

CARDIOVASCULAR PERSPECTIVE

Physical Activity Guidelines for Americans From the US Department of Health and Human Services

Cardiovascular Benefits and Recommendations

The American Heart Association focuses on reducing factors known to increase risk for heart disease and stroke through Life's Simple 7. By focusing on these factors, American Heart Association seeks to both improve the cardiovascular health of all Americans and reduce deaths from cardiovascular disease and stroke by 20% by the year 2020.¹ Physical activity has a strong and positive impact on several of these factors—blood pressure, blood glucose, and body weight, in addition to overall risk for cardiovascular disease incidence and mortality. With the recent release of the second edition of the *Physical Activity Guidelines for Americans* (PAG),² more is known about the benefits of physical activity, and the news is good—benefits start even earlier and are easier to obtain than was previously thought.

The PAG is based on the work of a 17-member Advisory Committee that conducted an extensive review of the literature on physical activity and health. The Advisory Committee graded the evidence as strong, moderate, limited, or grade not assignable and summarized its findings in the *2018 Physical Activity Guidelines Advisory Committee Scientific Report*.³ Evidence graded as strong or moderate was used as the basis for the PAG. Some of the strongest evidence was on risk factors for cardiovascular disease that can be modified by physical activity, including blood pressure, blood glucose, blood lipids, and body weight.

The PAG recommends that adults do at least 150 to 300 minutes of moderate-intensity aerobic physical activity a week, or 75 to 150 minutes of vigorous-intensity activity, or an equivalent combination of moderate- and vigorous-intensity activity. The key guidelines for adults are described in Table 1. Intensity can be measured in different ways but generally can be determined using the talk test. During moderate-intensity activity, a person can talk, but not sing. During vigorous-intensity activity, a person cannot say more than a few words without pausing for a breath. Adults should also do muscle-strengthening activities of moderate or greater intensity, and that involve all major muscle groups on ≥ 2 days a week. Currently, only 22% of adults meet the combined aerobic and muscle-strengthening targets, whereas 36% report doing no leisure-time physical activity.⁴

LESS PHYSICAL ACTIVITY IS NEEDED THAN PREVIOUSLY THOUGHT TO OBTAIN BENEFITS

Although meeting the PAG should be the goal, the threshold at which health benefits begin to accrue is less than 150 minutes a week for most outcomes. The biggest bang for your buck is moving from being inactive to doing some physical activity each week. There is no lower limit to the benefits of physical activity in reducing cardiovascular disease risk. The amount of physical activity recommended in the PAG takes into account the wide range of health outcomes associated with

Katrina L. Piercy, PhD, RD
Richard P. Troiano, PhD

Key Words: advisory committee
■ blood pressure ■ blood glucose
■ cardiovascular disease ■ exercise

The opinions expressed in this article are not necessarily those of the editors or of the American Heart Association.

© 2018 American Heart Association, Inc.

<https://www.ahajournals.org/journal/circoutcomes>

Table 1. Key Guidelines for Adults

Adults should move more and sit less throughout the day. Some physical activity is better than none. Adults who sit less and do any amount of moderate-to-vigorous physical activity gain some health benefits.
For substantial health benefits, adults should do at least 150 min (2 h and 30 min) to 300 min (5 h) a week of moderate-intensity, or 75 min (1 h and 15 min) to 150 min (2 h and 30 min) a week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity aerobic activity. Preferably, aerobic activity should be spread throughout the week.
Additional health benefits are gained by engaging in physical activity beyond the equivalent of 300 min (5 h) of moderate-intensity physical activity a week.
Adults should also do muscle-strengthening activities of moderate or greater intensity, and that involve all major muscle groups on ≥ 2 days a week, as these activities provide additional health benefits.

regular physical activity; thus the 150-minute target is based on obtaining benefits for the greatest number of outcomes. On the other end of the spectrum, additional physical activity confers additional benefits, and health risk does not seem to increase with high amounts of physical activity, even beyond 3 to 5 times the 150 minutes a week recommendation.

