

The Urgent Need to Sit Less and Move More During the COVID-19 Pandemic

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The coronavirus disease-2019 (COVID-19) pandemic containment and mitigation strategies may lead to excessive physical inactivity and sedentary behavior, drastically impacting cardiorespiratory fitness and overall health. It is urgent to safely find ways to sit less and move more.

Key Words: cardiorespiratory fitness • coronavirus • physical activity • sedentary time

As the coronavirus disease-2019 (COVID-19) pandemic continues to spread and have a global impact, a combination of critically important containment and mitigation strategies have been implemented worldwide, such as closure of schools and business, shelter in place, and social distancing strategies.

While these strategies are imperative to public health, they may lead to important unintended consequences for health, which include excessive physical inactivity (PI) and sedentary behavior (SB). The activity restrictions and routine disruption imposed by the COVID-19 pandemic have already led to concern that individuals and families are reducing their exercise habits and daily physical activity (PA) in different contexts (occupational, transportation, and leisure), while increasing their sedentary activities (increased time using mobile devices, television, etc.).¹ In fact, evidence has already emerged to support these concerns—demonstrating a significant reduction in PA, paralleled by a significant increase in SB, during the COVID-19 pandemic.^{2,3} Physical inactivity and SB are among the leading modifiable risk factors for cardiovascular disease and all-cause mortality, and are contributing causes to ≥ 35 unhealthy conditions.⁴ Moreover, while there is no current evidence of a direct protective effect of PA on severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection, the overwhelming body of established evidence builds a strong rationale for promoting PA during the COVID-19 pandemic.⁵ Specifically, among the countless benefits of avoiding excessive PI and SB, the positive effects of exercise on the immune system are particularly noteworthy during the COVID-19 pandemic,⁶ in addition to preventing/managing chronic conditions, reducing anxiety/

depression risk, and improving sleep and quality of life. This is especially true for patients with cardiopulmonary diseases,^{7,8} as their access to rehabilitation programs has been compromised as part of the response to the pandemic.

If in fact the world is moving much less and sitting much more during the COVID-19 pandemic, the timing could not be any worse, given PI and SB have already themselves been defined as a pandemic with catastrophic health consequences. The COVID-19 pandemic may be creating an “imposed physical inactivity model,” which has been used to demonstrate the impact of PI and SB on human health, whereby individuals experimentally transition from high/normal to an imposed low daily ambulatory PA and/or increased sedentary time.⁹ Evidence has shown that, among a group of young healthy men, a reduction of their normal daily steps from approximately 6000 to 10 000 to approximately 1 400 steps, during only 3 to 5 d, was enough to negatively alter insulin sensitivity, glycemic control, and endothelial function. Longer duration (2–3 wk) resulted in more robust and clinically significant metabolic and functional impairments, with a 7% reduction in maximal oxygen consumption (Vo_{2max}), 17% reduction in peripheral insulin sensitivity, attenuation of post-prandial lipid metabolism, 1.2-kg decrease in total fat-free mass (0.5 kg of it in the leg musculature), and a 7% increase in visceral adipose tissue.⁹ The rapidity by which Vo_{2max} , a gold standard measure of cardiorespiratory fitness (CRF),¹⁰ declines during “imposed physical inactivity models” is particularly disconcerting. Recently, the American Heart Association referred to CRF as a “clinical vital sign, potentially a stronger predictor of mortality than established risk factors such as smoking, hypertension, high cholesterol, and type 2 diabetes mellitus.”¹¹ Simply stated, individuals with a higher CRF, regardless of other health characteristics, have a far better health trajectory while those with a low CRF do far worse. As such, maintaining CRF throughout the lifespan is of paramount importance.¹² Moreover, a 7% reduction in Vo_{2max} found after 2–3 wk of reduced physical activity, which would be expected to occur, under normal conditions, after only 10 yr of aging, is particularly troubling.¹³ In this context, there is significant concern over the long-term consequences of a significant and lasting global increase in PI and SB leading to a decline in CRF post-COVID-19.

Efforts are underway to promote PA during this time. Both the World Health Organization and the American College of Sports Medicine have provided useful and reliable resources to help individuals and families to avoid excessive PI and SB, and to safely maintain their PA.^{14,15} During (and after) the COVID-19 pandemic, it is imperative, perhaps now more than ever, that the world finds a way to sit less and move more.

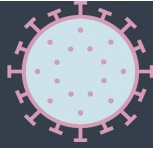
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The authors declare no conflicts of interest.

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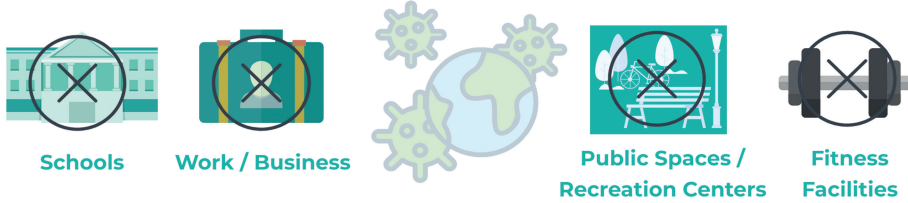
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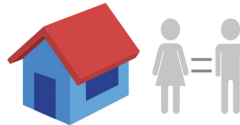
COVID-19: Sit Less and Move More

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Containment and Mitigation Strategies

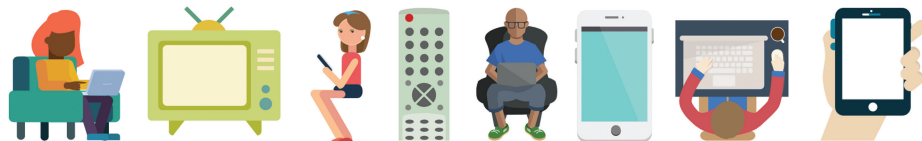


HOME ISOLATION



SOCIAL DISTANCING

Physical Inactivity and Sedentary Behavior



Reduction from 6,000 ~ 10,000 to ~1,500 steps

Negative Health Effects After Only 2-3 Weeks



Staying Physically Active at Home



Sit Less and Move More!

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Figure. Illustrative summary of the potential effects of the coronavirus disease-2019 (COVID-19) pandemic on physical inactivity (PI) and sedentary behavior (SB), its negative health consequences, and a call to sit less and move more. This figure is available in color online (www.jcrpjournal.com).

In summary:

- The COVID-19 pandemic may lead to important unintended consequences for health, such as excessive PI and SB.
- Physical inactivity and SB are leading health risk factors, and the current “imposed physical inactivity” can have a drastic impact on CRF and overall health.
- Sitting less and moving more is of paramount importance, now more than ever (Figure).

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