





An NP's guide to current physical activity recommendations

Abstract: Physical inactivity is a public health crisis that contributes to many of the chronic diseases that affect Americans. This review emphasizes the beneficial health implications of physical activity along with the dangers of sedentary lifestyles. It also provides advice tailored to NPs to help their patients become more physically active.

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Physical inactivity has been identified as a primary factor in the development of obesity and many comorbid conditions. Although the caloric expenditure of exercise bouts rarely outweighs caloric imbalances incurred as a result of unhealthy dietary choices, exercise has a positive impact on reducing obesity-related comorbidities.¹⁻⁴ Decades of research have demonstrated that exercise provides a cardio-protective and metabolic benefit to the body, reducing the risk of all-cause mortality and mortality from numerous chronic diseases.^{3,4} Physical activity reduces the risk of chronic conditions such as cardiovascular disease, type 2 diabetes mellitus (T2DM), and many forms of cancer irrespective of weight.^{1,2,5} NPs should consider the empirical evidence regarding physical activity to better educate patients on implementing healthy physical activity into their lives. This article provides a synthesis of physical activity

information in relation to obesity, as well as advice from the Physical Activity Guidelines for Americans, 2nd edition, published in 2018, tailored for the NP to encourage and foster physical activity among patients.¹

■ Health benefits of physical activity across the lifespan

In addition to its ability to reduce the risk of numerous chronic diseases, physical activity can help patients achieve many health benefits after a single exercise session, such as reduced anxiety and blood glucose and sleep improvements.^{1,2,6-8} Physical activity can benefit the heart and muscles and has been shown to reduce the risk of certain cancers, such as colon and breast cancer, as well as improve the survival rate in patients with these cancers.⁵ (See *Acute and long-term health benefits of physical activity.*)

The majority of adults do not meet the recommendations outlined by the recent physical activity guidelines.¹ In fact, only 26% of men and 19% of

Keywords: exercise, obesity prevention, physical activity, prolonged sitting, sedentary time

women are meeting those 2018 recommendations. The overall number of adolescents meeting the physical activity recommendations is 20%.^{1,12} Given the substantial health benefits and importance of physical activity on reducing the risk of many major chronic diseases, the public health challenge facing the nation is how to educate and motivate people to increase their physical activity levels.

Understanding the role of body composition is essential when evaluating the interplay of physical activity and obesity. The undercurrent of the metabolic disturbances associated with obesity has more to do with excess amounts of body fat, particularly in the abdominal region, than it does with excessive weight.^{13,14} Solely focusing on losing weight or reducing a person's

body mass index is a large part of the problem observed with weight cycling in response to crash diets. A strict hypocaloric diet without incorporation of exercise can significantly slow metabolism due to the loss of muscle along with fat.¹⁵ It is common to observe that when two people undergo a similar caloric deficit, the one who does so by restricting caloric intake alone will likely lose weight more quickly than a person who is both exercising and restricting their diet. This is because the person exercising is retaining more muscle than the one who is only dieting. Although the addition of exercise, particularly resistance training, may result in slower weight loss in the short term, it will be beneficial in the long term and help prevent weight regain by preserving valuable lean body tissue.^{13,14} This muscle mass retention will not only be essential to help regulate blood glucose levels, but also to maintain resting metabolic rate to a much higher degree than the person who initially lost weight quickly by simply reducing his or her caloric intake.^{13,14}

The chronic disease prevention benefits of physical activity extend to even adults who are currently classified as obese. Blair and Ortega have researched this concept over the past 2 decades and consistently found that individuals with obesity who have a high cardiorespiratory fitness level have similar cardiovascular and all-cause mortality risk as individuals who are considered fit and normal weight.¹⁶ In fact, adults who are aerobically fit and overweight or obese have a lower mortality risk than adults who are sedentary and normal weight.^{16,17} Emerging research suggests that having a high cardiorespiratory fitness level might attenuate some of the negative metabolic health consequences of adolescent obesity as well, but more research is needed in a younger population.

