

COVID-19: a challenge for exercisers and, an opportunity for non-exercisers?

COVID-19: un desafío para los exercisers y, ¿una oportunidad para los non-exercisers?

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Coronavirus (COVID-19) is a pandemic that has infected more than 1,500,000 people (10.1% in Spain) and caused more than 89,900 deaths worldwide (16.9% in our country)¹. The Spanish Government decreed a national state of alert from 14 March to 26 April 2020 with the possibility of an extension based on the actual conditions at that time. As a result, the majority of the population was forced to remain at home in order to stop the spread of the virus, stem the flow of infections and prevent the saturation of the healthcare system.

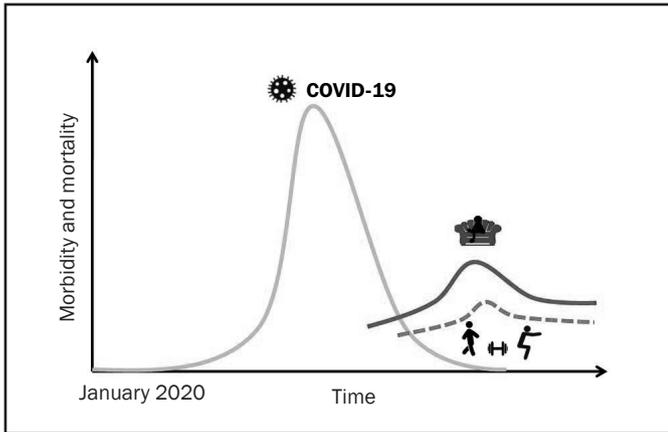
However, although lockdown is extremely necessary in order to reverse the current situation, it can also be harmful to health, specifically with regard to those in a vulnerable situation (older people or those with chronic pathologies). The Morris studies in the fifties were pioneers in reflecting the negative impact that the habits of a sedentary lifestyle have on health and, even today, cardiovascular disease is the leading cause of death in the world (31%). In this respect, there is strong evidence that relates physical inactivity with an increase not only in the occurrence and aggravation of chronic diseases but in the mortality rate². Despite this, globally, 27.5% of the adult population and 80% of young people are insufficiently active, a situation that has been named "physical inactivity pandemic", with a mortality rate that has reached 6%³. Due to the exceptional state of isolation proposed as a result of COVID-19, Google[®] made a report based on location history data from mobile devices in which it shows a drop in the movement trends of the Spanish population in a range from 64 to 94%⁴. Looking at these statistics, it is obvious that the impact of the current lockdown period could lead to an even more sedentary lifestyle.

While some evidence is already available on the cell and molecular mechanisms by which the regular practice of physical exercise is beneficial, it is evident that muscle contraction is in itself a determining factor in molecular signalling. Thus, the skeletal muscle behaves as an endocrine organ generating molecules (myokines) capable of acting on a large number of organs and tissues while modulating their functions, directly intervening in the progression of certain pathologies. Moreo-

ver, the release of myokines is closely related to the amount of muscle mass involved.

It is more than likely that those subjects who were training regularly before lockdown will continue to maintain these habits. It is therefore reasonable to think that professional and leisure athletes, and even weekend warriors, will be able to adapt their exercise workouts to their home settings, following the routines guided by sports physicians, physical education instructors or else turning to virtual training platforms such as the social media. Moreover, subjects with previous training can count on a powerful ally: muscle memory. This concept was coined to describe the fact that the trained skeletal muscle takes less time to return to its original structure after being subject to a re-training workout following a period of physical deconditioning. It has thus been observed that the micronuclei formed in response to an exercise workout, keep their number despite the training cessation period, irrespective of the reduction in the muscle cross-sectional area. This factor is fundamental once a person starts to exercise again, given that it accelerates the re-adaptation process to the training tables. In this respect, it has been estimated that the muscle memory mechanism could remain latent even over decades. It therefore does not appear to be necessary to get worried about maintaining the same exercise levels during lockdown. However, those persons previously considered to be physically inactive (< 150 minutes of moderate physical activity or < 75 minutes of intense physical activity a week) are the ones who need to take exercise as a necessary instrument to counteract the periods of inactivity, particularly at this present time (Figure 1). The main arguments associated with a little physical activity are a lack of time and motivation. If we start from the premise that, in terms of exercise, "something is always better than nothing" and taking into account the fact that 36% of the Spanish population reports that it spends its leisure time in a way that is almost completely sedentary, we can assume that it is not due to lack of time (and even less so at present) but due to a lack of motivation, the most important obstacle for doing physical exercise. Although it has been

Figure 1. Estimate of the morbidity and mortality based on the practice of physical exercise during the lockdown period caused by COVID-19, for vulnerable people.



reported that the practice of vigorous physical exercise (60-75 minutes a day) is able to counteract the greater risk of death associated with long periods of a sedentary lifestyle, those persons unaccustomed to physical activity are not advised to start intensive workouts right from the outset. An alternative to the traditional training workouts could be to include frequent periods of physical exercise in order to transition from sedentary behaviour. This habit is able to produce a significant drop in the postprandial glucose levels, as well as in insulin and triglyceride levels. However, there has been no definition of the amount, duration, intensity or type of exercise to be made during these active periods. In fact, positive effects are likely to be obtained regardless of the exercise model used, provided that this involves a large muscle mass (from walking at a light pace to doing strengthening exercises with one's own body weight)⁵.

According to a report by Eurostat, Spanish homes have an average size of 90 m² in urban areas and 115 m² in rural areas⁶.

In principle, it may appear to be advantageous to have more space, as well as terraces or gardens. However, putting these advantages to one side, a spacious area to exercise is not strictly necessary. In this way, many of the leading healthcare institutions have put forward physical

exercise workouts that are specifically directed at those with the least experience in this area and those vulnerable populations, not only those who are elderly but also those with chronic pathologies⁷. Although these initiatives are directed at getting the population to do physical exercise during this lockdown period, their real value goes beyond the present situation and could serve to create physical exercise guidelines that go beyond present requirements. Moreover, the inactive population, although to a lesser extent, does also have some advantages. On the one hand, an untrained person requires less stimulus or training load to achieve adaptations, and therefore improvements will be observed right from the outset. On the other hand, it is good to remember that "it's never too late" to obtain the benefits resulting from doing physical exercise, as has already been demonstrated in the elderly population.

Despite all the prejudices on the quality of life with regard to the period in which we are living, it could be a good time to look for positive things and to create long-lasting healthy habits. Therefore, people should be made aware of the advantages of doing frequent physical exercise and, although today it may appear to be a challenge or a simple hobby, it may have unimaginable benefits in the not-too-distant future.

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