Recent Trends in Adherence of Physical Activity and Sedentary Behavior—We Need to Move More and Sit Less

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Du and colleagues1 nicely summarized the current status and secular trends in aerobic physical activity and sedentary behavior using self-reported prevalence data from the National Health and Nutrition Examination Survey (NHANES) from 2007 to 2016. Their article examines trends from the first release of the Physical Activity Guidelines for Americans (PAG)2 and provides insight into adherence to the PAG in the 8 years since its release. This study is unique in that it assessed physical activity from leisure-time, work-related, and transportation-related activity; many similar analyses only evaluate leisure-time physical activity. Combining these components led to an adherence rate of meeting the aerobic physical activity guideline of 65.2%, which is higher than other estimates of 54.1% from the 2017 National Health Interview Survey3 and 44.6% from 2015-2016 NHANES leisure-time physical activity data.4 Although overall population data showed a stable trend of low rates of physical activity, several populations showed improvements. Females, non-Hispanic black individuals, nonsmokers, and individuals who were not underweight or overweight had increased adherence to the PAG. Possible reasons for increased physical activity in these populations was not discussed in the article.

Du et al1 reported, however, that most populations had increased rates of sedentary behavior during the 8 years studied. The greatest increases were among people with an educational level of college or above and individuals with obesity. Reasons for these trends were not explored but are consistent with the recent publication by Yang et al,5 who found an increase in sedentary behavior by 1 hour per day using 2001 to 2016 NHANES data compared with the 0.8-hour per day increase noted by Du et al.1 Taken together, these data suggest a significant increase in sedentary behavior levels in recent years.

This article1 and others assessing adherence to the PAG focused exclusively on the aerobic component and did not include the muscle-strengthening component. The quantitative key guideline for adults, which is unchanged from 2008, states that “adults need at least 150 minutes (2 hours and 30 minutes) to 300 minutes (5 hours) a week of moderate-intensity, or 75 minutes (1 hour and 15 minutes) to 150 minutes (2 hours and 30 minutes) a week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity aerobic activity and 2 or more days a week of muscle-strengthening activities of moderate or greater intensity.”6(p 56)

Whether a study includes both components is important to note because overall adherence to the PAG tends to be markedly lower because of lower rates of muscle-strengthening physical activity. For example, with use of the National Health Interview Survey data for adults in 2017, which was used for the Healthy People 2020 objectives, 54.1% met the aerobic component, 27.7% met the muscle-strengthening component, and only 24.7% met the aerobic and muscle-strengthening component.3

This is a timely topic because research in sedentary behavior has expanded greatly. The 2018 Physical Activity Guidelines Advisory Committee included a subcommittee on sedentary behavior and concluded that there was strong or moderate evidence that sedentary behavior is associated with increased risk of all-cause mortality, cardiovascular disease mortality, cardiovascular disease, type 2 diabetes, and colon, endometrial, and lung cancers.7 The advisory committee specifically looked for evidence to make a quantifiable recommendation for sedentary behavior and concluded that it was not possible to determine a dose-response relationship for various combinations of sedentary behavior and moderate to vigorous physical activity and health outcomes. Instead, the
committee highlighted how moderate to vigorous physical activity could counter the negative health outcomes of sedentary behavior.\textsuperscript{7} In addition, there are benefits attained by swapping sedentary behavior for light-intensity physical activity.\textsuperscript{7,8}

Du et al\textsuperscript{1} reported that adherence to the PAG has not changed since the first edition of the PAG but that sedentary behavior has increased, thus necessitating nationwide efforts to promote physical activity and reduce sedentary time. This sentiment is reflected in one of the key guidelines for adults: “Adults should move more and sit less throughout the day.”\textsuperscript{6,56} This key message and others from the PAG are incorporated in the Move Your Way communications campaign, which encourages Americans to move more and to sit less and through a variety of publicly available resources.\textsuperscript{9}

Although the study by Du et al\textsuperscript{1} was focused on adherence to the PAG, it is important to remember that the PAG presents public health targets. Some physical activity benefits, such as reduced blood pressure, decreased anxiety, and improved sleep outcomes, begin after 1 bout of exercise, whereas others are achieved by sustained engagement in physical activity.\textsuperscript{6,10} In addition, many benefits begin to accrue below the target of 150 minutes.\textsuperscript{6,10} Ideally, people should meet the PAG targets to obtain the most of the health benefits, but considering that currently 25% of adults do no leisure-time physical activity,\textsuperscript{3} any increase in physical activity is good.

Analyses such as that by Du et al\textsuperscript{1} provide a benchmark and track adherence trends. These estimates also provide justification for maintaining a focus on physical activity because so few Americans get the physical activity they need to stay healthy. The second edition of the PAG\textsuperscript{6,10} removed the 10-minute bout requirement, which is currently used as a minimum threshold for physical activity in many surveillance systems. As those systems are updated, it will be interesting to monitor trends in physical activity adherence using self-reported and device-based measurement.

ARTICLE INFORMATION
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