Health benefits and physical activity recommendations for children and adolescents. Developing positive lifestyle choices among children and adolescents can be particularly important for long-term healthy weight status. Telama and colleagues found that across six age cohorts, physical activity in youth was related to physical activity habits in adulthood.¹⁸ The recommended 60 minutes of physical activity per day is important; however, an emphasis on developing long-term physical activity habits and not just sports skills is essential.^{1,18} This focus will lead to greater inclusion and more success in promoting physical activity as the children age.^{1,18} Another important reason to keep children physically active is the theory that as their

Acute and long-term health benefits of physical activity^{1,8-11}

	Acute benefit	Long-term benefit
Improved quality of life	Yes	Yes
Improved cardiometabolic health	Yes	Yes
Lower risk of all-cause mortality	-	Yes
Lower risk of cardiovascular disease	-	Yes
Improved cardiorespiratory fitness	Yes	Yes
Improved lipid profile	-	Yes
Lower risk of hypertension	-	Yes
Improved muscular fitness	-	Yes
Improved weight status	-	Yes
Reduced weight gain	-	Yes
Improved insulin sensitivity and glucose regulation	Yes	Yes
Lower risk of numerous cancers, including bladder, breast, colon, endometrial, esophageal, kidney, lung, and gastric	-	Yes
Improved cognition	Yes	Yes
Reduced risk of anxiety	Yes	Yes
Reduced risk of depression	-	Yes
Reduced risk of dementia	-	Yes
Improved bone health	-	Yes
Lower risk of falls (older adults)	-	Yes

bodies grow and develop, they also establish their homeostatic set point for weight and adipocyte number. Regular physical activity, therefore, helps establish healthier homeostatic ranges for key metabolic markers (such as glucose and lipids) that result in lower cardiovascular disease risk.¹⁹

According to the updated physical activity guidelines, activities for younger children (ages 3 to 5 years) should include a variety of activities that the child finds enjoyable, such as riding a bike, playground play, and outdoor games.¹ Activities for young children should also emphasize development of neuromuscular control and balance. The guidelines are more specific for children and adolescents (ages 6 to 17 years), where it is recommended that they participate in at least 60 minutes of moderate-to-vigorous physical activity each day. They should explicitly incorporate vigorous-intensity aerobic activity 3 days per week in addition to 3 days each of muscle- and bone-strengthening exercises. The same exercises may not be appropriate for both a 6-year-old and a 17-year-old; therefore, exercises should vary by age.¹⁹

Health benefits and physical activity recommendations for adults. A primary recommendation for adults is simply that they move more and sit less throughout the day. In fact, simply taking exercise “snacks” during the day can yield some direct health benefits, such as improved lipid and glucose levels.^{1,20} For more substantial and sustained health benefits, it is recommended that adults participate in at least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity aerobic physical activity each week. Adults should also engage in muscle-strengthening activities at least 2 days per week. For adults who are currently inactive and to whom these targets seem unattainable, even modest increases in physical activity can significantly reduce a person's risk of all-cause mortality, cardiovascular disease (CVD), T2DM, and some types of cancer.^{1,8} The Physical Activity Guidelines for Americans recommends that inactive individuals progressively reduce sedentary time and make modest increases in their physical activity until they develop a sustainable pattern toward the recommendations.¹

Additionally, the timing of physical activity may be important. Timing light exercise after meals can result in improved metabolic control and can immediately increase insulin sensitivity and glucose processing from that meal. DiPietro and colleagues found that physical activity following a high-carbohydrate

meal was particularly important for those at risk for insulin resistance.²⁰ Their research demonstrated that even a 15-minute walk after a meal improved glycemic control for the next 24-hour period.²⁰ This logic also applies to improving metabolic health of patients with established insulin resistance as exercise uses an insulin-independent cell-signaling pathway (the AMP-activated protein kinase [AMPK] pathway) to reduce a person's blood glucose levels.²¹ Because it works without the need for insulin, activation of the AMPK pathway can be beneficial for patients who are either insulin-resistant or insulin-deficient. Similarly, resistance training provides substantial metabolic health benefits.²² One small study (N = 8) demonstrated that a bout of resistance training 15 hours prior to ingestion of a high-fat meal can reduce postprandial lipid levels.²³ Given how difficult it can be to limit high-fat meals in the modern fast-food climate, this finding is practically important for the cardiometabolic health of patients. As mentioned before, resistance training is also essential for healthy muscle tissue and maintenance of resting metabolic rate.^{15,22}

