



2008 Physical Activity Guidelines for Americans

Introduction

In October 2008, a landmark document, *Physical Activity Guidelines for Americans* (<http://www.health.gov/paguidelines>), was released by the Department of Health and Human Services (HHS). In this edition of *Research Digest* key elements of these guidelines are summarized after we take a brief look at the steps leading to their development.

Many of the readership of *Research Digest* likely are familiar with the *Dietary Guidelines for Americans*—a document updated and published every five years by the Departments of Health and Human Services (HHS) and Agriculture to provide guidance on what kinds and how much food and drink to include in our diet to maintain and improve health and reduce the risk of chronic diseases. Although position stands on exercise and fitness (e.g., ACSM, 1998) or public health recommendations on physical activity and health (e.g., Pate et al., 1995, Haskell et al., 2007.) have been published, a federal government document on physical activity and health that is equal in scope to the *Dietary Guidelines for Americans* has not been available. In October 2006, a workshop was held in Washington, D.C. to determine whether there was a sufficient quantity and quality of scientific evidence related to the health benefits of physical activity on which to develop a document that parallels the Dietary Guidelines. That workshop generated a report—*Adequacy of Evidence for Physical Activity Guidelines* (<http://www.nap.edu/catalog.php?record%20id=11819>)—that confirmed what most of us already knew, and a process was set in motion to develop the *Physical Activity Guidelines for Americans*.

Who Wrote the Physical Activity Guidelines?

Published quarterly by the
President's Council on
Physical Fitness and Sports
Washington, D.C.



Guest Author:
Edward Howley
University of Tennessee,
Knoxville



Co-edited by:
Dr. Barbara Ainsworth,
Arizona State University,
Dr. Deborah R. Young,
University of Maryland, and
Dr. Michael La Monte,
University of Buffalo,
The State University of New York

The process for the development of the *Physical Activity Guidelines for Americans* (referred to as Guidelines for the rest of this report) followed a plan similar to that for the Dietary Guidelines. In brief, HHS appointed a 13-member advisory committee of senior scientists in the areas of exercise physiology, epidemiology, and preventive medicine (the Physical Activity Guidelines Advisory Committee) to conduct a systematic review of the literature on physical activity and health published since the release of the *Surgeon General's Report on Physical Activity and Health* in 1996 (<http://www.cdc.gov/nccdphp/sgr/contents.htm>). The advisory committee and its many consultants evaluated the literature related to physical activity and health across a broad range of health outcomes (e.g., cardiovascular disease, diabetes, osteoporosis) and populations (e.g., youth, those with disabilities), and generated a report of its findings, *Physical Activity Guidelines Advisory Report 2008* (<http://www.health.gov/paguidelines/Report/Default.aspx>). It must be noted that this advisory committee did not write the Guidelines. Consistent with the manner in which the Dietary Guidelines were written, staff within HHS wrote the *Physical Activity Guidelines for Americans*, using the advisory committee's report as a primary reference, along with comments from the public and other government agencies. The following pages provide a summary of the key elements of the Guidelines.

Who Should Read the Physical Activity Guidelines?

There is no question that regular participation in physical activity improves overall health and reduces the risk of several chronic diseases. Consequently, it is very important that policy makers and health professionals (the two groups the Guidelines are primarily aimed at) know how much and what types of physical activity are

needed to achieve health-related goals. This information also is useful for members of the public.

What Types of Activity Do the Guidelines Recommend?

The Guidelines focus on “health-enhancing” physical activity rather than “baseline activity” that each of us does throughout the day. Baseline activity is the activity associated with daily living (e.g., standing, walking slowly to the car or from room to room, lifting and moving light objects). Even though baseline activity is not the focus of the Guidelines, we are encouraged to take advantage of opportunities to increase our activities of daily living. Doing so will help expend more calories, which for many individuals will help maintain weight, improve bone health, and for those who are extremely inactive, help make a transition to health-enhancing physical activities. Health-enhancing physical activity is the physical activity that is added to baseline activity to produce health and physical fitness benefits. These activities include brisk walking, jogging, cycling, jumping rope, dancing, lifting weights, and so forth.

Who and What Was Studied?

