

PROMISING PRACTICES FOR CANCER PREVENTION AND SURVIVORSHIP: PHYSICAL ACTIVITY



Strong evidence suggests that physical activity reduces the risk of several cancers, including breast and colon cancers.^{1,2} Worldwide, around 10% of breast and colon cancer cases are linked to a lack of activity.³ Being physically active also helps prevent overweight or obesity, which may reduce a person's risk of certain cancers related to excess body weight.

COLON CANCER

- In 2013, there were 96,923 cases of colon cancer in the United States.⁴
- Physical activity is associated with a median 30% reduction in the risk of colon cancer.^{1,2,7}
- More physical activity and higher intensity physical activity are associated with the largest reductions in risk.¹



Cancer Survivorship

In addition to helping prevent cancer, physical activity is also important for cancer survivors. One-third of cancer deaths in the United States are linked to physical activity and dietary factors.⁸ Cancer survivors who are physically active have a better quality of life and better physical fitness than survivors who are inactive. They may also have a lower risk of developing other chronic diseases, such as heart disease and diabetes.

In addition, studies suggest that adults with breast or colon cancer who are physically active are less likely to die prematurely or have a recurrence of their cancer. Physical activity may also play a role in reducing adverse effects of cancer treatment.⁹

BREAST CANCER

- In 2013, there were 230,815 cases of female breast cancer in the United States.⁴
- Physical activity is associated with a median 20% reduction in the risk of breast cancer²
- Physical activity reduces the risk of both premenopausal and postmenopausal breast cancer.⁵
- Physical activity reduces risk in women with and without a family history of breast cancer.⁶
- Vigorous physical activity provides the largest reduction in breast cancer risk, but even moderate intensity activity, such as brisk walking, provides a benefit.^{5,6}

What We Know About Physical Activity

Current Physical Activity Guidelines

The US Department of Health and Human Services' 2008 Physical Activity Guidelines for Americans⁹ provides science-based guidelines to help US children and adults improve their health through appropriate physical activity. The following levels of physical activity are recommended:

Key Guidelines for Adults

- All adults should avoid inactivity. Some physical activity is better than none, and adults who participate in any amount of physical activity gain some health benefits.
- For substantial health benefits, adults should do at least 150 minutes (2 hours and 30 minutes) a week of moderate-intensity, or 75 minutes (1 hour and 15 minutes) a week of vigorous-intensity aerobic activity, or an equivalence combination of moderate- and vigorous-intensity aerobic activity. Aerobic activity should be performed in episodes of at least 10 minutes, and preferably, it should be spread throughout the week.



- For additional and more extensive health benefits, adults should increase their aerobic physical activity to 300 minutes (5 hours) a week of moderate-intensity, or 150 minutes a week of vigorous-intensity aerobic physical activity, or an equivalence combination of moderate- and vigorous-intensity activity. Additional health benefits are gained by engaging in physical activity beyond this amount.
- Adults should also do muscle-strengthening activities that are moderate or high intensity and involve all major muscle groups on 2 or more days a week, as these activities provide additional health benefits.

Key Guidelines for Children and Adolescents

- Children and adolescents should do 60 minutes (1 hour) or more of physical activity daily.
- **Aerobic:** Most of the 60 or more minutes a day should be either moderate- or vigorous-