Simply increasing patients' physical activity beyond a sedentary state can substantially reduce their chronic disease risk factors.¹ Fitness trackers are a popular, commercially available tool that are commonly used to achieve this aim.^{7,24} A systematic review from Kraus and colleagues highlights the association of increases in step counts with improved health outcomes.²⁴ A more simplified way to prescribe physical activity recommendations for the American population as a whole would be to provide a target daily step count. Although 10,000 steps a day is a physical activity target that is colloquially accepted, it has not been empirically tested as an appropriate goal for all Americans. In fact, 10,000 steps could be contraindicated for patients with certain orthopedic conditions.²⁴ Moreover, it is challenging to integrate a step count goal with the physical activity guidelines as the cardiorespiratory intensity of those steps could vary considerably. For instance, if a person gets 4,000 steps in their typical workday and then achieves the recommended 25 minutes of vigorous aerobic exercise, then they may have only accumulated 6,000 total steps, even though daily recommendations for positive cardiovascular health were actually met. Although 10,000 steps may not be a magic number for everyone, a step goal may be beneficial for instilling a physical activity routine into daily life. A systematic review from Qiu and colleagues highlights that adults with T2DM who have a step goal do accumulate more

physical activity throughout a day than those who wear a fitness tracker but have no specific target step count.²⁵

Health benefits and physical activity recommendations for older adults. Although the physical activity guidelines recommend the same volume of exercise for older adults as for young and middle-aged adults (at least 150 minutes per week and at least 2 days per week of muscle-strengthening activities), exercise programming for the older population should focus on exercises that will help them maintain their independence and ability to perform activities of daily living.¹ Specific to older adults, the guidelines recommend incorporation of multicomponent physical activity (including more than one type of activity, such as aerobic, muscle strengthening, and balance training). The inclusion of balance training is particularly important. Older adults are also encouraged to participate in flexibility activities. Exercise modalities and intensities may need to be modified for physical limitations and medical conditions. Specifically, individuals with certain cardiovascular conditions should not exceed exercise-intensity levels that are prescribed by their healthcare professional. Similarly, those with orthopedic conditions (such as arthritis, or knee or back pain) should take precautions when selecting aerobic, flexibility, and muscle-strengthening exercises. Swimming and water-based physical activity can be an efficacious mode of physical activity for patients suffering from joint pain or those who have difficulty regulating their body temperature.

In addition to the positive benefits on cardiovascular and metabolic health, it is especially important to incorporate strength-training exercises for older adults to delay the progression of sarcopenia and age-related bone loss.²² Appropriately prescribed strength training programs are safe and essential for maintaining a healthy and active lifestyle as a person ages.²² Countering muscle disuse with resistance training in this population will help maintain muscle and bone mass, reduce frailty, improve balance and mobility, reduce fall risk, and ultimately extend and improve quality of life. (See *Physical activity recommendations*.)

■ Limiting prolonged sedentary behaviors across the lifespan

Prolonged sedentary activities (for example, sitting) contribute to the risk of obesity, comorbid conditions, and significantly increase mortality risks.^{6,26,27} This is problematic because many leisure activities (for example, watching TV, reading, and playing video games)

and modern workplace environments are relatively sedentary. Matthews and colleagues found that more extended periods of sedentary behavior were associated with increased risk of all-cause and CVD mortality in older adults.²⁷ This may be a result of metabolic inflexibility, increased abdominal (and visceral) adiposity, arterial stiffness, and endothelial dysfunction that can be fostered by these sedentary behaviors.^{28,29}