Findings were reviewed from studies on the benefits of physical activity across virtually all population subgroups: women and men, young and old, apparently healthy and those with disabilities and existing diseases. In order to address the wide variety of potential health benefits that could result from regular participation in different physical activities, the Advisory Committee considered the following types of physical activity:

- **Aerobic** (also called endurance or cardiovascular) **activity** uses large muscles in dynamic rhythmical movements such as walking, running, and swimming. It has three components: **intensity**, or how hard or difficult an activity is to do (e.g., moderate intensity [a brisk walk] and vigorous intensity [jogging]); **frequency**, or how often a person does an activity (e.g., 3 times a week); and **duration**, or how long a person does an activity in one session (e.g., a 30-minute walk).
 - The intensity of the activity can be classified in either *absolute* or *relative* terms.
 - Absolute intensity is based on how much the actual rate of the physical activity energy expenditure is increased relative to resting energy expenditure. *Light intensity physical activity—1.1 to 2.9 times; moderate intensity physical activity—3.0 to 5.9 times; vigorous intensity physical activity—6.0 or more.*
 - Relative intensity refers to an individual’s level of effort required to do the activity. Individuals who are deconditioned, because of disease or sedentary lifestyles, require a greater level of effort to do the same absolute intensity of physical activity than do individuals with higher levels of conditioning. *Relative intensity uses a 0 to 10 scale where sitting*

is 0 and the highest effort is 10. Moderate intensity activity is a 5 or 6, and vigorous intensity activity is a 7 or 8.

- The most important variable linked to health outcomes appears to be the number of minutes of activity done per week, with 2 minutes of moderate intensity activity being equal to 1 minute of vigorous intensity activity (e.g., 150 minutes of moderate intensity activity per week or 75 minutes of vigorous intensity activity per week).
 - Low amounts of physical activity (i.e., above baseline, but less than 150 minutes per week of moderate intensity physical activity) provide some health benefits.
 - Medium amounts (i.e., 150 to 300 minutes per week) provide substantial health benefits.
 - High amounts (i.e., more than 300 minutes per week) provide even greater health benefits.
- **Muscle-strengthening activity** includes weight lifting, using resistance bands, and body weight as a resistance (e.g., push-up). It also has three components: **intensity**, or how much weight is used relative to what the person can lift; **frequency**, or how often the person does muscle-strengthening activity (e.g., number of “sets”); and **repetitions**, or how many times a person lifts a weight in a “set.”
 - The effects of muscle-strengthening exercises are limited to the muscles involved in the activity; therefore one should systematically exercise all of the major muscle groups: legs, hips, back, abdomen, chest, shoulders, and arms.
- **Bone-strengthening** (also called weight-bearing or weight-loading) **activity** provides a force to the bones that causes them to adapt and become stronger. These activities include aerobic activities like walking and running, and muscle-strengthening activity like weight lifting.

What Are the Health Benefits of Participating in Physical Activity?

All Americans should be regularly physically active to improve overall health and fitness and to prevent many adverse health outcomes. The Advisory Committee looked at the impact of physical activity on a large number of health outcomes. The following is a summary of their findings; see the Guidelines for more detail on each.

Health Benefits Associated with Regular Physical Activity

Adults and Older Adults

Strong evidence

- ♦ Lower risk of early death
- ♦ Lower risk of coronary heart disease
- ♦ Lower risk of stroke
- ♦ Lower risk of high blood pressure
- ♦ Lower risk of adverse blood lipid profile

- ♦ Lower risk of type 2 diabetes
- ♦ Lower risk of metabolic syndrome
- ♦ Lower risk of colon cancer
- ♦ Lower risk of breast cancer
- ♦ Prevention of weight gain
- ♦ Weight loss, particularly when combined with reduced calorie intake
- ♦ Improved cardiorespiratory and muscular fitness
- ♦ Prevention of falls
- ♦ Reduced depression
- ♦ Better cognitive function (for older adults)

Moderate to strong evidence

- ♦ Better functional health (for older adults)
- ♦ Reduced abdominal obesity

Moderate evidence

- ♦ Lower risk of hip fracture
- ♦ Lower risk of lung cancer
- ♦ Lower risk of endometrial cancer
- ♦ Weight maintenance after weight loss
- ♦ Increased bone density
- ♦ Improved sleep quality

Youth

Strong evidence

- ♦ Improved cardiorespiratory and muscular fitness
- ♦ Improved bone health
- ♦ Improved cardiovascular and metabolic health biomarkers
- ♦ Favorable body composition

Moderate evidence

Reduced symptoms of depression

Note: The Advisory Committee rated the evidence of health benefits of physical activity as strong, moderate, or weak. To do so, they considered the type, number, and quality of studies available, as well as consistency of findings across studies that addressed each outcome. They also considered evidence for causality and dose response in assigning the strength of evidence rating.