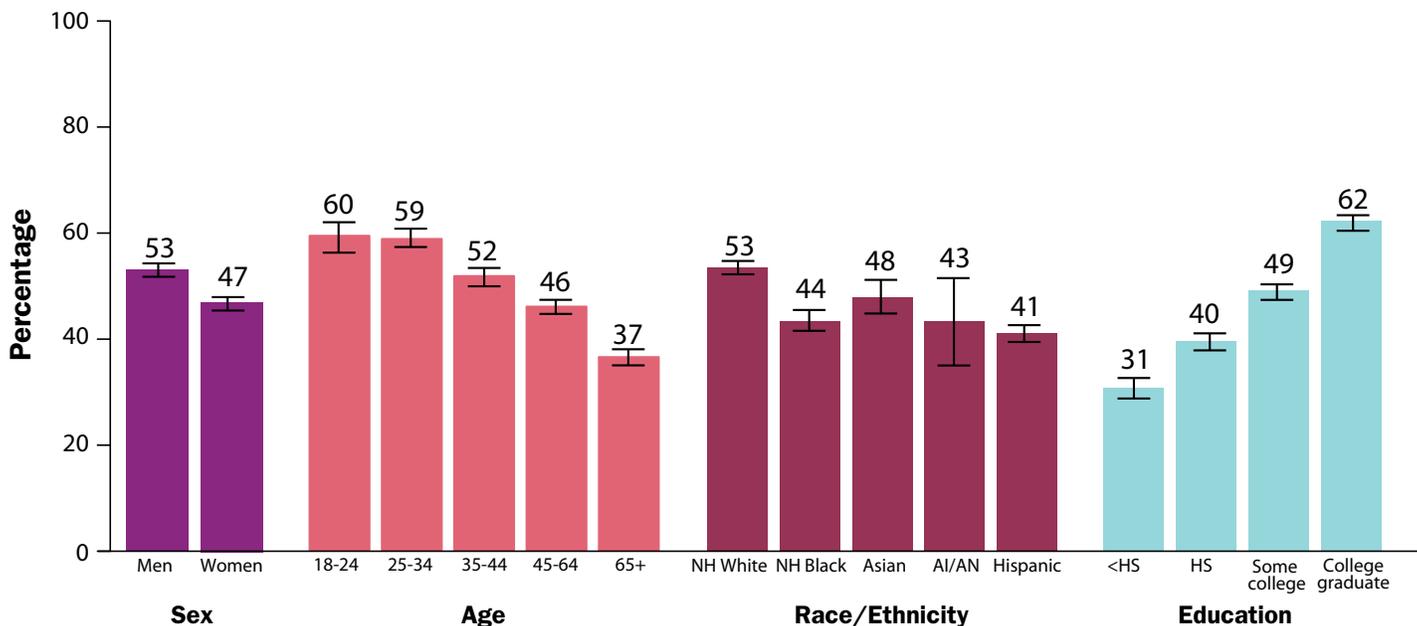
intensity aerobic physical activity, and should include vigorous-intensity physical activity at least 3 days a week.

- **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 3 days of the 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 3 days of the week.
- It is important to encourage young people to participate in physical activities that are appropriate for their age, that are enjoyable, and that offer variety.

Physical Activity Among Adults

In 2014, 49.9% of US adults reported levels of physical activity consistent with meeting the adult aerobic guideline. Adults who are male, younger, white or who have higher levels of education are more likely to meet the guidelines (Figure 1). People without disabilities are also more likely to meet the guidelines than people with disabilities (data not included).

FIGURE 1. PERCENTAGE OF ADULTS AGED 18 OR OLDER WHO MET AEROBIC PHYSICAL ACTIVITY GUIDELINES, UNITED STATES, 2014



Abbreviations: AI/AN, American Indian/Alaska Native; HS, high school; NH, non-Hispanic.

