation of this approach.

The Guide for Community Preventive Services has influenced many of the state's activities to help Washingtonians become more active. The state Nutrition and Physical Activity Plan is working with schools, businesses, and communities to develop policies and environments that make it easier for people to be physically active.<sup>20</sup>

**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): 2001, 2003, 2005, 2003 & 2005 data weighted to reflect county over-sample, November 2006.

National BRFSS: U.S. Behavioral Risk Factor Surveillance System Data: 1994–2005, downloaded from [http://www.cdc.gov/brfss/technical\\_infodata/surveydata.htm](http://www.cdc.gov/brfss/technical_infodata/surveydata.htm), August 2006.

Washington Healthy Youth Survey: Office of Superintendent of Public Instruction, Washington State Departments of Health, Social and Health Services, and Community, Trade, and Economic Development, and Family Policy Council, 2002, 2004, 2006.

### **For More Information**

Washington State Department of Health, Nutrition and Physical Activity website: [www.doh.wa.gov/cfh/nutritionpa](http://www.doh.wa.gov/cfh/nutritionpa).

U.S. Centers for Disease Control and Prevention, Division of Nutrition and Physical Activity, [www.cdc.gov/nccdphp/dnpa/](http://www.cdc.gov/nccdphp/dnpa/).

The Guide to Community Preventive Services: a comprehensive review of published community-based interventions to reduce tobacco use.

## Endnotes

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<sup>1</sup> U.S. Department of Health and Human Services. (2002). *Physical Activity Fundamental in Preventing Chronic Disease*. Retrieved November 2, 2006, from Office of the Assistant Secretary for Planning and Evaluation Website: <http://aspe.hhs.gov/health/reports/physicalactivity>.

<sup>2</sup> U.S. Department of Health and Human Services and U.S. Department of Agriculture. (n.d.). Physical Activity: Key Recommendations. *Dietary Guidelines for Americans 2005* (Chapter 4, p. 20). Washington, DC: U.S. Government Printing Office.

<sup>3</sup> Warburton, D. E. R., Nicol, C. W., & Bredin, S. S. D. (2006). Health benefits of physical activity: the evidence. *Canadian Medical Association Journal*, *174*(6), 801-809.

<sup>4</sup> The Washington State Department of Health developed an estimate for grades 9–12 based on Health 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.

<sup>5</sup> National Center for Health Statistics. (n.d.). *Healthy People DATA2010*. <http://www.healthypeople.gov/Data/data2010.htm> viewed October 30, 2006.

<sup>6</sup> Pate, R. R., Pratt, M., & Blair, S. N. (1995). Physical activity and public health: a recommendation from the U.S. Centers for Disease Control and Prevention and the American College of Sports Medicine. *Journal of the American Medical Association*, *273*, 402-407.

<sup>7</sup> Centers for Disease Control and Prevention. (n.d.). *Physical Activity for Everyone: Recommendations*. <http://www.cdc.gov/nccdphp/dnpa/physical/recommendations/index.htm> viewed October 30, 2006.

<sup>8</sup> Koplan, J. P., & Dietz, W. H. (1999). Caloric imbalance and public health policy. *Journal of the American Medical Association*, *282*(16), 1579-1581.

<sup>9</sup> Humpel, N., Owen, N., & Leslie, E. (2002). Environmental factors associated with adults' participation in physical activity: A review. *American Journal of Preventive Medicine*, *22*, 188–199.

<sup>10</sup> Napolitano, M. A., & Marcus, B. H. (2000, October). Breaking Barriers to Increased Physical Activity. *The Physician and Sportsmedicine*, *28*(10), 88.

<sup>11</sup> Public Health Service, U.S. Department of Health and Human Services. (1999). *Promoting physical activity: a guide for community action*. Champaign, IL: Human Kinetics Publishers.

<sup>12</sup> Tjepkema, M. (2006). Adult Obesity. *Health Reports* (Statistics Canada, Catalogue 82-003), *17*(3), 9-25.

<sup>13</sup> Tremblay, A., & Therrien, F. (2006, February). Physical activity and body functionality: implications for obesity prevention and treatment. *Canadian Journal of Physiology and Pharmacology*, *84*(2), 149-156.

<sup>14</sup> Lopez-Zetina, J., Lee, H., & Friis, R. (2006, December). The link between obesity and the built environment: Evidence from an ecological analysis of obesity and vehicle miles of travel in California. *Health and Place*, *12*(4), 656-664.

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<sup>15</sup> Sallis, J. F., Hovell, M. F., & Hofstetter, C. R. (1992). Predictors of adoption and maintenance of vigorous physical activity in men and women. *Preventive Medicine*, *21*(2), 237-251.

<sup>16</sup> U.S. Department of Health and Human Services. (1996). *Physical activity and health: A Report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services.

<sup>17</sup> The Secretary of Health and Human Services and the Secretary of Education. (2000). *Promoting Better Health for Young People Through Physical Activity and Sports: A Report to the President*. Silver Spring, MD: U.S. Centers for Disease Control and Prevention.

<sup>18</sup> Washington State Department of Health. (2003). *The Health of Washington State 2002*, (Physical Activity Chapter, p 3). Olympia, WA: Washington State Department of Health.

<sup>19</sup> U.S. Centers for Disease Control and Prevention. (n.d.). *Guide to Community Preventive Services, Physical Activity*. <http://www.thecommunityguide.org/pa/default.htm> viewed on December 18, 2006.

<sup>20</sup> Washington State Department of Health. (2003). *Washington State Nutrition and Physical Activity Plan*. (1<sup>st</sup> edition), 33-56. Olympia, WA: Washington State Department of Health.