Ekelund and colleagues conducted a meta-analysis that included over 1 million men and women and found a two-dimensional continuum in the relationships between sitting time and moderate-to-vigorous physical activity and risk of all-cause mortality.³⁰ They observed that the groups with the highest mortality risk are those with the longest sitting time and the least amount of physical activity. The opposite is also true in that the lowest mortality risk is found in the group with the highest amount of physical activity (60 to 75 min/day of moderate-intensity physical activity or 30 to 40 min/day of vigorous-intensity physical activity) and least amount of sitting time. Based on this continuum, as sitting time is reduced and physical activity time increases, all-cause mortality is reduced as well. As highlighted in the physical activity guidelines, simply reducing sitting time decreases a person's mortality risk, but patients will still be at elevated risk if they do not perform any moderate-to-vigorous physical activity.^{1,6,30,31} Moreover, Ekelund and colleagues found that a high level of physical activity could decrease or eliminate the mortality risk associated with increased sitting time.³⁰

Limiting sedentary behaviors in children and adolescents. Sedentary time in children and adolescents is often congruent with screen time or time spent in school. In order to effectively interrupt sedentary behaviors in childhood, limits must be set for screen use, and the school environment must be more conducive to physical activity.¹⁹ Using a timer while children are using electronic devices may be a useful way to limit sedentary behavior. During school, teachers can be encouraged to schedule "activity breaks" each hour to get students moving around, which can actually improve cognition and students' ability to concentrate.^{1,19} In Mississippi schoolchildren, it has been shown that students with higher levels of physical fitness had fewer absences and higher math and language arts standardized test scores.³² Additionally, a small study (N = 35) by Engel and colleagues demonstrated that inserting a 6-minute high-intensity circuit training session during school on 4 days per week was enough to improve markers of functional strength.³³

Physical activity recommendations¹

Children, ages 3 to 5 years	<ul style="list-style-type: none"> • Should be physically active throughout the day with a variety of enjoyable recreational activities. • Ideal amount of daily physical activity is not clear but a target of about 3 hours per day including a combination of light, moderate, and vigorous activity is reasonable. • Incorporate bone-strengthening activities, such as jumping and skipping.
Children and adolescents, ages 6 to 17 years	<ul style="list-style-type: none"> • At least 60 minutes per day of moderate-to-vigorous activity, which should include: <ul style="list-style-type: none"> – vigorous-intensity aerobic activity on at least 3 days per week – muscle-strengthening exercises on at least 3 days per week – bone-strengthening exercises on at least 3 days per week. • Include a variety of enjoyable, age-appropriate activities.
Adults	<ul style="list-style-type: none"> • Simple recommendation: Move more, and sit less. • At least 150 minutes of moderate-intensity aerobic activity each week <i>or</i> at least 75 minutes of vigorous-intensity aerobic activity each week. • Engage in muscle-strengthening exercises at least 2 days per week. • Brief exercise bouts after meals can improve metabolic control. • Use of fitness trackers and a realistic step count goal may motivate patients.
Older adults	<ul style="list-style-type: none"> • Same volume recommendations for aerobic activity and muscle-strengthening exercises as the younger adult population. • Multicomponent physical activity with balance training should be incorporated to improve function and reduce risk of falls. • Tailor exercise intensity level and modality based on patient-specific conditions (such as cardiovascular or orthopedic conditions).

Limiting sedentary behaviors in adults. Like weekly screen-time notifications from cell phones, fitness trackers can be a very effective way to let adults know how long they spend in a stationary position. Patients can also use calendar reminders on their computers or alarms on their smartwatches to remind them to stand up, stretch, or take a walk. An additional advantage of fitness trackers is that some can be set to achieve an hourly step count (250 steps/hour). Another option for reducing prolonged sitting for adults in mostly sedentary jobs is to transition to a standing desk or even a treadmill/elliptical workstation. Although standing is technically still a sedentary activity, it is not associated with as low of a metabolic demand as sitting and, as a result, does not increase all-cause mortality risk to as great of a degree. A review published in the *Cochrane Database of Systematic Reviews* found that using a sit-stand desk can decrease sitting time by an average of 100 minutes per workday.³⁴ If someone chooses to use a standing desk at work, they should ideally make a slow transition to this change. Abrupt changes to a standing desk from those accustomed to prolonged sitting could result in orthopedic issues and increased fatigue. Ideally, sit-stand workstations are an excellent compromise, allowing employees to stand the majority of the day and

