PHYSICAL ACTIVITY DURING CORONAVIRUS ISOLATION

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Abstract

Social distancing measures due coronavirus pandemic, have had a significant effect on peoples' physical activity as part of their daily life. Furthermore, isolation may alter all three dimensions of well-being: physical, psychological, and social well-being. The purpose of this study is to discuss the effect of physical activity on the immune system and, in antithesis the risk of inactivity in pandemic conditions. Regular exercising while pandemic isolation would prevent the negative effects of loneliness and the lack of usual outdoor activities. A healthy diet, staying in a good shape and positive emotions stimulate and harden the immune system. Physical activity prevent weight gaining and keeps the BMI and muscle mass percentage in balance with body fat while overweight and especially obesity is not only a risk factor for infected patients, but disease severity increased with BMI.

Keywords: *immunity, physical activity, social isolation, well-being*

JEL Classification: **I12; I19; I30**

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1. Introduction

2020 will remain in sport history as the most significant disruption to the major sporting events calendar since World War II. The COVID-19 pandemic was not only a global health crisis, but has prevented sport, as a phenomenon, to gather athletes and fans together, resulting in a financial crisis too. Large scale sporting events have been cancelled or postponed, inflicting the regional, national, and international competitions worldwide. Every part of the sporting value chain has been affected, from millions of fans to athletes, teams, leagues, and media that broadcast games and events.

Social distancing measures, brought in to limit the spread of coronavirus, have had a significant effect on peoples' physical activity. The near total closure of education facilities from kindergarten to universities and the lock-down measures drastically reduced the outdoor activities. The gyms, swimming pools, fitness

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centers were close and, in many countries and regions the access in parks was forbidden for public.

Working remotely, staying mostly indoors, having passive leisure time and few opportunities to spend energy in an active way may add body weight or may reduce the muscle mass. Furthermore, the social isolation may have psychological repercussions especially for those living alone. Social distancing, quarantine and isolation may thus alter all three dimensions of well-being: physical, psychological, and social well-being [1]. The purpose of this paper is to discuss the effect of physical activity on the immune system and, in antithesis the risk of inactivity in pandemic conditions.

2. Physical activity benefits on immune system

Fitness consumers adapted their programs to the new conditions traying to maintain their routine. Waiting the reopening fitness studios offer live videos on different platform like Zoom, Facebook, YouTube to their members intending to keep the members active and interested in the gym they have been subscribers before the closure. People also find creative options to replace fitness equipment at home: they use water bottles instead of weights, their living room carpet as yoga matt, a chair instead of a gym bench, and so on. However, the home workout equipment sales increased significantly because the online orders. Home fitness products stores are one of the most successful businesses of this period, and one of the only parts of the sporting value chain still active.

Physical activity is associated with higher levels of psychological well-being, especially when it is engaged more than three times a week. Active people experience more positive emotions, feel more satisfied with their lives comparing with samples of less active and sedentary people [1]. We can enjoy more vitality, a better health, and a longer life by actively practicing regular physical exercises [2]. The daily routine prepares the body to access energy resources associated with endorphins release, creating in time the need and the willing to exercise.

There is a compelling evidence that moderate exercises training helps the immune system, has an anti-inflammatory effect, reduces the illness risk, and delays or alleviates the age-related dysfunction [3]. Moderate exercise refers to intensity, but also training duration and frequency matter in immune support. For a healthy person, a regularity of 5 days/week, with 40-50 min duration and 60-85% hart rate reserve would be ideal. Intensive or prolonged physical effort may induce immune dysfunction, oxidative stress, inflammation risk, or muscle damage.

Physical activity should be accompanied by an adequate diet with increased carbohydrate (from legumes, whole grains, fruits, and vegetables) and polyphenol (from fruits, vegetables, cereals, tea, coffee) intake in strengthening the immune system. Carbohydrate attenuate the post exercise inflammatory risk, while polyphenol have been shown to enhance immunomodulatory processes.