ACHIEVING PHYSICAL ACTIVITY BENEFITS IS EASIER

A significant update with the PAG is that any amount of physical activity counts toward the weekly total. Evidence shows that getting a minimum bout (previously 10 minutes in duration in the first edition of the PAG) is no longer necessary to accumulate the benefits of physical activity; the total amount is what matters. This means parking farther away from the store or walking up the stairs instead of taking the elevator—even if it is only a few minutes of activity—contributes to overall benefits. This makes it easier to accumulate physical activity throughout the day or week.

PHYSICAL ACTIVITY PREVENTS CARDIOVASCULAR DISEASE

The positive relationship between overall cardiovascular health and regular physical activity is well established. The Advisory Committee highlighted its confidence in the relationship, noting the strength of the evidence is unlikely to be modified by additional studies on this topic. The specific outcomes (cardiovascular disease incidence, blood pressure, body weight, type 2 diabetes mellitus, and blood lipids) affected by regular physical activity are listed in Table 2, and evidence reviewed by the Advisory Committee³ is described below.

A strong inverse dose-response relationship was observed between physical activity and the incidence

Table 2. The Benefits of Physical Activity and Cardiovascular-Related Outcomes

Decreased incidence of cardiovascular disease, including stroke and heart failure.
Decreased cardiovascular disease mortality.
Reduced blood pressure (in people with normal blood pressure, prehypertension, and hypertension).
Decreased incidence of hypertension.
Weight loss, especially when combined with dietary changes to reduce calorie intake.
Prevention of weight regain after weight loss.
Reduced or slowed weight gain over time.
Decreased incidence of type 2 diabetes mellitus (includes those at any body weight).
Decreased risk of adverse lipid profile.

of cardiovascular disease, including stroke and heart failure. Compared with inactive adults, meeting the PAG is associated with a 14% reduced risk of developing coronary heart disease.³ This same relationship exists for cardiovascular disease mortality and is similar to the relationship between physical activity and all-cause mortality. Those who meet the PAG will achieve about 75% of the maximal risk reduction in all-cause mortality and approximately a 40% reduction in cardiovascular disease mortality.³ Those who exceed the PAG will have additional risk reduction from all-cause mortality. Research has not identified an upper limit of activity, above which additional health benefits cease to occur.

Physical activity has both acute and chronic effects on blood pressure. Interestingly, people with prehypertension gain greater benefits from physical activity. Blood pressure is lowered more for people with prehypertension than people with normal blood pressure. In both populations, the blood pressure reductions associated with regular physical activity can reduce the risk of coronary heart disease by 4% to 5% and stroke by 6% to 8%.³

Physical activity affects several aspects of body weight. Combined with calorie restriction, physical activity can contribute to initial weight loss. Physical activity also plays an important role in supporting maintenance of weight loss. Physical activity can attenuate weight gain over time, helping to delay or reduce the risk of becoming overweight or obese. With the current high rates of overweight and obesity, physical activity can play a crucial role in improving overall health.

Risk of type 2 diabetes mellitus is greatly reduced with physical activity, and this benefit is observed irrespective of body weight. Engaging in 150 to 300 minutes a week of moderate-intensity physical activity can reduce the risk of developing type 2 diabetes mellitus by 25% to 35%.³ Because physical activity independently reduces body weight, the benefits of physical

activity in reducing type 2 diabetes mellitus risk could be even greater.

Physical activity helps lower the risk of adverse blood lipid profiles by increasing HDL (high-density lipoprotein) cholesterol and decreasing triglycerides. This benefit applies to those with type 2 diabetes mellitus, as well as other conditions with hyperlipidemia.