What Are the Physical Activity Guidelines for Different Populations?

Based on the evidence related to all of the health outcomes described above, the following guidelines have been offered for different populations.

Children

Even though children usually don't develop cardiovascular diseases, type 2 diabetes, and osteoporosis in childhood, there is evidence that these chronic diseases have childhood origins. Physically active children are less likely to develop early risk factors associated with these conditions and are more likely to remain healthy as adults.

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 per day should be either moderate or vigorous intensity aerobic physical activity, and should include vigorous intensity physical activity at least 3 days per week.
 - *Even though these activities may be done in short bursts and are not technically aerobic activities, they are included in this category.*
 - *In contrast to the adult guidelines that specify 10-minute bouts, any time period of moderate or vigorous intensity activity counts toward the Guideline.*
 - **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.
 - *Children's participation in a variety of unstructured activities that involve lifting/moving things, their body weight (e.g., climbing) or working against a resistance meets this Guideline.*
 - *Adolescents may meet this Guideline with free play and structured activities (e.g., lifting weights, doing pull-ups or push-ups). These activities should involve moderate to high levels of effort and engage the major muscle groups.*
 - **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.
 - *Many of the aerobic activities such as running, hopping, skipping, and jumping meet this Guideline.*
- 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.
 - *Adults play an important role in providing opportunities for their children to be physically active and help lay a foundation for a life-long pattern of health-promoting physical activity.*

One way to increase physical activity among children and adolescents is to replace activities with very low energy expenditure (TV watching, video games, etc.) with activities that result in higher levels of energy expenditure. Children and adolescents with disabilities should work with their health care provider to develop an appropriate physical activity program and should try to meet the Guidelines, if possible. If they cannot, they should strive to be as active as possible.

Adults

The following observations and Guidelines apply to most men and women 18 to 65 years of age; later sections will address Guidelines for women who are pregnant, and adults with chronic diseases or disabilities.

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 (2.5 hours) per week of moderate intensity, or 75 minutes per week of vigorous intensity aerobic physical activity, or an equivalent combination of moderate and vigorous intensity aerobic activity. Aerobic activity should be performed in episodes of at least 10 minutes and it should be preferably spread throughout the week.
- For additional and more extensive health benefits, adults should increase their aerobic physical activity to 300 minutes (5 hours) per week of moderate intensity or 150 minutes per week of vigorous intensity aerobic physical activity or an equivalent 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 per week, as these activities provide additional health benefits.

In general, healthy men and women who increase their physical activity in a prudent manner do not need to consult a health care provider before becoming active. However, depending on the current activity status of the individual, different approaches may be needed.

- **Inactive adults** should gradually progress from smaller to greater amounts of activity at the start of their physical activity program, be it for aerobic activities or muscle-strengthening activities.
 - They should gradually approach the target of 150 minutes of moderate intensity aerobic physical activity per week by using light to moderate intensity physical activity done for shorter sessions (e.g., 5 minutes), and spread throughout the day.
 - Even if the person does not reach the goal of 150 minutes per week of moderate intensity physical activity, some health benefits are realized with less physical activity and one should be as active as possible.

- Muscle-strengthening activities should also be approached in the same way, starting with activities done at light to moderate effort done one day per week, and progressing over time to two or more days per week; the intensity can be increased gradually to moderate to high levels.

- **Active adults** who already meet the guidelines are encouraged to move toward 300 minutes of moderate intensity physical activity per week to gain additional health and fitness benefits. By including more vigorous intensity physical activity, that goal can be accomplished in a shorter period of time.
- **Highly active adults** are encouraged to maintain that level of activity and increase the variety of physical activity to distribute the load to more muscle groups and reduce the chance of injury.