then adjust their desk to a seated position when they need a break.⁷ Standing desk users should have appropriate footwear and cushioning when standing, and the height of the desk should be adjusted to keep their shoulders, wrists, and neck in comfortable, ergonomic alignment. The Cochrane review highlights some workplace strategies to reduce sitting time along with systemic and workplace culture changes that can be incorporated by corporations to improve worker health.³⁴ It was also found that providing educational information on the dangers of sitting and/or counseling could be an effective intervention to reduce sitting time at work.³⁴

Limiting sedentary behaviors in older adults. An effective strategy for reducing sedentary behaviors in this age group is to create a culture of activity.¹ Developing habits of physical activity and planning nonsedentary activities are essential. Although solitary physically active hobbies such as gardening are beneficial, scheduling outings and walking activities with friends can increase accountability to stay active. As with all age groups, the allure of sedentary leisure time can be quite strong, so it is helpful to set alarms or reminders each hour to pause the TV or put down a book to then take a walk or do some chores around the house in order to break up that sedentary time.

■ Implications for practice

Physical activity for chronic disease prevention and management is vital across all age populations. NPs are in a unique position to provide physical activity recommendations to individuals and families that can further be incorporated into their day-to-day routines as a means of improving physical and mental health. It is important that NPs take the time to explain to patients the short- and long-term benefits of physical activity for health, as well as provide practical guidelines for achieving the necessary amounts of physical activity per week. Adherence to a program is always a challenge with any lifestyle intervention, but emphasizing the vital importance of physical activity and providing specific, practical, and manageable suggestions can significantly help patients make necessary lifestyle changes. NPs may benefit from consulting and receiving training from organizations such as the American College of Sports Medicine, to receive the most up-to-date information regarding physical activity guidelines. Additionally, NPs could receive training in providing recommendations for both traditional and nontraditional forms of physical activity so that they can best meet the varied needs of their patients. For example, not all patients will have access to a gym or gym equipment, so being able to provide free online resources or pamphlets that demonstrate body weight activities could be beneficial. If providing physical activity recommendations to patients seems daunting, then simply referring patients to a trusted personal trainer can provide them appropriate guidance, supervision, and accountability.

NPs also need to make their patients aware of the dangers of sedentary time. One of the largest contributors to sedentary time currently is screen time. While it is naive to expect children and adolescents to not sit during class time or adults to quit their desk jobs, if patients are not getting enough movement, NPs can provide alternatives to these behaviors that children, adolescents, and adults can engage in outside of school and working hours that might counteract the negative effects of sitting throughout the day. For example, enlighten families about screen time recommendations and encourage unstructured play or sports after school or a walk after dinner, as opposed to sitting and watching TV. For adults, the recommendation could be to find digital workout classes that can be completed conveniently from home in the evening hours. YouTube has many free workout resources. Often, individuals are reluctant to change behaviors when they feel as though

they do not have alternatives to their current behaviors. This is an area where an NP could play a vital role in the behavior-change process.

The following valuable resources can provide practical approaches for healthcare professionals to provide to patients to increase physical activity and reduce sedentary behaviors:

- Physical Activity Guidelines for Americans, 2nd edition: https://health.gov/sites/default/files/2019-09/Physical_Activity_Guidelines_2nd_edition.pdf
- American College of Sports Medicine: www.acsm.org.