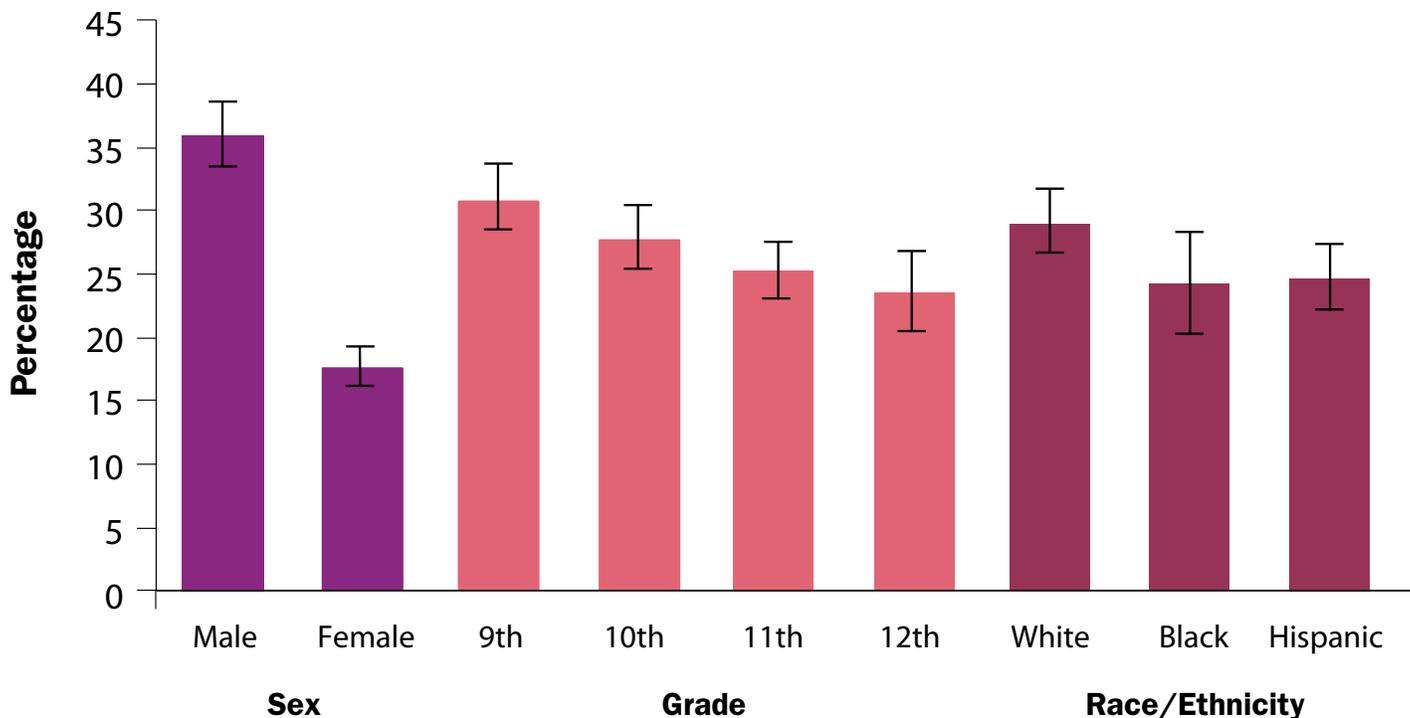
Source: National Center for Health Statistics, National Health Interview Survey.¹⁰



Physical Activity Among Youth

Among youth, only 27.1% of high school students reported levels of physical activity consistent with meeting the youth aerobic guideline in 2015 (Figure 2). Male high school students and students in lower grades were more like to meet the guidelines.