Sedentary behavior is a new topic for the PAG. The Advisory Committee examined this to better understand sitting and its contribution to health outcomes. Sedentary behavior is strongly associated with increased risk of cardiovascular disease mortality, cardiovascular disease, high blood pressure, and type 2 diabetes mellitus. Combining this evidence with the benefits of physical activity, the PAG concludes that all Americans can benefit from moving more and sitting less throughout the day. Replacing sitting with light-intensity physical activity may help. Even more benefits are likely when sedentary behavior is replaced by moderate- or vigorous-intensity physical activity.

PHYSICAL ACTIVITY SLOWS THE PROGRESSION OF CARDIOVASCULAR DISEASE

Over 92 million Americans are living with some form of cardiovascular disease. Many contributing factors, such as hypertension or type 2 diabetes mellitus, can progress over time, adding complications and medical costs. Physical activity benefits individuals living with those diseases as well. Among adults with hypertension, physical activity can reduce blood pressure, reduce the risk of increased blood pressure over time, and thereby slow the progression of cardiovascular disease. Among adults with type 2 diabetes mellitus, physical activity can reduce hemoglobin A1C, blood pressure, body mass index, and blood lipids, all indicators of type 2 diabetes mellitus progression. Physical activity also reduces the risk of cardiovascular disease mortality among people with hypertension and people with type 2 diabetes mellitus.

CONCLUSIONS

Everyone, including children and adolescents, can gain the cardiovascular health benefits of physical activity. Physical activity is one of the best things people can do to reduce the risk of cardiovascular disease, progression of cardiovascular disease, or death from cardiovascular

disease. The amount of physical activity that provides favorable cardiorespiratory health and fitness outcomes is similar for men and women of all ages, including older people, as well as for adults of various races and ethnicities. Aerobic exercise also improves cardiorespiratory fitness in people with disabilities and chronic medical conditions. Although this article focuses on cardiovascular health, the benefits of physical activity are extensive and affect many aspects of health, both physical and mental. A new area of study for the Advisory Committee was brain health, which showed acute benefits of physical activity in reducing anxiety and improving cognition. Long-term physical activity is linked with reducing risk of dementia, risk of depression, and improving quality of life. Some of these benefits may be attributable to physical activity's impact on circulation. Physical activity can also improve physical function and the risk of falling, as well as the risk of injury if a fall occurs. The bottom line is this—the benefits of physical activity, not only on cardiovascular health but also on overall health and wellness, cannot be overstated. Some physical activity is better than none, and more physical activity is even better.

ARTICLE INFORMATION

Correspondence

Katrina L. Piercy, PhD, RD, Office of Disease Prevention and Health Promotion, US Department of Health and Human Services, 1101 Wootton Pkwy, LL100, Rockville, MD 20852. Email Katrina.Piercy@hhs.gov

Affiliations

Office of Disease Prevention and Health Promotion, US Department of Health and Human Services, Rockville, MD (K.L.P.). National Cancer Institute, National Institutes of Health, US Department of Health and Human Services, Bethesda, MD (R.P.T.).

Disclosures

Drs Piercy and Troiano were the lead writers for the Physical Activity Guidelines for Americans, 2nd Edition.

REFERENCES

1. American Heart Association. My Life Check - Life's Simple 7. <http://www.heart.org/en/healthy-living/healthy-lifestyle/my-life-check-lifes-simple-7>. Accessed October 10, 2018.
2. U.S. Department of Health and Human Services. *Physical Activity Guidelines for Americans*. 2nd ed. Washington, DC: U.S. Department of Health and Human Services; 2018.
3. 2018 Physical Activity Guidelines Advisory Committee. *2018 Physical Activity Guidelines Advisory Committee Scientific Report*. Washington, DC: U.S. Department of Health and Human Services; 2018.
4. Office of Disease Prevention and Health Promotion. Healthy People 2020: Data Search - Physical Activity. <https://www.healthypeople.gov/2020/topics-objectives/topic/physical-activity>. Accessed October 10, 2018.