



Physical Exercise and Covid-19 Updated Recommendations for Cardiorespiratory and Immune Systems

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Abstract

Since the declared health emergency due to the appearance of the SARS-CoV-2 virus, primary prevention measures have been established; however, little has been said regarding to regular physical exercise, despite the fact that there is evidence that physical exercise helps to strengthen the cardiorespiratory and immune system, so there is a possibility that this could be a method of prevention and as therapy after recovery, since people with a weak immune system and with a systemic inflammation processes are more likely to get this virus. That is why the present research aims to show updated evidence about the regular practice of physical exercise and its benefits during and after this lockdown.

Keywords: Motor Activity; Covid-19; Public Health

Introduction

The disease caused by the SARS-CoV-2 virus, COVID-19, has been declared a public health emergency by the World Health Organization, after having started the infections in the city of Wuhan, China, during December 2019 and having spread to much of the Asian territory, where contingencies arose that allowed the rest of the world to act early; However, the spread of the virus advanced rapidly to Europe, where as of November 11st 2020, there have been more than 289 050 deaths, while in America the number of infections and deaths continue to rise, presenting more than 21,018,924 infected and 647 892 deaths as of this date. Isolation at home has been chosen as the main preventive measure worldwide, which leads to a restructuring of people's lifestyle, in which physical activity levels are likely to decrease considerably.

Development

It is mentioned that the presence of obesity, type I and II diabetes, hypertension and certain people with a decreased response of the immune system are more likely

to be receptors of this virus, since, although any one regard less of age, gender or ethnic group can acquire it, there is a higher fatality rate in people with the pathologies mentioned above [1,2]. Countries like Mexico have mentioned that once the cases of COVID-19 are reduced, a series of behaviors regarding the prevention of chronic diseases such as diabetes and obesity must be incorporated.

Discussion

Through the information that has been presented in the last days, as well as the regular recommendations for exercise and physical activity, it is considered that staying active is a healthy habit for the population during this outbreak caused by the SARS-CoV virus- 2, coinciding with Dr. Jeffrey A. Woods' interview [3].

The practice of moderate intensity aerobic physical exercise favors the strengthening of the immune system and the humoral immune response, given the increase of T cells, leukocytes and immunoglobulins such as IgM, IgE, IgG, and IgA, which act as an antiviral response [4,5]; in addition, it

reduces the risk of upper respiratory tract infections by up to 30%; it also increases the amount of anti-inflammatory cytokines such as IL-10, IL-1 and white cells (which provide protection to the bronchiole epithelium), and finally, regulates the activity of pentoxins, which in high amounts (as in the case of people who have COVID-19) they can damage the lungs; but, in decrease amounts, its antiviral response is insufficient [5,6].

Some of the recommendations suggested by the American College of Sports Medicine [7] and the World Health Organization [8] consist of either a minimum of 150 minutes of moderate physical activity or 75 minutes of vigorous physical activity during the week. It is here that the recommendation goes beyond this time; since it is considered that the regular practice of physical exercise increases cardiorespiratory capacity and strengthens the immune system, which is recommended in the face of this COVID-19 outbreak.

The Center for Disease Control and Prevention (CDC), according to the Physical Activity Guidelines for Americans [9,10], states that the recommendation ranges from a minimum of 150 minutes to 300 minutes of moderate physical activity and 75 to 150 minutes of vigorous physical activity, during which muscle strengthening exercises involving all muscle groups must be included at least twice a week, taking in to account the response dose of the exercise, that the more exercise the better its results are; however, when dealing with this type of virus, special care must be taken with the disease, since vigorous or high intensity exercise can be harmful, due to the temporary depression of various aspects of immune function, for example: the respiratory explosion of neutrophils, lymphocyte proliferation the presence of monocyte antigen, an effect that normally lasts from 3 to 24 hours after exercise, depending on intensity and duration of exercise [11].

Although to date there is no evidence about the effects of either the physical activities or the duration of physical exercise in patients who have acquired COVID-19, a strong correlation among variables associated with physical exercise and the reduction of diseases in those patients who have acquired the virus has been presented; therefore, in conclusion, it is recommended to perform moderate intensity physical exercise at home, with a minimum of 300 minutes per week as a strategy to help strengthen the immune and cardiorespiratory system, which could be helpful in reducing the propensity to acquire said disease.

Some of the recommendations for exercising at home, as well as their contributions may be:

Aerobic work: walking and trying to reach the largest number of steps inside the house, dancing, exercising

through some virtual platform, knees and heels elevation at a moderate pace. Regarding strength exercises, planks, squats, push-ups and abdominals with different levels of difficulty are suggested. Then finish with stretching exercises.

ACSM: for aerobic work the suggested exercises are walking around the house, going up and down stairs for a minimum of 10 minutes twice a week, dancing, exercising with the help of some virtual platform, jump rope and, if there is a possibility, the use of any cardiovascular equipment such as an exercise bike, stair climber or elliptical. Regarding strength work, the use of applications that provide strength training is suggested, as well as the support of virtual platforms, chairs, squats, push-ups on the wall, stretches. Finally, for stretching exercise, yoga is suggested.

Conclusion

As a contribution of this research, the time will be 300 minutes per week with series circuits in which cardiovascular exercise is performed for a period of 30 seconds for 30 seconds of rest are suggested; these can be star jumps, jump rope, climbing steps, knee elevation, walking in one place, this for 4 repetitions and 4 series, remembering that the total time of physical activity can be accumulated, as long as it is performed in continuous 10-minute intervals.

Strength work is recommended twice a week, and as a modification of the squats, adding some type of extra weight such as a bottle of water or a kilogram of some food product is suggested; even, with the bottles of water, exercises such as the bicep curl, cup press, military, etc., can be done, being the ideal to end the sessions with stretching and balance exercises, as well as with proper hydration and suitable rest.

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