FIGURE 2. PERCENTAGE OF HIGH SCHOOL STUDENTS WHO MET AEROBIC PHYSICAL ACTIVITY GUIDELINES, UNITED STATES, 2015



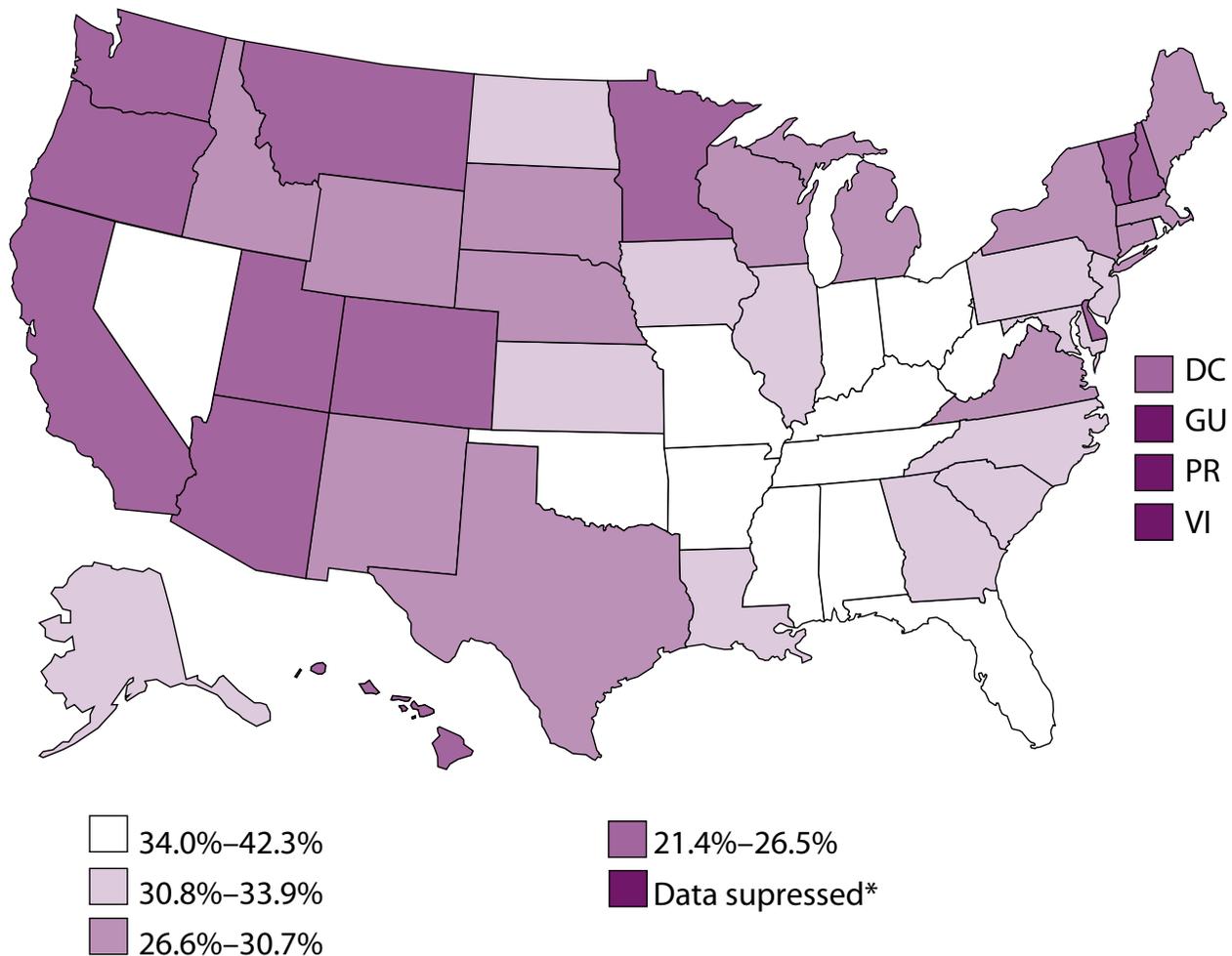
Sources: Centers for Disease Control and Prevention, Youth Risk Behavior Surveillance System, and US Department of Health and Human Services, MMWR. ¹⁰



Physical Activity Among Cancer Survivors

In 2009, about one-third (31.5%) of cancer survivors had not participated in any leisure-time physical activity during the past 30 days (Figure 3). The highest proportion of cancer survivors reporting no leisure-time physical activity lived in the South (34.3%), followed by the Midwest (32.5%), Northeast (31.3%), and West (25.5%).

FIGURE 3. PERCENTAGE OF CANCER SURVIVORS AGED 18 OR OLDER WHO REPORTED NO LEISURE-TIME PHYSICAL ACTIVITY DURING THE PAST 30 DAYS, UNITED STATES, 2009



Abbreviations: GU, Guam; PR, Puerto Rico; VI, US Virgin Islands.