Increasing physical activity time and decreasing sedentary behaviors is essential for obesity prevention and chronic disease management. Although the physical activity guidelines provide evidence-based recommendations for adequate levels of physical activity, the depth of this information may be too much for some patients in a brief office visit. In those instances, an NP could provide patients with the knowledge of the health benefits of physical activity and the simple advice to move more and sit less in order to motivate patients to adopt a more physically active lifestyle. The acute and long-term benefits of improving these behaviors are many, and NPs should encourage patients to make lifestyle changes that promote active and healthier lives. **NP**

REFERENCES

1. U.S. Department of Health and Human Services. *Physical Activity Guidelines for Americans, 2nd Edition*; 2018.
2. Colberg SR, Sigal RJ, Yardley JE, et al. Physical activity/exercise and diabetes: a position statement of the American Diabetes Association. *Diabetes Care*. 2016;39(11):2065-2079.
3. Carlson SA, Adams EK, Yang Z, Fulton JE. Percentage of deaths associated with inadequate physical activity in the United States. *Prev Chronic Dis*. 2018;15:E38.
4. Mandsager K, Harb S, Cremer P, Phelan D, Nissen SE, Jaber W. Association of cardiorespiratory fitness with long-term mortality among adults undergoing exercise treadmill testing. *JAMA Netw Open*. 2018;1(6):e183605.
5. McTiernan A, Friedenreich CM, Katzmarzyk PT, et al. Physical activity in cancer prevention and survival: a systematic review. *Med Sci Sports Exerc*. 2019;51(6):1252-1261.
6. Katzmarzyk PT, Powell KE, Jakicic JM, et al. Sedentary behavior and health: update from the 2018 Physical Activity Guidelines Advisory Committee. *Med Sci Sports Exerc*. 2019;51(6):1227-1241.
7. King AC, Whitt-Glover MC, Marquez DX, et al. Physical activity promotion: highlights from the 2018 Physical Activity Guidelines Advisory Committee Systematic Review. *Med Sci Sports Exerc*. 2019;51(6):1340-1353.
8. Piercy KL, Troiano RP, Ballard RM, et al. The physical activity guidelines for Americans. *JAMA*. 2018;320(19):2020-2028.
9. Chow L, Eberly LE, Austin E, et al. Fitness change effects on midlife metabolic outcomes. *Med Sci Sports Exerc*. 2015;47(5):967-973.
10. Kujala UM, Vaara JP, Kainulainen H, Vasankari T, Vaara E, Kyröläinen H. Associations of aerobic fitness and maximal muscular strength with metabolites in young men. *JAMA Netw Open*. 2019;2(8):e198265.
11. Mikus CR, Oberlin DJ, Libla JL, Taylor AM, Booth FW, Thyfault JP. Lowering physical activity impairs glycemic control in healthy volunteers. *Med Sci Sports Exerc*. 2012;44(2):225-231.
12. Du Y, Liu B, Sun Y, Snetelaar LG, Wallace RB, Bao W. Trends in adherence to the Physical Activity Guidelines for Americans for aerobic activity and