Physical Activity and Body Weight. The health-related benefits of physical activity are generally independent of body weight, and occur no matter how body weight changes over time. In combination with an appropriate diet, physical activity is an essential part of a weight control plan, whether it is to maintain body weight, lose weight, or keep weight off once it is lost. The amount of physical activity needed to achieve these various weight goals varies considerably across individuals. Individuals who are meeting the physical activity guideline of 150 minutes of moderate intensity physical activity per week and still see weight drifting upward should increase the amount of physical activity, or reduce caloric intake, or do both. To achieve a weight loss of 5% to 10% of body weight (i.e., 10 to 20 pounds for a 200 pound person), a dietary intervention is usually needed in combination with a regular physical activity program. In addition, to maintain the weight loss once a goal has been achieved, attention should be directed at both the caloric intake (to make sure it does not return to the pre-weight-loss value), and a physical activity program. Some people will need 300 minutes per week of physical activity to realize and maintain a health body weight. It is important to remember that all calories expended during any kind of physical activity, be it light, moderate or vigorous intensity, helps to maintain body weight. In this regard, reducing the amount of time in inactivity (e.g., TV watching) would be helpful.

Older adults (65 years and older)

There is a great deal of variation in this population in terms of existing chronic diseases (most have at least one), and the level of physical functioning tends to decrease with advancing age. Given that physical inactivity is particularly high among older adults, participation in a program of regular physical activity will result in many health- and fitness-related benefits that should improve and maintain quality of life. The Guidelines for this group can be used for younger adults who have chronic diseases with low levels of fitness. The key Guidelines for adults stated above are the same for older adults; however, Guidelines unique for this population are described in the following box.

Guidelines Just for Older Adults

- When older adults cannot do 150 minutes of moderate intensity aerobic activity a week because of chronic conditions, they should be as physically active as their abilities and conditions allow.
- Older adults should do exercises that maintain or improve balance if they are at risk of falling.
- Older adults should use relative intensity to determine their level of effort for physical activity.
- Older adults with chronic conditions should understand whether and how their conditions affect their ability to do regular physical activity safely.

In this population, the relative intensity of the activity should be used rather than the absolute intensity (see earlier definitions). The reason is that with age-related declines in cardiorespiratory fitness, the same absolute intensity (e.g., 3.5 times resting metabolic rate) results in a higher relative intensity in an older compared with younger individual. Being active at a higher relative intensity might limit an older individual's ability to do the activity long enough to meet the Guidelines.

Even though healthy older adults do not need to see a health care professional before becoming physically active, such a consultation might be helpful to obtain specific advice regarding appropriate types and amounts of physical activity. As for the adult, above, the *inactive older adult* should ease into both aerobic and muscle-strengthening activities, progressing from smaller to moderate amounts over a period of time. *Older adults with chronic conditions* should see their health care professional to obtain advice about the type and amount of physical activity to do. Walking is an excellent activity for this age group; it is a low-risk activity that can be done most anywhere and results in defined health benefits. Even 60 minutes of physical activity per week provides some health benefits in this age group.

Special Considerations

The physical activity Guidelines presented above are suitable for most children, adolescents, adults, and older adults; however, special consideration is needed for selected populations: women during pregnancy and postpartum, people with disabilities, and people with chronic diseases (e.g., osteoarthritis, type 2 diabetes, cancer survivor).

Women during pregnancy and postpartum period

Women who are pregnant should be under the care of a health care provider to address a variety of issues, including diet, weight gain, signs or symptoms, or physical activity interests. The Guidelines for this group follow.

Key Guidelines for Women During Pregnancy and the Postpartum Period

- Healthy women who are not already highly active or doing vigorous intensity activity should get at least 150 minutes (2.5 hours) of moderate intensity aerobic activity per week during pregnancy and the postpartum period. Preferably, this activity should be spread throughout the week.
- Pregnant women who habitually engage in vigorous intensity aerobic activity or in high amounts of activity can continue physical activity during pregnancy and the postpartum period, provided that they remain healthy and discuss with their health care provider about how and when activity should be adjusted over time.

After the first trimester of pregnancy, women should avoid doing exercises while lying on their back. Also, activities that increase the risk of falling or of abdominal trauma (e.g., soccer, skiing, basketball) should be avoided.

Physical activities in people with disabilities

Individuals with disabilities such as spinal cord injury, cerebral palsy, Parkinson's disease, mental illness, and dementia experience health benefits (improved cardiorespiratory fitness, strength, mental health, and ability to do activities of daily living) from regular participation in physical activity. The Guidelines are similar to those of adults for aerobic and muscle-strengthening activities, but with two modifications.