* The sample size of the numerator was <50, or the half-width of the confidence interval was >10.

Source: Behavioral Risk Factor Surveillance System.¹¹





Barriers to Physical Activity

Despite the benefits of physical activity, barriers that prevent people from getting enough physical activity exist. Understanding these barriers is essential to designing and implementing approaches that promote physical activity. People commonly cite lack of time¹² and safety issues as barriers.^{13,14} People also report the following reasons for not adopting more physically active lifestyles:^{15,16}

- Exercising is inconvenient.
- They lack self-motivation or self-management skills.
- They find exercise to be boring or they do not enjoy it.

- They lack confidence in their ability to be physically active.
- They lack encouragement, support, or companionship from family and friends.

Other barriers to physical activity include the ways in which communities are designed and built. For example, some communities do not have parks, sidewalks, bicycle trails, or safe and pleasant walking paths.^{17,18} In addition, functional limitations associated with disabilities, chronic conditions, and age can be barriers for some people.¹⁹⁻²¹

What Strategies work for Increasing Physical Activity

Community Strategies

The strategies listed in this section can help communities create social and physical environments that promote physical activity. Most of these strategies are recommended by the Community Preventive Services Task Force on the basis of systematic reviews of their effectiveness in increasing physical activity.²² The Community Preventive Services Task Force is an independent, nonfederal, unpaid panel of public health and prevention experts that provides evidence-based findings and recommendations about community preventive services, programs, and policies to improve health.

Individually-Adapted Health Behavior Change Programs

Individually-adapted health behavior change programs are tailored to each participant.²³ They aim to increase physical activity by teaching participants skills to help them add physical activity to their daily routines. These skills can include the following:

- Goal-setting and self-monitoring of progress toward those goals.
- Building social support for new behaviors.
- Behavioral reinforcement through self-reward and positive self-talk.
- Structured problem-solving to maintain the behavior change.
- Prevention of relapse into sedentary behavior.

Social Support Interventions in Community Settings

Social support interventions in community settings involve building, strengthening, and maintaining social networks in order to provide supportive relationships for behavior change.²⁴ Examples for

physical activity could include walking clubs, buddy systems, or contracts with others to complete certain levels of physical activity.

Enhanced School-Based Physical Education

Enhanced school-based physical education (PE) involves changes that increase the amount of time that students in kindergarten through 12th grade engage in moderate- or vigorous-intensity physical activity during PE classes.²⁷ Examples of these strategies include the following:²⁵

- Instructional strategies and lessons that increase physical activity, such as modifying the rules of games or substituting more active games for less active ones.
- Physical education lesson plans that incorporate fitness and circuit training activities.





Community-Wide Campaigns

Community-wide campaigns are highly visible, broad-based, multicomponent strategies that involve many sectors of the community in order to increase physical activity, including social support, risk factor screening, and health education.²⁶

Community-Scale Urban Design and Land Use Policies

Community-scale urban design and land use policies include design elements designed to address the proximity of residential areas to stores, jobs, schools, and recreation areas; the connectivity of streets and sidewalks; and the aesthetic and safety aspects of the physical environment. Urban design and land use policies include zoning regulations, building codes, other government policies, and builders' practices to promote physical activity.²⁷

Creation of or Enhanced Access to Places for Physical Activity

Worksites, coalitions, agencies, and communities can help create or enhance access to places for physical activity as part of their efforts to change the local environment to create opportunities for physical activity. Such changes include creating walking trails, building exercise facilities, or providing access to existing nearby facilities.²⁸

