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**Diet, Exercise and Cancer**  
**The American Cancer Society Nutrition and Exercise Guide**  
**Part II: Exercise and Cancer**  
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**Your Life your Health**  
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The first part of this study appeared in the March 27, 2008 Examiner. The following is the American Cancer Society's guidelines for exercise in general for cancer prevention and in the prevention of specific types of cancer. The question is: "Will increasing physical activity lower cancer risk?" Yes. People who engage in moderate-to-vigorous levels of physical activity are at lower risk of developing colon and breast cancer than those who do not. This risk reduction is independent of the impact of activity on weight. Data for a direct effect on the risk of developing other cancers are more limited. Nonetheless, overweight and obesity have been associated with many types of cancer, and physical activity is a key component of maintaining or achieving a healthful body weight. In addition, physical activity has a beneficial impact on cardiovascular disease and diabetes.

**To decrease your risk of cancer: Adopt a physically active lifestyle.**

- Adults: engage in at least moderate activity for 30 minutes or more on five or more days of the week; 45 minutes or more of moderate-to-vigorous activity on five or more days per week may further enhance reductions in the risk of breast and colon cancer.
- Children and adolescents: engage in at least 60 minutes per day of moderate-to-vigorous physical activity for at least five days per week.

Physical activity acts in a variety of ways to impact cancer risk. Regular physical activity helps maintain a healthful body weight by balancing caloric intake with energy expenditure. Other mechanisms by which physical activity may help to prevent certain cancers may involve both direct and indirect effects. For colon cancer, physical activity accelerates the movement of food through the intestine, thereby reducing the length of time that the bowel lining is exposed to mutagens (cancer producing substances taken in while eating). For breast cancer, vigorous physical activity may decrease the exposure of breast tissue to circulating estrogen. Physical activity may also affect cancers of the colon, breast, and other sites by improving energy metabolism and reducing circulating concentrations of insulin and related growth factors. Physical activity helps to prevent adult-onset diabetes, which has been associated with increased risk of cancers of the

colon, pancreas, and possibly other sites. The benefits of physical activity go far beyond reducing the risk of cancer, however, and include reducing the risk of other chronic diseases, such as heart disease, diabetes, osteoporosis, and hypertension.

### Recommended Amount of Activity

There are many unanswered questions about the optimal intensity, duration, and frequency of physical activity needed to reduce cancer risk. However, current evidence suggests that there is substantial risk reduction for colon cancer from simply not being sedentary. And by participating in moderate-to-vigorous physical activity at least 45 minutes on five or more days of the week, individuals may achieve optimal activity levels needed to reduce the risk of developing both breast and colon cancers, as well as several other types of cancer, including kidney, endometrial, and esophageal cancer. Moderate-to-vigorous physical activity is needed to metabolize stored body fat and to modify physiological functions that affect insulin, estrogen, androgen, prostaglandins, and immune function. This recommendation to include physical activity in one's lifestyle to reduce cancer risk is supported by a recent extensive review by the World Health Organization.

For people who are largely inactive or just beginning a physical activity program, a gradual increase to 30 minutes per day of moderate-to-vigorous physical activity on at least five days per week will provide substantial cardiovascular benefits and aid in weight control. Those who are already active at least 30 minutes on most days of the week should strive toward accumulating 45 minutes of moderate-to-vigorous activity on most days of the week. Selected examples of moderate and vigorous activities are:

	Moderate Intensity Activities	Vigorous Intensity Activities
<b>Exercise and Leisure</b>	Walking, dancing, leisurely bicycling, ice skating, roller skating, horseback riding, canoeing, yoga	Jogging or running, fast bicycling, circuit weight training, aerobic dance, martial arts, jumping rope, swimming
<b>Sports</b>	Volleyball, golfing, softball, baseball, badminton, doubles tennis, downhill skiing	Soccer, field or ice hockey, lacrosse, singles tennis, racquetball, basketball, cross-country skiing
<b>Home</b>	Mowing the lawn, general lawn Digging, carrying and hauling,	

<b>Activities</b>	and garden maintenance	masonry, carpentry
<b>Occupational Activities</b>	Walking and lifting as part of the job custodial work, farming, auto or machine repair)	Heavy manual labor (forestry, construction work, fire fighting)

Moderate activities are those that require effort equivalent to a brisk walk. Vigorous activities generally engage large muscle groups and cause an increase in heart rate, breathing depth and frequency, and sweating. These activities can be performed in a variety of settings: occupational, recreational, in the home or garden, and with friends or family. While there is limited evidence regarding whether physical activity is most protective if done in a single session or incrementally throughout the day, it is reasonable to assume that benefit can be accumulated in separate sessions of 20 to 30 minutes each.

Adopting a physically active lifestyle involves making deliberate decisions and changing lifestyle behaviors in order to select active rather than sedentary behavior. To enhance the ability of individuals to adopt a more active lifestyle, communities as well as individuals need to implement changes. Ideas to reduce sedentary behavior include:.

Use stairs rather than an elevator.

If you can, walk or bike to your destination.

Exercise at lunch with your co-workers, family, or friends.

Take a 10-minute exercise break at work to stretch or take a quick walk.

Walk to visit co-workers instead of sending an e-mail message.

Go dancing with your spouse or friends.

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Plan active vacations rather than only driving trips.

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Wear a pedometer every day and watch your daily steps increase.

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Join a sports team.

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Use a stationary bicycle while watching TV.

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Plan your exercise routine to gradually increase the days

People who are less active than recommended by these guidelines should gradually increase the intensity, duration, and frequency of physical activity. Most children and young adults can safely engage in moderate physical activity without consulting their physicians. However, men over 40, women over 50, and people with chronic illnesses and/or established cardiovascular risk factors should consult their physicians before beginning a vigorous physical activity program. Stretching and warm-up periods should be part of each exercise session to reduce risk of musculoskeletal injuries.

### **Train up a child**

Because one of the best predictors of adult physical activity is activity levels during childhood and adolescence, and because of the critical role physical activity plays in weight maintenance, children and adolescents should be encouraged to be physically active at moderate-to-vigorous intensities for at least 60 minutes per day on five or more days per week. Such activities should include sports and fitness activities at school and at home. To help achieve activity goals, daily physical education programs and activity breaks should be provided for children at school, and television viewing and computer game time should be minimized at home.

The health benefits of physical activity in preventing cancer and other chronic diseases are thought to accumulate over the course of a lifetime and are facilitated by the development of healthy activity patterns in childhood. However, increasing the level of physical activity at any age can provide important health benefits. Although it is uncertain at the present time whether increasing physical activity among the elderly will reduce cancer risk, many other health benefits can be achieved by an appropriate exercise regimen, even among the elderly.