Key Guidelines for Adults with Disabilities

- Adults with disabilities who are able to should get at least 150 minutes per week (2.5 hours) of moderate intensity, or 75 minutes (1.25 hours) per week of vigorous intensity aerobic activity, or an equivalent combination of moderate and vigorous intensity aerobic activity. Aerobic activity should be performed in episodes of at least 10 minutes and it should be preferably spread throughout the week.
- Adults with disabilities who are able to should also do muscle-strengthening activities of moderate or high intensity and that involve all major muscle groups on 2 or more days per week, as these activities provide additional health benefits.
- When adults with disabilities are not able to meet the above guidelines, they should engage in regular physical activity according to their abilities and should avoid inactivity.
- Adults with disabilities should consult with a health care provider about the amounts and types of physical activity that are appropriate for their abilities and chronic conditions.

People with disabilities should contact a professional with experience in physical activity and disability to develop an individualized physical activity plan that would match abilities with appropriate exercises and/or equipment to realize physical activity goals.

People with Chronic Medical Conditions

Regular participation in physical activity results in many health benefits for those with chronic health conditions. Three conditions are highlighted.

Key Messages for People with Chronic Medical Conditions

- Adults with chronic conditions obtain important health benefits from regular physical activity.
- When adults with chronic conditions do activity according to their abilities, physical activity is safe.
- Adults with chronic conditions should be under the care of a health care provider. People with chronic conditions and symptoms should consult their health care provider about the types and amounts of activity appropriate for them.

- **Osteoarthritis.** Osteoarthritis may interfere with physical activity because of pain or fatigue, and a perception that physical activity may make the condition worse. However, the evidence indicates that those suffering from osteoarthritis gain important health and fitness benefits from regular participation in aerobic and muscle-strengthening physical activity, without making the condition worse. Attention needs to be paid to the type of activity that will not aggravate the condition (e.g. cycling rather than walking), and most should be able to do 150 minutes of physical activity per week or more.
- **Type 2 diabetes.** Regular participation in physical activity by those with type 2 diabetes helps reduce the risk of heart disease and promotes a health body weight. The standard Guideline of 150 minute per week of moderate intensity physical activity is appropriate for those with type 2 diabetes, and doing even more activity would lead to greater benefits.
- **Cancer survivors.** Cancer survivors should develop a physical activity program to realize the health benefits, including a lower risk of heart disease. Those who are active are less likely to die prematurely or have the cancer return. The actual physical activity plan should be developed in collaboration with a health care provider.

How to Be Safe and Active

In general, regular participation in physical activity is safe, but problems can develop. Injuries can occur to muscles and bones, a person can become dehydrated and overheat, and rarely, a person may experience a heart attack. The evidence indicates that physical activity is safe for almost everyone and benefits outweigh risks.

Physical activity is safe for almost everyone

Musculoskeletal injuries are the most common type of adverse event during physical activity, but such injuries occur at a low rate in the general adult population (e.g., 1 per 1,000 hours of walking). The risk of injury to the musculoskeletal system is related to the gap between the new level of physical activity and what the person is currently doing. By gradually increasing the amount/intensity of activity, it is easier bridge that gap and allow the body to adapt.

Ways to further reduce the risk of injury

There are a number of steps that can be taken to further reduce the risk of injury:

