

The Benefits and Challenges of Staying Physically Active during the COVID-19 Pandemic

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Abstract

Engagement in physical activity improves one's physical and mental health. Moreover, regular physical activity can also boost immune function, which has become of great importance during COVID-19. Yet, physical activity levels have decreased globally during the COVID-19 pandemic while sedentary behaviour has increased. Despite the challenges of remaining physically active during the pandemic, the changes to our daily routines have led to more online physical activity resources becoming available. The increase in online fitness resources seems promising for continued engagement post COVID-19. Here, we outline the importance of regular movement, in any form, during COVID-19 and make recommendations for how to achieve this through digital fitness initiatives.

This commentary explores the health benefits of physical activity (PA), current PA levels, available digital PA resources, and barriers to PA engagement during the 2019 coronavirus disease (COVID-19) pandemic. Engagement in regular PA, defined as any bodily movement that is produced by skeletal muscles resulting in energy expenditure,¹ has been well-documented to impart a myriad of benefits to one's physical and psychological health.² Notable benefits include improved cardiovascular function, increased muscle strength, and decreased depression and anxiety levels.² There is also evidence to suggest that exercise can strengthen one's immune system by increasing blood flow, reducing stress and cellular inflammation, and strengthening antibodies (i.e., blood proteins that fight foreign substances in the body).³ This is particularly important during COVID-19, especially for populations that are more vulnerable to the disease including older adults and immunocompromised individuals.³ Moreover, regular PA has been shown to reduce the risk of at least 25 chronic medical diseases (e.g., obesity, chronic obstructive pulmonary disease),² many of which are associated with greater health complications if infected by the COVID-19 virus.⁴ On the contrary, a lack of PA has been shown to lead to bodily dysfunction, including muscle protein degradation (i.e., cell dysregulation) and atrophy, which can be evident after only a

few days of no PA.⁵ Furthermore, physical inactivity is a major risk factor for cardiovascular disease and other chronic illnesses associated with premature death. Recently, the Canadian Society for Exercise Physiology (CSEP) published 24-hour movement guidelines which emphasize the importance of daily movement behaviours for all ages. According to their recommendations, adults aged 18+ should engage in 150 minutes of moderate-to-vigorous (i.e., aerobic) PA per week, as well as muscle strengthening exercises targeting major muscle groups at least twice per week to optimize health benefits.⁷ Moderate PA is defined as activity that uses 3-6 metabolic equivalents (METs; an objective measure of the rate at which a person expends energy relative to their mass) and includes activities such as jogging or cycling; vigorous PA uses greater than 6 METs and includes activities such as sprinting and stair climbing; light PA uses between 1.6 and 2.9 METs and includes walking slowly at a regular pace.⁸ Importantly, the CSEP guidelines have been updated to include recommendations surrounding daily sedentary behaviour (SB), defined as any waking behaviour characterized by an energy expenditure less than or equal to 1.5 METs in a sitting, lying or reclining posture.^{7,9} Examples of common sedentary behaviours include sitting while watching television, driving a car and working at a computer desk. Studies have shown that sedentary behaviour is

associated with a variety of adverse health outcomes, including all-cause mortality, that are independent of PA level.¹⁰ As such, CSEP's movement guidelines suggest that, in addition to engaging in regular aerobic and muscle strengthening exercises, adults should limit SB time to 8 hours or less per day as well as break up long periods of sitting as often as possible (e.g., every 30 minutes).⁷

The COVID-19 pandemic has resulted in numerous changes to daily life, including community-wide lockdowns and "stay-at-home orders" that have affected PA levels.¹¹ In most cases, these restrictions have led to a decrease in daily movement and an increase in SB¹² as a result of closing gyms, restricting sports activities and increasing time spent indoors. In turn, this has resulted in downstream reductions to incidental movement behaviours typically accrued when going to school, work and other social activities.¹³ Fitbit data scientists found that countries around the world were experiencing a 7% to 38% decline in step counts at the onset of the pandemic in March 2020, when comparing data from the previous year (i.e., pre-pandemic).¹⁴ Similarly, one study found an 18.2% decrease in general PA levels (measured in MET minutes per week) in adults as a result of the COVID-19 lockdown.¹⁵ In fact, the majority of studies that have compared PA levels before and during COVID-19 have found reduced PA levels and increased SB during the pandemic, and this appears to hold true across all populations.¹²

Given the strong evidence of the health benefits of PA, coupled with a reduction in PA levels during COVID-19, one of the largest health priorities during the pandemic has been to make PA resources accessible. Despite the obvious barriers to engaging in PA at this time, one silver lining of the pandemic has been the introduction of more digitally available PA resources including PA apps and online fitness classes or training.¹⁶ Yang & Koenigstorfer¹⁵ found that the use of digital-based initiatives (PA apps) during COVID-19 was associated with greater PA levels during lockdown, after controlling for pre-lockdown fitness levels and intention to be physically active. In this study, the use of gamification-related features (i.e., game design elements including points and levels) was particularly beneficial to attracting users and increasing PA levels.¹⁵ Evidently, mobile health technology may help buffer the

decline in PA that has occurred during the pandemic.¹⁵

One of the largest benefits of digital PA resources during COVID-19 is their accessibility. For example, online classes and apps are frequently being offered free of charge during the pandemic and can be tailored to one's needs. Nationally-known gyms and organizations are now offering instructor-led online fitness classes (that were not previously offered pre-pandemic) at no cost, many of which require no at-home equipment or suggest ways in which equipment can be substituted with everyday household supplies (e.g., using water jugs instead of light dumbbells to add resistance to bodily movements). Nike Training Club has waived their monthly fee for premium service indefinitely, which offers yoga, cardio and targeted running training programs, as well as nutrition and wellness advice.¹⁷ An additional benefit to online PA resources is the opportunity to connect with others, far and wide, digitally. For example, Strava, an internet service for tracking PA, is an excellent tool for sharing activities with others and joining public PA challenges. Research has shown that social support, delivered through online PA resources, increases one's feelings of confidence and competence in their ability to be physically active, which in turn increases PA engagement.¹⁸ However, it is important to note that these digital resources may not be available to all citizens (e.g., those with lower socioeconomic status (SES) who may not have internet or smartphone access). Future research should assess how SES correlates to PA levels during COVID-19, and how PA resources may be improved to meet the specific needs of those with lower SES.

In conclusion, there are numerous benefits to engaging in regular PA during the pandemic, including strengthening the immune system and preventing comorbidities that may worsen COVID-19 outcomes. As we continue to face the challenges of being physically active during COVID-19, it is important to emphasize that any amount and type of movement can have significant health benefits. For example, light occupational and recreational movement, as well as movement acquired through performing household and everyday tasks, can help increase blood flow and improve joint and muscle function.¹⁹ Moreover, targeted strategies for reducing sedentary behaviour are needed now more than ever, and are often overlooked. Public health

strategies should focus on educating the public on the various PA resources available to them during the pandemic, including new and extended digital-based initiatives. Importantly, increased access to digital resources will continue to be helpful after COVID-19 is eradicated, particularly for those who may face barriers to accessing fitness facilities. Acknowledging that our future PA ‘normalcy’ may look different than it has previously, it is important that we as a society continue to support one another as we continue to find creative ways to be physically active during these ever-changing times. Finally, future research should examine COVID-19 outcomes based on PA levels, as well as assess the utility and effectiveness of currently offered PA resources to determine how we may be able to improve them for similar future circumstances.

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