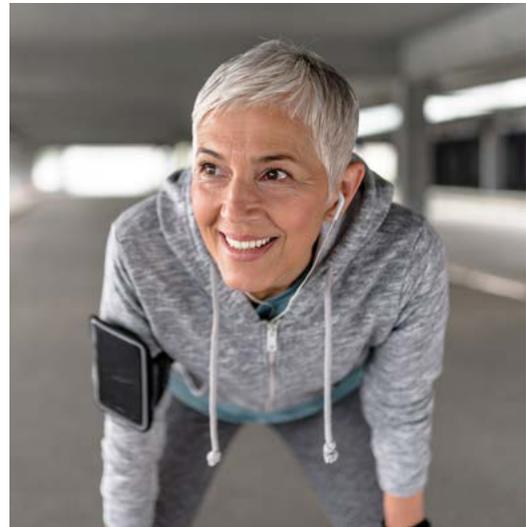
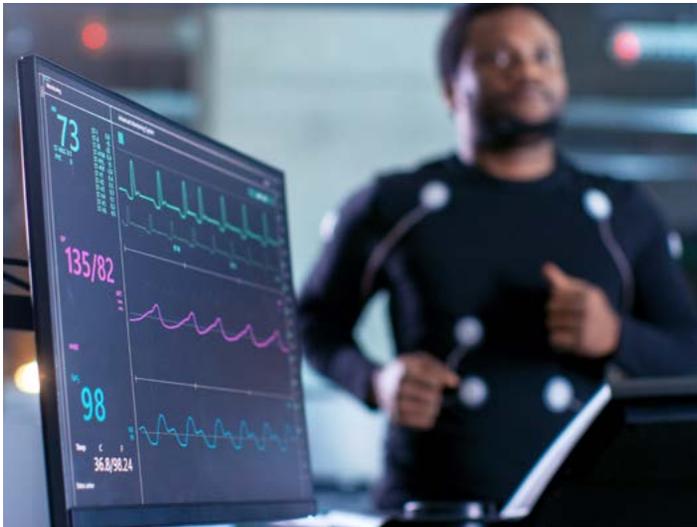


Exercise is Medicine[®] Fact Sheet



Exe*R*xercise
is Medicine[®]

AMERICAN COLLEGE
of **SPORTS MEDICINE**[®]

Exercise is Medicine® (EIM) a global health initiative founded in 2007 by the American College of Sports Medicine (ACSM) with the American Medical Association (AMA) as a result of the overwhelming evidence that physical activity plays a powerful therapeutic role in the prevention and management of many chronic health conditions. The vision of EIM is to make physical activity assessment and promotion a standard in clinical care, connecting health care with evidence-based resources for people everywhere and of all abilities.



The Problem

Physical activity is effective in the prevention and treatment of a variety of chronic diseases and health conditions, including heart disease, hypertension, obesity, type 2 diabetes, osteoarthritis, dementia and many types of cancer. Despite the many benefits, levels of inactivity are alarming and have tremendous costs.¹

- Nearly half of U.S. adults (46 percent) do not meet the recommendations for aerobic physical activity, and nearly one-third (30 percent) report doing less than 10 minutes of moderate-to-vigorous physical activity per week.²
- Estimates suggest that many individuals spend almost 8 hours a day in sedentary behaviors³, and about 24 percent of adults engage in no leisure-time physical activity at all.⁴
- Physical inactivity causes 6 percent of the burden of disease from coronary heart disease, 7 percent of type 2 diabetes, 10 percent of breast cancer, and 10 percent of colon cancer. Inactivity causes 9 percent of premature mortality, or more than 5.3 million of the 57 million deaths that occurred worldwide in 2008.⁵
- Globally, physical inactivity costs health care systems 54 billion dollars, productivity losses of 14 billion, and 13.4 million disability-adjusted life years.⁶
- 40 percent of U.S. primary care doctors and 36 percent of U.S. medical students do not meet the physical activity guidelines. Inactive physicians are less likely to provide exercise counseling to patients and are less credible role models for the adoption of healthy behaviors.⁷



The Benefits

The 2018 Physical Activity Guidelines Advisory Committee updated Scientific Report states that, “in addition to disease prevention benefits, regular physical activity provides a variety of benefits that help individuals sleep better, feel better and perform daily tasks more easily.” To read the entire 779-page report, as well as the Executive Summary and Integrating the Evidence sections, go to <https://health.gov/paguidelines/second-edition/report/>.

