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If Exercise Snacks Are Beneficial: It's Time to Reevaluate Physical Activity Questionnaires

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Abstract

We argue that if “exercise snacks” are truly beneficial, current physical activity questionnaires need to be reconsidered. Questionnaires remain the most widely used tools for assessing physical activity in large-scale epidemiological studies because they are inexpensive, feasible, and easy to administer. However, many widely used instruments, such as the International Physical Activity Questionnaire and the Global Physical Activity Questionnaire, only record activities that last at least 10 consecutive minutes, and some tools apply even higher bout-duration thresholds. These conventions were consistent with earlier physical activity guidelines and simplified recall for respondents, but they are increasingly misaligned with contemporary evidence and lifestyles. Recent guidelines from the World Health Organization and the United States have removed the requirement that activity be accumulated in bouts of ≥ 10 minutes. At the same time, emerging experimental and epidemiological research indicates that very brief, fragmented bouts of activity—sometimes lasting only seconds to a few minutes—can meaningfully improve cardiometabolic markers, interrupt sedentary time, and are associated with lower mortality risk. This commentary highlights the risk that traditional questionnaires systematically undercount these “exercise snacks” and thereby underestimate both true activity levels and the health potential of fragmented, high-intensity or lifestyle-embedded movements. We propose that existing questionnaires be reevaluated and potentially revised to remove or lower bout-duration thresholds, and that new tools be developed specifically to capture fragmented activity patterns (e.g., through diaries or brief-event recording). Future validation studies should explicitly test how these revised measures relate to health outcomes, thereby clarifying the role of fragmented physical activity in public health surveillance and guideline development.

Keywords: exercise; physical activity; health; active living; sedentary

1. Main Text

Among various methods for measuring physical activity, questionnaires are the most commonly used tools, second only to accelerometers. Particularly in large-scale studies with extensive sample sizes and long-term follow-ups, questionnaires offer clear advantages due to their ease of use, low cost, and practicality. For example, large observational studies such as the UK Biobank, the National Health and Nutrition Examination Survey (NHANES) in the United States, and the China Health and Retirement Longitudinal Study (CHARLS) all rely on questionnaire items to assess physical activity levels. However, questionnaire-based measurements also have certain limitations, with the most prominent being self-report bias. This paper aims to highlight another significant limitation: the issue of “exercise duration per bout” in physical activity measurement.

Many physical activity questionnaires impose time constraints when measuring activity duration. For instance, both the Global Physical Activity Questionnaire (GPAQ) and the International

Physical Activity Questionnaire (IPAQ) specify that certain activities must be performed for "at least 10 continuous minutes" in order to be considered. If this duration requirement is not met, further specific measurements are not performed. Some scales even set this threshold as high as 20-30 minutes (Smith et al., 2005).

On the one hand, this time requirement aligns with historical physical activity guidelines (e.g., the 2008 U.S. Physical Activity Guidelines). On the other hand, it simplifies the recall and reporting process for participants. However, with the ongoing evolution of modern lifestyles—characterized by increasing busyness and faster-paced routines—many behaviors have become fragmented, and physical activity is no exception. Traditional physical activity questionnaires may fail to adequately capture these fragmented, yet beneficial, forms of exercise (Stamatakis et al., 2019).

In fact, some updated guidelines (e.g., the World Health Organization's 2020 Guidelines on Physical Activity and Sedentary Behaviour and the second edition of the U.S. Physical Activity Guidelines) have removed the minimum duration requirement of "at least 10 continuous minutes of activity." However, many existing physical activity measurement tools still retain this time constraint. While some studies suggest that this change may have minimal impact on overall estimates of physical activity (Ussery et al., 2020), we argue that fragmented physical activities—especially those that involve very short durations but considerable intensity—should not be overlooked, as they may offer unique and critical health benefits. As sedentary behavior and its associated health risks gain increasing attention in the information age, these brief bouts of physical activity, which can interrupt sedentary time, are becoming more important.

A growing body of research suggests that brief bouts of physical activity (<10 minutes), even in the form of short bursts of exercise, can significantly improve various health markers, including cardiovascular and metabolic health (Gibala & Little, 2020; Yin et al., 2023). Moreover, when these short-duration activities are performed multiple times throughout the day, they can sometimes outperform traditional continuous exercise of equivalent duration in improving health markers such as blood glucose and cardiovascular health (Loh et al., 2020). This fragmented, on-the-go exercise model may be better suited to modern lifestyles, as the lack of structured exercise time is considered a major barrier to physical activity participation (Kimm et al., 2006; Trost et al., 2002). Recent epidemiological studies also show that high-intensity physical activities of even 1-minute duration, when performed multiple times throughout the day (referred to as VILPA—Very Brief Intermittent Low-Volume Physical Activity), are associated with a significant reduction in all-cause mortality risk (Stamatakis et al., 2022). Therefore, short durations and fragmented bouts of activity should not be "ignored" by physical activity assessment tools. On the contrary, they may represent an emerging, more promising physical activity accumulation model that helps to break up sedentary behavior, enhance overall physical activity levels, and promote exercise participation.

In light of this, we suggest that current physical activity measurement tools be reevaluated, considering the removal of time constraints or the adjustment of these thresholds to shorter durations. These revised tools should undergo performance evaluations, focusing on the relationship between the measurement outcomes and health, in order to validate the importance of capturing fragmented physical activity. Additionally, we propose the development of specific measurement approaches for fragmented physical activity (e.g., using diary methods to track the frequency of ultra-short bouts of physical activity), to further investigate the health benefits of such activities. This would lay the groundwork for integrating the measurement of fragmented physical activity into traditional physical activity assessment tools in the future.

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