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### **Physical Activity Can Be Helpful in the Coronavirus Pandemic**

Exercising is probably not top of mind as we struggle with how to protect ourselves, our families, and our communities during the COVID-19 pandemic. Perhaps it should be, because physical activity can be a valuable tool for controlling COVID-19 infections and maintaining quality of life.

Physical activity is one of the most powerful forces for good health. Physical activity helps prevent and/or treat many physical and mental health conditions by improving functioning of numerous physiological systems. (Powell et al., 2018) In this piece we explain how harnessing the salutogenic power of physical activity could help ease the consequences of the coronavirus pandemic in four ways.

First, physical activity has potential to reduce the severity of COVID-19 infections. This is related to what happens in the lungs during an infection. The immune system detects the virus invader in the lungs and attacks it. The conflict between the virus and immune cells creates inflammation. That inflammation causes damage to lung tissue that interferes with breathing and can become severe enough to require medical interventions, such as mechanical ventilators.

How is this relevant to physical activity? When you are active, muscles produce compounds that improve functioning of the immune system and reduce inflammation. (Hojman, 2017) Thus, physical activity strengthens the two biological processes that react to the infection. Although studies of the effects of exercise have not been conducted with COVID-19 patients, the effects of exercise on immunity, inflammation, (Campbell & Turner, 2018; Hojman, 2017; Jones & Davison, 2019; Lee et al., 2019; Meneses-Echávez et al., 2016; Miles et al., 2019) and viral respiratory infections (Nieman & Wentz, 2019) are well documented. Because muscles make up 30-40% of body weight, they can be a powerful ally in fighting the impact of infection, but only when the muscles are being used. Moderate intensity physical activity, like walking, has the best impact, but extreme vigorous exercise, like running a marathon, temporarily reduces immune function. (Nieman & Wentz, 2019) The potential for increased physical activity to reduce the number of infected people who require hospitalization and use of ventilators could help reduce the extent to which health care systems become overwhelmed by cases of severe infection.

Second, physical activity is effective for both preventing and treating heart diseases, diabetes, and eight cancers, (Powell et al., 2019) all of which increase risk of severe illness and death among those infected with the coronavirus. Though physical activity is widely recommended by health authorities, efforts to promote active lifestyles are minimal. (Reis et al., 2016) It makes sense now to encourage people, especially those with chronic conditions, to be moderately active prior to being infected, to reduce severity of illness after infection. Because physical activity has immediate effects on immune functioning and inflammation (Hojman, 2017), similar to taking a medication daily, people can reduce their risk of severe viral infections and their risk from multiple chronic diseases by simply taking a walk every day. It is not too late in the pandemic for people to benefit from modest increases in their physical activity.

Third, symptoms of stress will increase as the pandemic continues, due to health threats, job loss, reduced income, and isolation from social contact. Fortunately, being physically active has important mental health benefits, and encouraging people to be active could help many cope with ongoing stress and avoid psychological ill-health. Each session of physical activity reduces symptoms of depression and anxiety, (Basso et al., 2017) so being active every day can be a partial antidote to the stress of the pandemic. For people already feeling distress, being active is as effective as medications and psychotherapy. (Powell et al., 2019) The most common physical

activity is walking, which is free, accessible to most people of all ages, (CDC, 2018) and lends itself well to maintaining social distancing. (CDC, 2018)

Fourth, the body's response to psychological stress creates imbalances between cortisol and other hormones that negatively affect the immune system and inflammation. Thus, psychological stress affects the underlying biological processes of COVID-19, but restoring cortisol balance is another mechanism by which physical activity benefits immunity and inflammation. The most effective strategies for improving cortisol balance are physical activity and stress management. (Adam et al., 2017) Because older people have disrupted cortisol physiology and weaker immune systems, physical activity may be particularly important for this large population at high risk for COVID-19.

### **Action is Needed to Increase Physical Activity During the Coronavirus Pandemic**

The most important actions now are to reduce spread of the coronavirus through social distancing, frequent hand washing, avoiding touching the face. But, due to its multiple benefits, physical activity should not be an afterthought during this pandemic. Being active should be a key recommendation. People need to know about actions they can take themselves to help reduce the risk of severe infections and stressful reactions to the pandemic. In the US, only 19% of women, 26% of men, and 20% of adolescents meet physical activity guidelines (Giroir & Wright, 2018), so the majority of Americans are increasing their risk for many diseases through inactivity.

We recommend immediately beginning studies on the impact of regular physical activity on the severity of illness among people infected by the coronavirus. One important study would be to assess physical activity at the time of COVID-19 testing, then follow-up patients to determine whether activity reduces severity of the infection and enhances survival. But action does not need to wait for a study. Physical activity is already almost universally recommended, and there is much evidence that physical activity could contribute to both reducing the severity of COVID-19 illness and enhancing quality of life before and after infection. What is missing is a concerted effort to implement some of the many evidence-based interventions. (King et al., 2018)

We have been encouraged by media stories and online posts from citizens encouraging people to be active during the current crisis. (Koren 2020) We are pleased that, so far, exercising has been encouraged as part of orders for sheltering in place. But the potential for physical activity to reduce the severity of COVID-19 infection has not been explained to Americans. And closures of parks, trails, gyms, and beaches make it more difficult for people to be active. Places for activity should be retained as much as possible, but it may be necessary to monitor popular outdoor places to ensure people maintain safe social distancing. Any kind of enjoyable moderate activity, indoors or outdoors, is great for mind and body. But going for a walk outdoors can be a high point of the day for millions that helps us get through this pandemic while preserving as much quality of life as possible.

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### **Biographies**

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