Research have shown that an important percentage of university students consider physical activity [4] and sport as an important aspect in their daily life [5].

The temporarily absence of traditional sport competitions presented an opportunity for virtual technologies to grow and to satisfy the digital generation need for sports entertaining. Already, sports leagues across the world are using e-sports to engage fans and bring in revenue during breakdowns. In schools and universities have been launched online portals aiming to incorporate or maintain physical activity in student's daily routine and above all to limit extended sedentary periods favored by home isolation.

3. The risk of inactivity

The virus affects low immunity persons and comorbidities worsen the effect of COVID-19. The immune system function is to defend our bodies against infectious microorganisms such as viruses, bacteria, fungi, and parasites [2]. From long time ago it has been observed that people who overcome an infectious disease acquire immunity against that disease.

The pandemic we are getting through is reminding us once again that mental health is just as important as physical health. WHO and UNICEF take the impact of COVIT19 and physical distancing on mental health very seriously. As the economic and social impacts of the pandemic expand, we can expect to see a rise in depression, anxiety, violent behavior, and substance use disorders [6]. Children and adolescents, whose daily routines have been completely disrupted, may be affected and older people, particularly those living alone, are at risk of social isolation.

The perception of social isolation is a risk factor for both physical and psychological morbidity. The social type of loneliness is related to the absence of a wider network of friends with common interests [7]. Social isolation determines changes in the hypothalamic–pituitary–adrenal axis (HPA) that have consequences such as increases the risk of chronic illnesses (cardiovascular, neurodegenerative) while simultaneously undermining resistance to viral infections. [8]. The causal role of loneliness on neural and neuroendocrine mechanisms was tested by measuring the cortisol levels. Cortisol is the main body's stress hormone and influences a wide range of physiological functions that include glucose regulation, metabolism, inflammatory control, cardiovascular activity, reproductive processes, neurodegeneration, and cellular and humoral immunity.

In a study including medical students, aiming to assess loneliness and immune functioning was found that lonely people show lower immune competency comparing with social people [9]. Lonely people may take poorer care of their health or may cope with loneliness in a health compromising manner: taking more snacks, eating less healthy food, having an unbalanced energy intake – consumption cycle and eventually getting more sedentary.

People living with family or partners may benefit from their support, assistance, and advice. Pelman and Poplan recommend an active solitude and consider as a constructive way to spend time exercising besides reading or working [9]. Reading and tele-working or working from home imply the sitting position in front of a screen for long periods of time. Therefore, exercising at home or nearby became even more necessary in this pandemic breakdown.

It has been observed that the morbidity and mortality rate due to COVID 19 may be intense especially among the people over 65 years of age. But there are other environmental and personal crucial factor that might influenced the evolution of younger infected persons. While in China it was smoking and pollution, in Italy the larger older population lived with extended families, in USA the body mass index (BMI) is the issue [10]. Obesity is a comorbidity associated with a high prevalence of mechanical ventilation and intensive care for confirmed COVIT19 patients. Overweight and especially obesity is not only a risk factor for these patients, but disease severity increased with BMI [11].

Conclusion

A good feeling following physical activities is not only because of a better physical shape perception, but also because an increase in endorphin release. Therefore, regular exercising while pandemic isolation would prevent the negative effects of loneliness and the lack of usual outdoor activities. A healthy diet, staying in a good shape and positive emotions stimulate and harden the immune system.

Physical activity prevent weight gaining and keeps the BMI and muscle mass percentage in balance with body fat. A normal weight avoids pulmonary disfunction while cardio programs provides a sufficient level of oxygen for a normal body functioning.

The reopening society after Coronavirus lockdown will bring an increase amount of emotional and social support exchanged, and consequently the decrease in intensity effects of social isolation. Relationships with friends and colleagues serve to connect people outside the family circle and to exchange ideas and news. The joy of spending time together will contribute to mutual psychological wellbeing. The advice for all people aiming to develop immunity is a balance diet, exercise, and cheerful time.

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