Street-Scale Urban Design and Land Use Policies

Street-scale urban design and land use policies support the efforts of urban planners, architects, engineers, developers, and public health professionals to change the physical environment of small geographic areas, generally limited to a few blocks, in ways that promote physical activity. For example, infrastructure projects can include design components that improve street lighting, increase safety of street crossing, use traffic-calming approaches (e.g., speed humps, traffic circles), or enhance street landscaping. Policy instruments can include building codes, roadway design standards, and environmental changes that promote physical activity.²⁹

Point-of-Decision Prompts to Encourage Use of Stairs

Point-of-decision prompts are motivational signs placed in or near stairwells or at the base of elevators and escalators to encourage people to use stairs more often. These signs inform people about the health or weight loss benefits of taking the stairs. They also remind people who are already predisposed to becoming more active (for health or other reasons) about an opportunity to do so.³⁰

Transportation and Travel Policies and Practices

Transportation and travel policies and practices that create or enhance pedestrian and bicycle networks and expand or subsidize public transit systems can be another approach to encourage walking and biking for transportation. Although the Community

Preventive Services Task Force found insufficient evidence for these practices in 2004,³¹ more recent reviews conducted by the National Institute for Clinical Excellence³² and the National Academy of Science’s Transportation Research Board³³ found evidence that a variety of transportation policies offer effective ways to promote both leisure-time and transportation-related physical activity. Creating walkable communities around transit hubs can further encourage walking.^{34,35}

Resources to Support Community Strategies

The following resources provide additional information about the community strategies described in this section:

- Step It Up! The US Surgeon General’s Call to Action to Promote Walking and Walkable Communities
 - US Department of Health and Human Services
 - Strong evidence exists that physical activity has substantial health benefits. People can get these benefits through brisk walking or by

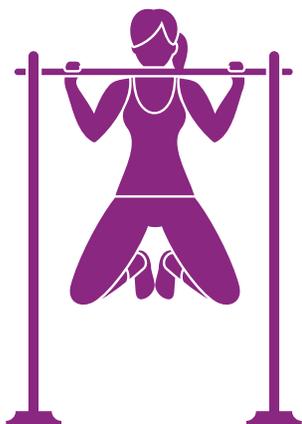
adding brisk walking to other physical activities. Walking is an easy way to start or maintain a physically active lifestyle. In 2015, the US Surgeon General called for improved access to safe and convenient places to walk and wheelchair roll, as well as for a culture that supports these activities for people of all ages and abilities.³⁶ The five goals of the Call to Action are as follows:

- **Goal 1:** Make walking a national priority.
- **Goal 2:** Design communities that make it safe and easy to walk for people of all ages and abilities.
- **Goal 3:** Promote programs and policies to support walking where people live, learn, work, and play.
- **Goal 4:** Provide information to encourage walking and improve walkability.
- **Goal 5:** Fill surveillance, research, and evaluation gaps related to walking and walkability.



Additional Resources:

- National Institutes of Health We Can! (Ways to Enhance Children’s Activity & Nutrition)
- Office of the First Lady: Let’s Move! www.letsmove.gov
- President’s Council on Fitness, Sports & Nutrition: I Can Do It, You Can Do It www.fitness.gov
- President’s Council on Fitness, Sports & Nutrition: Presidential Youth Fitness Program <https://pyfp.org/>
- President’s Council on Fitness, Sports & Nutrition: The President’s Challenge www.presidentschallenge.org
- President’s Council on Fitness, Sports & Nutrition: The President’s Challenge Adult Fitness Test www.adultfitnessstest.org
- CDC: BAM! Body and Mind www.cdc.gov/bam
- NIH: Go4Life www.go4life.nia.nih.gov
- U.S. Department of Agriculture: SuperTracker www.supertracker.usda.gov
- National Physical Activity Plan (NPAP) www.physicalactivityplan.org
- U.S. Department of Transportation: Safer People, Safer Streets Initiative <http://www.transportation.gov/policy-initiatives/ped-bike-safety/safer-people-safer-streets-pedestrian-and-bicycle-safety>

**Clinical Strategies**

Professional organizations and recommendations from the US Preventive Services Task Force (USPSTF) indicate that health care professionals have a role to play in counseling their patients about physical activity. Professional organizations encourage counseling as part of routine care for patients.^{37,38} Healthcare professionals can use the USPSTF recommendations below to aid in patient counseling. USPSTF recommends physical activity as part of intensive behavioral counseling for adults who have cardiovascular risk factors and are overweight or have obesity and for children aged 6 or older with obesity.