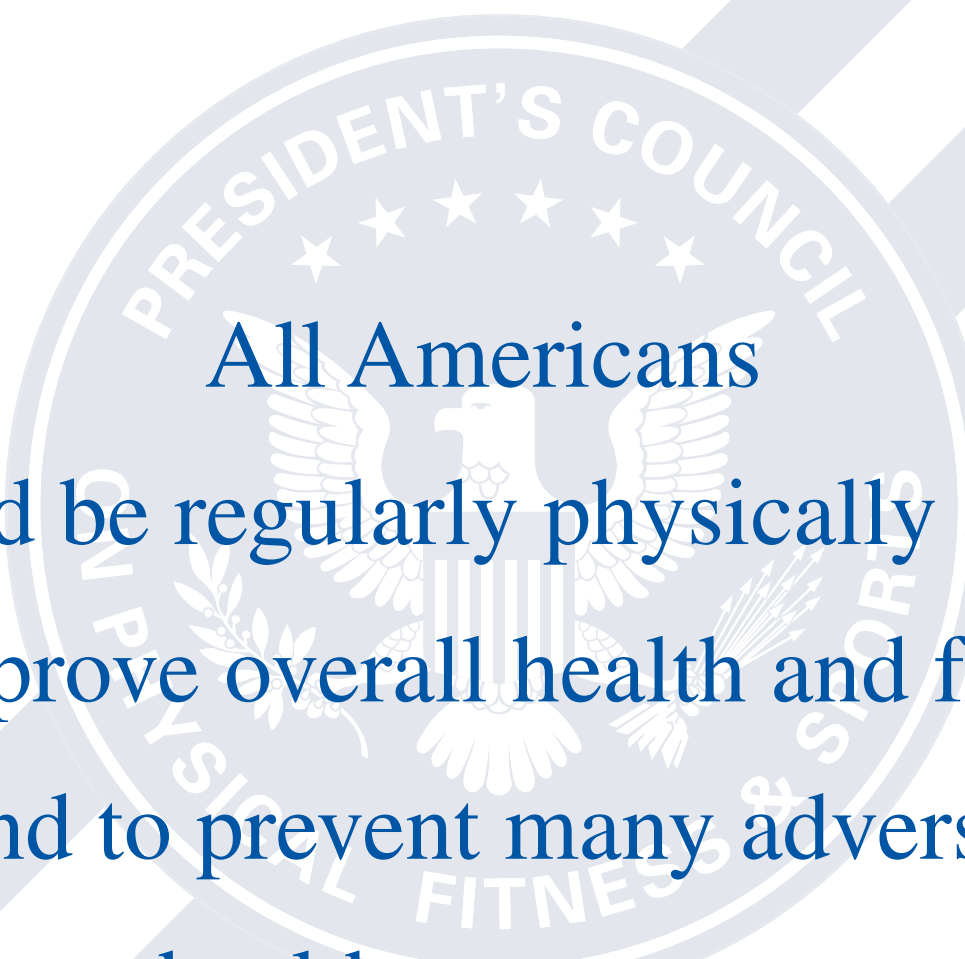
- Choose activities that are recreational (versus competitive) in nature, and involve little or no contact.
- Use the correct type of protective gear and equipment that is well-fitted and maintained.
- Do physical activity away from busy streets, in areas that are well-lit, and on surfaces that are well-maintained.
- Follow rules and policies associated with safety (e.g., wearing bicycle helmets).
- Make sensible choices about when and how to be active,
 - Early morning exercise during high temperature days,
 - Swim rather than play soccer,
 - Lower the intensity of the activity,
 - Get plenty of fluids and rest to reduce heat injury.

How to Increase the Physical Activity Levels of Americans

Given the overwhelming evidence that participation in regular physical activity has tremendous health benefits, what do we need to do to get more Americans active? The Guidelines provide a variety of approaches, and the reader is directed to that document for the details related to the following highlights:

- Setting personal goals (e.g., lose weight, get fit, feel better, lower blood pressure),
 - Use a pedometer to track steps and help you toward your goal.
- Social support from family members and friends,
 - Be physically active with a buddy.
- Worksite health promotion programs,
 - Time for exercise; co-pay for fitness memberships.
- Communities,
 - Develop multi-media campaigns to promote physical activity,
 - Physical education classes should increase the amount of physical activity,
 - Better infrastructure (streets/sidewalks) to support physical activities.

It will take the collaboration between and among various government, education, business, and health care leaders to bring about such changes in the population's level of physical activity. The time and resources needed to make this happen will result in economic, personal, and societal benefits worth many times the investment. Local public health departments can facilitate such collaborations and track progress over time.

The seal of the President's Council on Physical Fitness & Sports is centered in the background. It features an eagle with wings spread, holding an olive branch and arrows. The eagle is surrounded by a circular border containing the text "PRESIDENT'S COUNCIL" at the top and "PHYSICAL FITNESS & SPORTS" at the bottom. There are stars around the inner edge of the seal.

All Americans
should be regularly physically active
to improve overall health and fitness
and to prevent many adverse
health outcomes.

Edward Howley
University of Tennessee, Knoxville

Please Post
President's Council on Physical Fitness & Sports
200 Independence Avenue, S.W., Washington, DC 20201
(202) 690-9000 • FAX (202) 690-5211

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