Reducing Sedentary Behavior and Increasing Physical Activity Among Low Active, Underserved Adults: A Staircase Approach

Scherezade K. Mama,1 Erica G. Soltero,2 and Rodney P. Joseph3

1Department of Health Disparities Research, Division of Cancer Prevention and Population Sciences, The University of Texas MD Anderson Cancer Center, Houston, TX, USA; 2USDA/ARS Children’s Nutrition Research Center, Baylor College of Medicine, Houston, TX, USA; 3Center for Health Promotion and Disease Prevention, College of Nursing and Health Innovation, Arizona State University, Phoenix, AZ, USA

The Physical Activity Guidelines for Americans recommend that for substantial health benefits, adults should achieve at least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity aerobic activity each week (or an equivalent combination) and engage in muscle-strengthening activities that target the major muscle groups on 2 or more days per week.1 The health benefits associated with participating in regular physical activity (PA) at these levels are substantial and include lower all-cause and cardiovascular disease mortality, as well as reduced risk of cardiovascular diseases, type 2 diabetes, and cancers of the bladder, breast, colon, endometrium, esophagus, kidney, lung, and stomach.1,2 Despite robust scientific evidence supporting these guidelines,1,2 less than half (46.9%) of adults meet aerobic PA guidelines, and only 24.2% of adults meet overall guidelines for aerobic and muscle-strengthening activities.3

Women and non-Hispanic Black and Hispanic adults are less likely to meet PA guidelines compared with men and non-Hispanic White adults.3 Only 20.4% of women meet PA guidelines for aerobic and muscle-strengthening activities compared with 28.3% of men. Among men, only 29.7% of non-Hispanic Black and 23.5% of Hispanic adults meet PA guidelines compared with 30.5% of non-Hispanic White adults. Similarly, among women, only 16.5% of non-Hispanic Black and 18.0% of Hispanic adults meet PA guidelines compared to 24.3% of non-Hispanic White adults.3 Furthermore, non-Hispanic Black and Hispanic adults report the highest prevalence of physical inactivity outside of work (ie, 30.0% of non-Hispanic Black and 32.1% of Hispanic adults report doing no PA outside of their regular job).4 Disparities in PA across sex and race/ethnic subgroups contribute to disparities in chronic diseases and health outcomes, as shown in Table 1.

Physical inactivity and the strong evidence linking low levels of PA with multiple chronic diseases and other health conditions highlight the need for effective programs to promote regular moderate to vigorous PA (MVPA) and reduce inactivity among non-Hispanic Black and Hispanic adults. However, most evidence-based PA interventions have had limited success among these subgroups.10–14 and even fewer have led to sustained high levels of MVPA.15 This may be due to the unrealistic goals or targets (perceived or actual) of most PA interventions. PA interventions typically enroll adults who are considered “inactive” or perform little to no MVPA and aim to increase MVPA to 150+ minutes per week to meet national guidelines. The limited broad-scale success of PA interventions among non-Hispanic Black and Hispanic adults underscores the need for researchers and public health professionals to critically examine common approaches for promoting MVPA and consider new intervention targets to enhance the success of intervention efforts.

A promising, yet often understudied, method to promoting MVPA includes a staircase approach (Figure 1). The staircase leverages an important, yet overlooked, component of the national PA guidelines: “move more, sit less.” This message is based on scientific evidence demonstrating that the greatest health benefits from PA are seen among physically inactive individuals who become more active, even if the increase is small, regardless of intensity level.2,16 The staircase approach starts with an emphasis on reducing sedentary time, then focuses on replacing sedentary behavior with movement and light-intensity PA before progressing to increasing MVPA to meet PA guidelines.17 In this figure, the first step focuses on breaking up sitting time and sedentary activities with light-intensity activities, such as slow walking, gentle yoga, or standing while folding laundry. During the second step, the focus shifts to slowly increasing MVPA. This may include brisk walking, dancing, or yardwork that requires moderate effort or greater and some resistance training, such as lifting light weights or using a resistance band. For the third step, the focus is to do enough MVPA to meet PA guidelines for aerobic and muscle-strengthening activities.

An important distinction between the staircase approach and the more traditional elevator approach, which focuses on immediately moving people from inactive to achieving the guidelines, is the inclusion of small transitional or manageable steps.17,18 Integrating multiple short bouts of light PA can lead to increased energy expenditure comparable to structured leisure-time exercise that may lead to similar health benefits.19 Likewise, from a theoretical perspective, this approach aligns with tenets underpinning numerous behavior change concepts and theories (eg, self-efficacy, self-regulation, control beliefs). In addition to providing more realistic intervention targets, “move more, sit less” may also be a more readily receivable and actionable message for participants.20 As a result, this approach may build capacity for meeting and sustaining MVPA recommendations in the future, which would have a substantial impact on health.

The staircase approach may be particularly relevant to PA promotion among underserved groups, such as non-Hispanic Black and Hispanic men and women, rural adults, older adults, and so on, who are inactive or insufficiently active, have lower access to resources, and report greater barriers to PA participation. Shifting the initial focus of intervention efforts from increasing MVPA to...
replacing time spent sitting with time spent moving prior encouraging MVPA is an innovative strategy to reducing health disparities related to physical inactivity and promoting health equity. Furthermore, this approach lends well to home and community settings, increasing sustainability and promoting long-term maintenance of behavior change.

In summary, we urge the PA community to consider new strategies, such as the staircase approach, that may be more appropriate for promoting PA in physically inactive, underserved groups. Researchers should also consider broader outcomes that include, but move beyond MVPA such as light-intensity PA, energy expenditure, and increased physical functioning, as these outcomes can reflect an increase in movement across the staircase.6 Adapting this approach to meet participants where they are in terms of both their activity level and goals is a key first step to building capacity for PA across the lifespan and promoting health equity in those who have yet to benefit from traditional approaches to increase PA.

Acknowledgments

Mama is partially supported by a career development award from the National Cancer Institute (K07 CA222335). Soltero is partially supported by a career development award from the National Institute of Diabetes and Digestive and Kidney Diseases (K01 DK131287). Joseph is partially supported by awards from the National Heart, Lung, and Blood Institute (R01 HL168170) and the National Institute on Aging (R61 AG078089).

References