USPSTF Recommendations Related to Physical Activity

USPSTF is an independent, volunteer panel of national experts who make evidence-based recommendations about clinical preventive services such as screenings, counseling services, and preventive medications. Each recommendation receives a letter grade (A, B, C, or D) or an “I” statement that indicates insufficient evidence. This section summarizes the recommendations relevant to physical activity:³⁹

Healthful Diet and Physical Activity for Cardiovascular Disease Prevention in Adults with Cardiovascular Risk Factors: Behavioral Counseling

The USPSTF recommends offering or referring adults who are overweight or obese and have additional cardiovascular disease (CVD) risk factors to intensive behavioral counseling interventions to promote a healthful diet and physical activity for CVD prevention. Grade: B

Obesity in Adults: Screening and Management

The USPSTF recommends screening all adults for obesity. Clinicians should offer or refer patients with a body mass index (BMI) of 30 kg/m² or higher to intensive, multicomponent behavioral interventions. Grade: B

Obesity in Children and Adolescents: Screening

The USPSTF recommends that clinicians screen children aged 6 years and older for obesity and offer them or refer them to comprehensive, intensive behavioral intervention to promote improvement in weight status. Grade: B

Resources for Physical Activity Counseling

The following resources provide additional information about recommendations for physical activity counseling:

- American Academy of Pediatrics: Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents <https://brightfutures.aap.org>
- American College of Sports Medicine: Exercise is Medicine <http://exerciseismedicine.org/>
- CDC: Increasing physical activity among adults with disabilities <http://www.cdc.gov/ncbddd/disabilityandhealth/pa.html>

What Comprehensive Cancer Control Programs Can Do

CDC's National Comprehensive Cancer Control Program (NCCCP) helps prevent and control cancer in the United States by funding comprehensive cancer control (CCC) programs in all 50 states, the District of Columbia, 7 tribes and tribal organizations, and 7 US territories and Pacific Island Jurisdictions. Through these programs, CDC support grantees' efforts to:

- Develop data-driven cancer control plans.
- Set up and convene statewide cancer coalitions.
- Implement and evaluate a state cancer control plan.

Many NCCCP grantees already include information about physical activity in their cancer plans. In a recent analysis of cancer plans, all programs recognized the importance of physical activity in cancer prevention, and most plans included goals and strategies to address physical activity changes

for cancer prevention.⁴⁰ CCC programs can also help promote physical activity for cancer prevention through the following activities:

Collect and Analyze Data

- Conduct an environmental scan to identify physical activity legislation in your area. Environmental scans can help you understand the political climate for physical activity legislation and can help inform your own resource allocation and help you select strategies to improve physical activity in your community.
- Use Behavioral Risk Factor Surveillance Survey data to monitor physical activity in your area.
- Use cancer registry and vital statistics data to examine breast and colon cancer incidence and death rates in your area. These data can be used to look at trends over time by age group, race, and ethnicity.
- Look for other data that may be available for analysis. Examples include administrative data on the number and locations of local parks, YMCAs, and other recreational areas.
- Monitor changes in data over time to determine if your efforts to increase physical activity are making a difference.
- Develop a survey on a specific topic, such as whether primary care doctors in your area are counseling patients on physical activity for cancer prevention, or whether there are community supports for physical activity.