While the 2018 report reaffirms the 2008 recommendation for 150 to 300 minutes per week of moderate-intensity physical activity, it also highlights that inactive individuals “can achieve substantial health gains by increasing their activity level even if they do not reach the target range.” All physical activity counts. Replacing sedentary behavior with light-intensity physical activity has positive health effects. Contrary to previous recommendations regarding a minimal physical activity bout length of 10 minutes, bouts of any length contribute to the health benefits associated with the accumulated volume of physical activity.⁸

The benefits of physical activity extend across a variety of medical conditions and populations. The following sampling of research findings illustrates the breadth of the impact of regular physical activity.

Disease Prevention

- **Cancer:** Higher levels of leisure-time physical activity are associated with a reduced risk of developing 13 cancers, including esophageal adenocarcinoma, liver, lung, kidney, gastric cardia, endometrial, myeloid leukemia, myeloma, colon, head and neck, rectal, bladder and breast.⁹
- **Alzheimer's disease:** Strong evidence suggests that physical activity can reduce the risk of developing Alzheimer's disease and other dementias, as well as improve cognition.¹⁰
- **Stroke:** Regular physical activity lowers the risk of stroke by 34 percent and up to 58 percent among older adults.¹¹
- **Mental health:** Exercise has been shown to prevent the incidence of depression and anxiety as effectively as medication or behavioral therapy.¹²
- **Cardiovascular disease:** Physical activity or fitness reduces the risk of cardiovascular disease (CVD), with a magnitude of risk reduction comparable to that of not smoking.¹³
- **Back pain:** An international review of randomized clinical trials (RCTs) showed that exercise performed 2 to 3 times/week, including strengthening and either stretching or aerobic exercise, can prevent lower back pain.¹⁴
- **Mortality:**
 - A low level of fitness is a bigger risk factor for mortality than being overweight or obese. It is better to be fit and overweight than unfit with a lower percentage of body fat. Substantial reductions in chronic diseases can be achieved via lifestyle changes with little, if any, weight loss.¹⁶
 - Adults with better muscle strength have a 20 percent lower risk of mortality (33 percent lower risk of cancer-specific mortality) than adults with low muscle strength.¹⁵

Disease Management

- **Cancer:**
 - Recreational physical activity after a diagnosis of colorectal cancer is associated with a reduced risk of colorectal cancer-specific and overall mortality.¹⁷
 - Resistance training improves chemotherapy completion rates in breast cancer patients receiving therapy.¹⁸
- **Renal disease:** Moderate-intensity aerobic training is beneficial to physical functioning and quality of life for those with end stage renal disease.¹⁹
- **Sleep apnea:** Regular exercise decreases the severity of obstructive sleep apnea, independent of changes in body weight.²⁰
- **Osteoarthritis (OA):** Regular aerobic and resistance exercise is the number one recommendation for first line non-pharmacologic treatment for knee and hip OA.²¹ Exercise can also decrease the pain and stiffness associated with OA with higher-intensity exercise having a more positive effect on pain and function.²²
- **Hypertension:** Individuals participating in exercise interventions experienced consistent modest reductions in systolic blood pressure similar to what may be achieved with commonly prescribed anti-hypertensive medications according to a meta-analysis of randomized controlled trials.²³

- **Cardiovascular disease:** A prospective study of more than 27,000 apparently healthy women examined the impact of physical activity on cardiovascular disease (CVD) events and related risk factors. The risk of CVD decreased linearly with higher levels of activity and was mediated by physical activity-related reductions in known risk factors, including a 32.6 percent decrease in inflammatory biomarkers and a 27.1 percent reduction in blood pressure.²⁴
- **Diabetes:**
 - A 10-year follow-up study of the National Diabetes Prevention Program (a lifestyle intervention promoting increased physical activity and a healthy diet) showed that participants reduced the risk of developing type 2 diabetes by 58 percent, and by 71 percent for people >60 years old.²⁵
 - When compared with similar participants not in the Diabetes Prevention Program (DPP), Medicare estimated savings of \$2,275 for each enrollee in the DPP over a 15-month period, more than enough to cover the cost of the program.²⁶
- **Obesity:** A meta-analysis of randomized trials found that exercise interventions resulted in a greater reduction in visceral adipose tissue (trunk fat) relative to weight loss than pharmacological interventions. This preferential reduction in visceral fat may be clinically meaningful and result in enhanced cardiovascular risk reduction.²⁷

