Action plan to increase physical activity during COVID-19 pandemic
Amir-Hossein Memari,¹ *Maryam Selk-Ghaffari,¹ Afifeh Khosravi,¹,² Ramin Kordi¹,³

¹Sports Medicine Research Center, Neuroscience Institute, Tehran University of Medical Sciences, Tehran, Iran; ²School of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran, Iran; ³Department of Sports and Exercise Medicine, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran.
*Corresponding Author’s E-mail: selk1360@gmail.com

The COVID-19 pandemic, defined as a Public Health Emergency of International Concern (PHEIC) by WHO on 30 January 2020, has forced governments to take several public health mitigation measures including various social isolation and physical distancing.¹ Public health measures including social distancing, mask-wearing, and hand hygiene might be barriers to physical activity during the COVID-19 pandemic.² These policies will have consequences on lifestyle including physical activity level.³ Physical activity is defined as any movement of the body, involving skeletal muscles and consuming energy.⁴ Based on the world health organization recommendations 150 minutes of moderate-intensity physical activity or 75 minutes of high-intensity physical activity is mandated for individuals to achieve health benefits.⁵ Physical activity and participation in sports have a protective effect against COVID_19.⁵-⁷ Meanwhile, physical activity is a leading protective factor for chronic diseases that increase the severity and mortality rate of COVID-19.²

COVID-19 caused 2 million deaths in Jan 2021.⁸ However, Physical inactivity leads to 3.6 million deaths worldwide annually.⁹ During the COVID-19 pandemic, the level of physical activity might decrease.¹⁰,¹¹ Based on the socio-ecological model, Individual, interpersonal,
environmental factors and governmental, community, and organizational policies have impact on physical activity. Challenges at the individual and interpersonal levels in engaging in physical activity consist of a variety of domains. Outlining the benefits of exercise, including positive effects on the immune system, might motivate more people to exercise regularly. Existing evidence indicates that moderate level of physical activity improves the immune system and reduces the risk of respiratory tract infection.

Challenges at the environmental level consist of keeping social distancing, sports clubs closure, canceling and postponing matches. Public exercise facilities are locked down and limited opportunities for exercise are available. Home-based exercises, engaging in physical activity in a less crowded environment, considering the safe distance, and disinfecting probably contaminated surfaces (including sports equipment) could be a solution to this issue. Public space innovations might be considered as a motivation for engaging in physical activity.

Challenges at the governmental, community, and organizational levels consist of current governmental policies related to quarantine and isolation during the COVID-19 pandemic which prohibit individuals from any outdoor activities (United Kingdom, Italy, Spain, etc.). Current COVID-19 related policies might affect the level of physical activity. As an example in Italy following the national lockdown, a 48% in the regional daily step count was reported, whereas in Sweden, which conducted gatherings limitations, and social distancing advice, a 6.9% decrease was reported. As another example, physical inactivity increased in Spain following COVID-19 quarantine. Other critical considerations at the governmental level consist of the need for investments and inconsistencies in policies.

**Physical activity action plan during COVID-19 pandemic**

According to the world health organization (WHO) document “Global action plan on physical activity 2018-2030, more active people for a healthier world” (GAPPA) system based approaches are mandated to increase physical activity. Four main objectives should be targeted in the physical activity action plan including creating active society, active people, active environments, and active systems. However, the four main objectives of GAPPA, are supposed to be modified according to the current COVID-19 pandemic. Thus the following recommendations are proposed.
Creating active society is related to the community standards, culture, beliefs via improving knowledge about the benefits of physical activity.\textsuperscript{4} Providing information via media about the benefits of physical activity on the prevention of COVID-19 is an applicable strategy.\textsuperscript{22} During the COVID-19 pandemic the following policy action are recommended to increase physical activity with the objective of creating active people in the society:\textsuperscript{18,23}

1. Implementing applicable social campaigns to increase knowledge related to the protective effect of physical activity against viral tract infections (COVID-19) and keeping active during the pandemic via physical activity stakeholders.\textsuperscript{18}
2. Implementing community-based initiatives in virtual public spaces, to introduce and educate home-based exercise programs for individuals at any age and with any level of ability requiring the least budget and available equipment according to the culture of the country via physical activity stakeholders.\textsuperscript{18}
3. Developing and conducting training courses for coaches and exercise experts to enhance the skills and information in creating physical activity opportunities considering the social distancing and protection roles via physical activity stakeholders.\textsuperscript{18}

Creating active environments, spaces and places is the second objective of GAPPA. Creating active environment is related to providing appropriate, accessible, and safe environments for engaging in physical activity for individuals of all ages and with any level of ability.\textsuperscript{4} Limited data are available to make a recommendation in this domain. However, access to public spaces and green spaces might increase the level of physical activity.\textsuperscript{19} During the COVID-19 pandemic the following policy actions are recommended to increase physical activity with the objective of creating active environments: \textsuperscript{24}
1. Improving the infrastructure of walking and cycling networks considering the principles of social distancing via widening the sidewalks and dedicating specific cycling routes on roads via governments and municipalities.

Creating active people is the third objective of GAPPA. Creating active people is related to providing and improving the availability of exercise and physical activity programs and opportunities to support individuals at any age and with any ability to engage in physical activity.\textsuperscript{4} Following recommendations are proposed for physical activity experts, physicians, and stakeholders:
1. Developing guidelines for home-based exercises via physical activity experts. 18,25
2. Developing guidelines for professional athletes including cardiorespiratory considerations, necessary assessments, and sanitary protocols before and during matches for safe return to the sport via sport federations. 26
3. Reinforcing development and implementation of high-quality virtual physical education and school-based physical activity programs for children and adolescents via physical activity stakeholders.
4. Applying and improving virtual patient evaluation and management systems in patients recovering from COVID-19 to improve physical activity and conduct pulmonary rehabilitation via physicians. 27

**Creating active systems, governance, and policies** is the fourth objective of GAPPA. Creating active systems is related to develop and reinforce leadership, management, the cooperation of physical activity-related sectors, physical activity workforce skills, advocacy, and surveillance data systems to increase physical activity. 26 Resource mobilization, and improving coordination via governments are mandated in the success of the physical activity action plan. 4 Improving data, and surveillance systems to determine the physical activity level, and barriers among patients, and healthy individuals during the COVID-19 pandemic is required via governments. 2

The level of physical inactivity is increasing worldwide as a consequence of the COVID-19 pandemic, and urgent actions are required to take place via governments, physical activity stakeholders, and experts. 11 Highlighting the impact of physical activity in reducing the severity, and mortality of COVID-19 might be beneficial. 5-7 Based on the socio-ecological model to reduce physical inactivity developing "physical activity during COVID_19 guidelines" via experts, developing a safe return to the sport in athletes via sports federations, school-based virtual physical activity interventions via stakeholders, and exercise-based rehabilitation following COVID-19 via physicians are mandated. Governmental cooperation is required to conduct the physical activity action plans during COVID-19 considering the COVID-19 preventive principles. 2 International and world health organization reinforcements might be beneficial in the success of the program during the COVID-19 pandemic.
References