- time spent on sedentary behavior among US adults, 2007 to 2016. *JAMA Netw Open*. 2019;2(7):e197597.
13. LeBlanc ES, Patnode CD, Webber EM, Redmond N, Rushkin M, O'Connor EA. Behavioral and pharmacotherapy weight loss interventions to prevent obesity-related morbidity and mortality in adults: updated evidence report and systematic review for the US preventive services task force. *JAMA*. 2018;320(11):1172-1191.
 14. Kim B, Kim S. Influences of resistance versus aerobic exercise on physiological and physical fitness changes in previously inactive men with obesity: a prospective, single-blinded randomized controlled trial. *Diabetes Metab Syndr Obes*. 2020;13:267-276.
 15. Donnelly JE, Blair SN, Jakicic JM, et al. Appropriate physical activity intervention strategies for weight loss and prevention of weight regain for adults. *Med Sci Sports Exerc*. 2009;41(2):459-471.
 16. Ortega FB, Ruiz JR, Labayen I, Lavie CJ, Blair SN. The Fat but Fit paradox: what we know and don't know about it. *Br J Sports Med*. 2018;52(3):151-153.
 17. Ross R, Blair SN, Arena R, et al. Importance of assessing cardiorespiratory fitness in clinical practice: a case for fitness as a clinical vital sign: a scientific statement from the American Heart Association. *Circulation*. 2016;134(24):e653-e699.
 18. Telama R, Yang X, Leskinen E, et al. Tracking of physical activity from early childhood through youth into adulthood. *Med Sci Sports Exerc*. 2014;46(5):955-962.
 19. Foster C, Moore JB, Singletary CR, Skelton JA. Physical activity and family-based obesity treatment: a review of expert recommendations on physical activity in youth. *Clin Obes*. 2018;8(1):68-79.
 20. DiPietro L, Gribok A, Stevens MS, Hamm LF, Rumpel W. Three 15-min bouts of moderate postmeal walking significantly improves 24-h glycemic control in older people at risk for impaired glucose tolerance. *Diabetes Care*. 2013;36(10):3262-3268.
 21. Kim J, Yang G, Kim Y, Kim J, Ha J. AMPK activators: mechanisms of action and physiological activities. *Exp Mol Med*. 2016;48(4):e224.
 22. Fragala MS, Cadore EL, Dorgo S, et al. Resistance training for older adults: position statement from the National Strength and Conditioning Association. *J Strength Cond Res*. 2019;33(8):2019-2052.
 23. Wilburn JR, Bourquin J, Wysong A, Melby CL. Resistance exercise attenuates high-fructose, high-fat-induced postprandial lipemia. *Nutr Metab Insights*. 2015;8:29-35.
 24. Kraus WE, Janz KF, Powell KE, et al. Daily step counts for measuring physical activity exposure and its relation to health. *Med Sci Sports Exerc*. 2019;51(6):1206-1212.
 25. Qiu S, Cai X, Chen X, Yang B, Sun Z. Step counter use in type 2 diabetes: a meta-analysis of randomized controlled trials. *BMC Med*. 2014;12(1):36.
 26. Stamatakis E, Gale J, Bauman A, Ekelund U, Hamer M, Ding D. Sitting time, physical activity, and risk of mortality in adults. *J Am Coll Cardiol*. 2019;73(16):2062-2072.
 27. Matthews CE, Moore SC, Sampson J, et al. Mortality benefits for replacing sitting time with different physical activities. *Med Sci Sports Exerc*. 2015;47(9):1833-1840.
 28. Whitaker KM, Pereira MA, Jacobs DR Jr, Sidney S, Odegaard AO. Sedentary behavior, physical activity, and abdominal adipose tissue deposition. *Med Sci Sports Exerc*. 2017;49(3):450-458.
 29. Lavie CJ, Ozemek C, Carbone S, Katzmarzyk PT, Blair SN. Sedentary behavior, exercise, and cardiovascular health. *Circ Res*. 2019;124(5):799-815.
 30. Ekelund U, Steene-Johannessen J, Brown WJ, et al. Does physical activity attenuate, or even eliminate, the detrimental association of sitting time with mortality? A harmonised meta-analysis of data from more than 1 million men and women. *Lancet*. 2016;388(10051):1302-1310.
 31. Katzmarzyk P, Pate R. Physical activity and mortality: the potential impact of sitting. *Transl J Am Coll Sport Med*. 2017;2(6):32.
 32. Hudson GM, Alvarez J, Blom LC, Zhang L, Kolbo JR. The association between fitness and school test scores, attendance, and discipline among Mississippi students. *J Mississippi Assoc Heal Phys Educ Recreat Danc*. 2012;1(1):19-24.
 33. Engel FA, Wagner MO, Schelhorn F, et al. Classroom-based micro-sessions of functional high-intensity circuit training enhances functional strength but not cardiorespiratory fitness in school children—a feasibility study. *Front Public Health*. 2019;7:291.
 34. Shrestha N, Kukkonen-Harjula KT, Verbeek JH, Ijaz S, Hermans V, Pedisic Z. Workplace interventions for reducing sitting at work. *Cochrane Database Syst Rev*. 2018;2018(12):CD010912.

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The authors have disclosed no financial relationships related to this article.

DOI-10.1097/01.NPR.0000694708.74213.53

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