Identify and Engage Potential Partners

- Educate CCC coalition members about breast and colon cancer rates and trends in your area.
- Engage your National Breast and Cervical Cancer Early Detection Program (NBCCEDP) and Colorectal Cancer Control Program (CRCCP) partners to identify potential ways to work together on physical activity strategies.
- Identify and engage national, state, and local chronic disease programs to collaborate and leverage existing resources to achieve a greater impact.
- Identify other potential partners at local and national levels and ask them to help you educate key stakeholders on strategies to increase physical activity.
- Share current data on breast and colon cancer rates and physical activity with partners.
- Provide information to partners, stakeholders, and decision makers in your area.
- Encourage breast and colon cancer survivors to share their stories and serve as champions for increased physical activity and cancer prevention in their community.
- Identify the needs of key partners and the resources they can add to your efforts.
- Partner with local schools and workplaces to develop and evaluate strategies to increase physical activity in the community.
- Implement community-based strategies identified by The Guide to Community Preventive Services within your local population.
- Educate your local healthcare providers on USPTF recommendations and resources available for their patients.

Update Your Cancer Plan

The cancer plans of many CCC programs already include some information about physical activity. However, a recent analysis showed that the level of detail and the number of goals and strategies related to nutrition and physical activity varied greatly.⁴⁰ Including evidenced-based strategies for physical activity changes in cancer plans is a key step in promoting physical activity for cancer prevention and cancer survivorship.

Measure Your Effects

Use CDC's Comprehensive Cancer Control Branch Program Evaluation Toolkit to develop an evaluation plan to help you measure the effects of your efforts to increase physical activity. Programs should develop your evaluation plan before intervention activities begin, if possible, to ensure that appropriate evaluation questions and data sources are in place to capture baseline information. Share your evaluation results with other CCC programs to help identify effective strategies that can be replicated in other areas.

Comprehensive Cancer Control Program Success Stories

Here are some examples of success stories from CCC programs promoting physical activity changes in their communities:

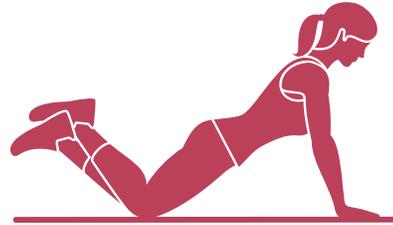
- **Completing Streets to Impact Cancer In Indiana**
<https://www.cdc.gov/cancer/ncccp/pdf/success/indiana-success-story.pdf>
- **Health Grants Address Body and Soul in Iowa's African American Community**
<https://www.cdc.gov/cancer/ncccp/pdf/success/iowa-success-story.pdf>



Possible Partners for Comprehensive Cancer Control Programs

Possible National Partners

- America Walks
- American Academy of Family Physicians
- American Academy of Pediatrics
- American Cancer Society
- American College of Sports Medicine
- American Public Health Association affiliates
- American School Health Association
- LIVESTRONG
- National Recreation and Park Association
- Safe Routes to School National Partnership
- SHAPE America
- YMCA of the USA



Federal Agencies

- Centers for Disease Control and Prevention: Physical Activity and Health Branch
- Centers for Disease Control and Prevention: Comprehensive Cancer Control Branch
- Centers for Disease Control and Prevention: Program Services Branch
- National Cancer Institute: Division of Cancer Control and Population Sciences
- National Cancer Institute: Division of Cancer Prevention
- US Department of Transportation



Local Partners to Consider

- Transportation, land use, and community design sector
- Parks and recreational and fitness facilities
- Schools
- Colleges and universities
- Worksites
- Volunteer and nonprofit organizations
- Comprehensive cancer control coalition members
- Health care sector
- Public health sector
- Media
- Law enforcement



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More Information

Division of Cancer Prevention and Control
National Center for Chronic Disease Prevention and Health Promotion
Centers for Disease Control and Prevention

4770 Buford Hwy NE, Mailstop F-76, Atlanta GA 30341-3717
800-CDC-INFO (800-232-4636) • TTY: (888) 232-6348

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