

Exercise and COVID-19 as an Infectious Disease

Dear Editor

The world is currently in the grip of an infectious disease called “Coronavirus disease 2019 (COVID-19)”. The incidence of this infectious contagion is on the rise around the world and has been classified as a pandemic. COVID-19 was first identified in Wuhan, China, in late 2019. By June 15, 2020, over 6,998,000 cases had been reported in more than 213 countries and territories, resulting in more than 435 000 deaths. More than 4,129,000 patients have recovered.¹ Common symptoms include fever, cough, fatigue, muscle pain, diarrhea, sore throat, and shortness of breath.¹

The high prevalence and mortality of COVID-19 have raised public concern about exercise. The evidence available for exercise and its association with upper respiratory tract infection and various types of influenza suggests that unaccustomed strenuous or prolonged exercise during exposure to viral infections can lead to the suppression of immune parameters, while moderate-intensity exercise reduces inflammation and improves immune function.² Several epidemiological studies have shown that regular physical activity is associated with reduced mortality from influenza and pneumonia.³ Animal studies have also demonstrated that moderate-intensity exercise (chronic) can attenuate the activity of the virus by reducing the inflammatory cytokines and chemokines. Further, moderate-intensity exercise (acute) has been reported to inhibit the early stages of infection.⁴ Research shows that in elderly people, either moderate or intense activity is associated with stronger and longstanding antibody responses to the influenza vaccine.⁵ There is evidence that in patients with human immunodeficiency virus (HIV), exercise can improve immune function and cardiovascular health.^{6, 7}

Therefore, considering the available knowledge and comparing the signs and/or symptoms of COVID-19 with some types of influenza such as H1N1, H3N2, and H3N3, there are general recommendations for exercise during the pandemic.

It is reasonable to restrict heavy exercise at this stage since based on the open window hypothesis, it may increase susceptibility to infection (Figure 1).³

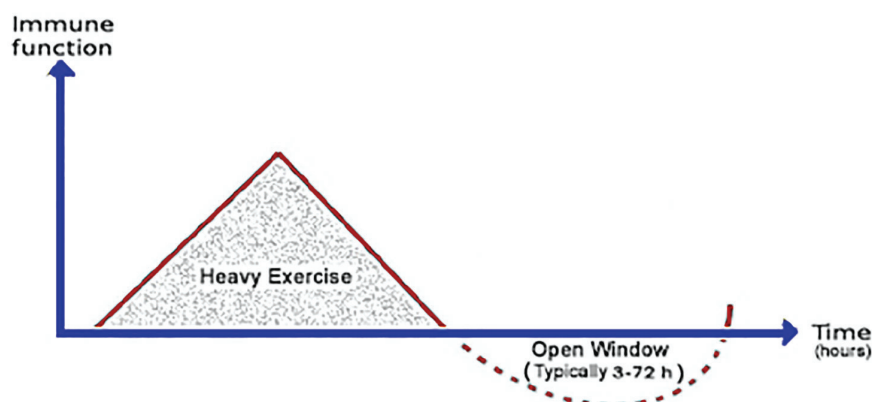


Figure 1: The open window hypothesis states that the immune system is compromised 3 to 72 hours after strenuous exercise, leading to an increased risk of opportunistic infections in the following days.

Healthy or asymptomatic individuals can exercise moderately while adhering to the hygiene guidelines and benefit from the improved immune function according to the J-shaped model (Figure 2).²

The most important hygienic instructions for exercise during the outbreak of COVID-19 include frequent hand washing with soap and scrubbing for at least 20 seconds, social distancing including maintaining physical distance from others, especially from those with symptoms, disinfecting sports equipment and surfaces according to the standard protocols, and exercising at home or in secluded places.

People with mild upper respiratory tract symptoms, provided that they take precautions, can do light strengthening, stretching, balance, aerobic, and mental exercises.

Individuals suspected of COVID-19 symptoms such as fever, severe sore throat, body aches, shortness of breath, general fatigue, chest cough, and a maximum pulse oximeter oxygen saturation of 93% at rest should avoid doing exercises.

Although there is still no evidential comment on the recovered patients of COVID-19, it appears that those who perform pulmonary capacity tests such as a 6-minute walk test with an acceptable

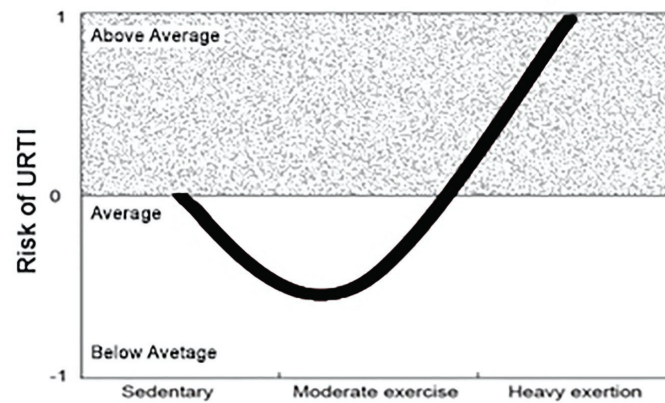


Figure 2: The J-curve model shows the relationship between the exercise workload and the risk for upper respiratory tract infection. Other factors such as travel, pathogen exposure, sleep disruption, mental stress, and dietary patterns may influence this relationship.

respiratory rate and normal oxygen saturation can start a light physical activity such as walking and breathing exercises.

Conflict of Interest: None declared.

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