RBPFEX
Revista Brasileira de Prescrição e Fisiologia do Exercício

WHAT DO WE KNOW ABOUT THE EFFECTS OF PHYSICAL EXERCISE IN MITIGATING THE COVID-19 INFECTION, TRANSMISSION AND SEVERITY? A LETTER TO THE EDITOR

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Dear editor, the coronavirus disease 2019 (COVID-19) pandemic, caused by acute respiratory syndrome coronavirus (SARS-CoV-2), has spread worldwide leading to high morbidity and mortality (Zhang et al., 2023).

Although several studies have aimed to understand how the COVID-19 is affected by systematic physical activity, only few studies have been conducted to better understand the role of physical exercise in mitigating COVID-19 contamination and transmission (Souza et al., 2021; Zecchin et al., 2023).

The role of physical exercise (i.e., resistance and/or endurance training) in the immune system is well understood (Nieman, Pedersen, 1999).

Increased immune vigilance and the improvement of immune competence, which help the control of pathogens, mainly in elderly and obese population, who show limited immunological control, have been described earlier (Mohammad et al., 2021; Simpson, 2011).

What do we know about the effects of physical exercise on COVID-19 disease?

Moderate intensity physical exercise is well known to be part of the treatment of many acute and chronic metabolic diseases (i.e., respiratory and cardiac diseases) (Burge et al., 2020).

Recent studies pertaining physical exercise and COVID-19 demonstrated that physical activity is not capable to diminish the transmission, however it has been reported to have a symptom-mitigating properly during the disease cycle, and it is part related to immune protection (Rahmati-Ahmadabad, Hosseini, 2020).

Lee et al., (2021) investigated 212 768 thousands of Korean adults (aged ≥20 y) and described that those who were engaged in the recommended levels of physical exercise decreased SARS-CoV-2 infection, COVID-19 related death and severe illness (aerobic and muscle strength activities according to the 2018 physical activity guidelines). This results reported by Lee et al., (2021) corroborate with de Souza et al., (2021) investigating well-trained patients who showed lower levels of hospitalization due to SARS-CoV-2 infection (according to the International Physical Activity Questionnaire [IPAQ]).

Halabchi et al., (2021) observed a lower frequency of hospitalization and number of deaths in athletes with regular sports participation compared to non-athletes. In fact, our research group recently reported that between 7676 participants who were active in some type of physical activity (i.e., CrossFit), were lower exposed to being hospitalized due to COVID-19 (under review) (Zecchin et al., 2023).

What needs to be addressed in future studies regarding COVID-19 and physical exercise?

To date, studies describing the effects of physical activity on COVID-19 have used different approaches, such as different guidelines for determining physical activity levels, and this is a limitation to a better

understanding. Future studies should investigate the effects of different physical exercise methods (i.e., interval training, continuum training) in the attenuation of COVID-19 infection and severity in risk groups (i.e., elderly, obese). There is also a need for more detailed studies of participants' physical activity levels. Studies involving different designs must be implemented for a better approach between COVID-19 infection and severity and different populations.

LIMITATIONS

This letter describes only the potential studies in which the rule of physical exercise in mitigating COVID-19 infection, transmission and severity were investigated.

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Received for publication in 24/04/2023
Accepted in 07/08/2023