Cognitive/Emotional Health in Children/Adolescents

- **Cognitive Function and Academic Achievement:**
 - Physical fitness, single bouts of physical activity (PA) and participation in PA interventions benefit children's cognitive function and brain structure and function. In addition, studies suggest that PA has a positive impact on academic achievement.²⁸
 - Research has shown positive associations between physical activity participation and on-task behavior in elementary school students.²⁹
- **Autism Spectrum disorder:**
 - Adolescents with autism spectrum disorder (ASD) are 2.12 times more likely to be obese compared with typically developing peers and are about 60 percent less likely to participate in physical activity or sports.³⁰ Low levels of physical activity are one of four obesity-related risk factors for both children and adolescents with ASD.³¹
 - Individuals with ASD have been shown to benefit from physical activity interventions aimed at increasing manipulative skills, locomotor skills, muscular strength and endurance, skill-related fitness or social function.³² Out-of-school programs such as dance, swimming, multisport camps, tennis, outdoor education and general recreation programs have been shown to improve social interactions and self-efficacy.³³
 - When examining exercise programs specifically, martial arts and horseback riding show the greatest impact on reducing stereotypic behaviors and improving attention, cognitive and social/emotional outcomes in children and youth with ASD.³⁴

For a list of references, please see the Exercise is Medicine® Reference sheet.



A Solution to the Greatest Public Health Problem of the 21st Century

The vision of Exercise is Medicine® (EIM) is to make physical activity assessment and promotion a standard in clinical care, connecting health care with evidence-based physical activity resources everywhere and of all abilities.

The initiative strives to make physical activity a “vital sign” that is routinely assessed at every patient visit. EIM is committed to the belief that exercise and physical activity are integral to the prevention and treatment of chronic disease. EIM encourages health care providers to include physical activity when designing treatment plans for patients. Health care providers should provide brief advice or an exercise prescription and refer the patient to appropriate physical activity resources (programs, professionals, facilities). EIM is also engaged in the education of exercise professionals to prepare them to safely and effectively guide referred patients to an active and healthy lifestyle.

For references related to the effectiveness of various clinical implementation strategies, see the citation list from the 2018 Scientific Statement from the American Heart Association:

<https://www.ahajournals.org/doi/abs/10.1161/CIR.0000000000000559>.



Your Call to Action

Exercise is Medicine® calls on each person and partner organization to build, support and advocate for physical activity as essential for global health and well-being.

- Policy makers and health plans are called to change policy to support physical activity as a vital sign for health and support reimbursement for physical activity counselling and intervention.
- Health care providers are called to integrate physical activity and exercise into every patient and client interaction.
- Health systems and medical practices are encouraged to implement the EIM solution by (1) integrating the physical activity vital sign and referral smart sets into the electronic health record and (2) collaborating with community-based physical activity partners to provide lifestyle interventions.
- Scientists are encouraged to conduct research to identify the most effective EIM implementation strategies to achieve cost-effective and improved health outcomes. In addition, understanding the molecular mechanisms that govern an individual’s response to physical activity is a high priority.
- Universities and institutions who train future health care providers are called to integrate physical activity into the curriculum.
- Exercise professionals are challenged to obtain the necessary education and training to safely and effectively work with a spectrum of clients with chronic medical conditions.
- Communities, workplaces, and schools are challenged to promote physical activity as an essential part of health and well-being and provide safe places and evidence-based programming for participants of all abilities.

Visit Exercise is Medicine® online at www.exerciseismedicine.org to sign up for a monthly e-newsletter, receive program updates and download EIM toolkits and resources.



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