4

Should We Allow Physical Activity During The Coronavirus Disease Pandemic?

ISGlobal Barcelona Institute for Global Health

Authors: Sarah Koch, Jill Litt, Carolyn Daher & Mark Nieuwenhuijsen (ISGlobal)

1. Overview of Current State

[This document is part of a series of discussion notes addressing fundamental questions about the COVID-19 crisis and response strategies. These documents are based on the best scientific information available and may be updated as new information comes to ligh.]

23 April 2020

Cover photo: Bruno-Nascimento / Unsplash

Physical, mental, and social health as well as wellbeing in **children, adolescents, adults and seniors are enhanced with regular physical activity**[1]. In response to the COVID-19 epidemic, governments across the world have adopted social distancing and home confinement tactics to reduce the spread of the disease. Consequently, physical activity of all forms has essentially stopped for hundreds of millions of people.

Spain has taken extreme measures to reduce the spread of COVID-19, including complete home confinement, permitting citizens to leave their homes only to access essential services such as grocery shopping, banks, and seeking medical help from pharmacies and hospitals. According to wearable physical activity tracking data by FitBit, **physical activity levels decreased by 38% after one week of confinement**. Moreover, Google data up to April 11th, 2020 indicated that physical activity related to recreation and park visits decreased by 92% and 85%, respectively[2]. As of April 18th, 2020, Spaniards walked 90% less compared to January 13th, 2020. The health impacts due to this drastic drop in physical activity have not yet been estimated but are anticipated to be broad and dramatic, particularly since deconditioning effects in recreational athletes have been observed to occur within a few weeks already.

To put this dramatic decrease in physical activity and the subsequent health threat into further perspective: already before the COVID-19 pandemic, only 24% of adolescents, 66% of adults and 68% seniors in Spain met the WHO recommendations for physical activity[3].

[1] World Health Organization. Physical activity. https://www.who.int/news-room/fact-sheets/detail/physical-activity. Accessed April 21st, 2020.

[2] Mobility, G. Spain March 29, 2020 Mobility changes. (2020). https://www.gstatic.com/covid19/mobility/2020-04-11_ES_Mobility_Report_en.pdf. Accessed April 21st, 2020.

[3] World Health Organization. *Spain Physical Activity Factsheet 2018*. http://www.msssi.gob.es/profesionales/saludPublica/prevPromocion/Estrategia/Recomendaciones_ActivFisica.htm. Accessed April 21st, 2020.

YouTube videos, and live streaming **of physical activity classes have been made freely available online**; however, it is unclear how many citizens are truly benefiting from these offers. Inability to access online resources, insufficient knowledge of how to adapt exercise routines safely that are too challenging, limited space and time, missing equipment and motivation are likely key hurdles. Moreover, **time outdoors, exposure to vitamin D** (the sunshine vitamin), **and physical activity** ignite a series of health benefits that cannot be achieved to the same extent indoors – ranging from immune function, mood and anxiety, metabolism, heart health, bone health, and overall health and mental well-being.

These benefits can be achieved by **least 150 minutes of moderate-intensity physical activity throughout the week**; with additional health benefits to be gained by increasing the weekly volume of moderate-intensity physical activity to 300 minutes (*i.e.* approximately 30 minutes per day on most days of the week) as recommended by the WHO[4].

2. Importance of Access to Outdoor Physical Activity

"Beneficial effects of regular physical activity specifically during the COVID-19 pandemic include: immunological and respiratory health, mental health, metabolic health, cardiovascular health, bone health and social and emotional health."

Beneficial effects of regular physical activity specifically during the COVID-19 pandemic include:

- **Immunological & respiratory health:** The coronavirus attacks the lungs and respiratory system by activating inflammatory cascades. Regular physical activity, particularly at low- to moderate intensities, enhances immune competency and has been shown to have an overall anti-inflammatory effect[5]. Furthermore, physical activity is important for children's and adult's maintenance of respiratory function[6].

- **Mental health:** Anxiety, fear, and stress are results from the limited current knowledge and uncertainties about the COVID-19 pandemic and the future. Physical activity is a tool to self-manage and release anxiety and stress. It provides an important opportunity for self-care.

- **Metabolic health:** The COVID-19 pandemic has undoubtedly changed citizens' dietary behaviours. Increases in high-caloric diets combined with increased alcohol and tobacco consumption are common responses to stressful situations. With no opportunity to engage in physical activity to increase caloric expenditure, weight gain will be unavoidable, resulting in negative health impacts. Physical activity has also been associated with healthier dietary choices, and better sleep quality, which are known to affect body weight.

- **Cardiovascular health:** Psychological stress, unbalanced diets, and physical inactivity are key risk factors for cardiovascular disease, all of which have been impacted by the COVID-19 crisis. A reduction in blood pressure, and resting heart rate in response to regular physical activity decreases the risk for myocardial infarctions and strokes, two predominant cardiovascular complications resulting in morbidity or mortality.

- **Bone health:** Due to increases in sedentary time, bone health particularly in children, adolescents and the elderly is at risk. For the growth and maintenance of healthy bones, high forces through impact and shear stress are needed. Body weight bearing physical activities, often completed in activities of daily living such as walking stairs, carrying groceries, running and jumping are often unnoticed factors assisting with bone health.

[4] World Health Organization. WHO | Information sheet: global recommendations on physical activity for health 18 - 64 years old. *WHO* (2015). https://www.who.int/dietphysicalactivity/factsheet_recommendations/en/. Accessed April 21st, 2020.

[5] Campbell, J. P. & Turner, J. E. Debunking the Myth of Exercise-Induced Immune Suppression: Redefining the Impact of Exercise on Immunological Health Across the Lifespan. *Frontiers in Immunology* 9, 648 (2018).

[6] Puente-Maestu, L. & Stringer, W. W. Physical activity to improve health: do not forget that the lungs benefit too. *Eur Respir* J 51, 1702468 (2018).

- **Social and emotional health:** Physical activity helps build and maintain social connectedness. Group exercise programs permit individuals of all ages, professional, and socioeconomic backgrounds to meet and interact, combating the global threat of perceived loneliness.
- **Other benefits:** One of the most repeated recommendations during home confinement is the maintenance of daily routines and structure, especially for mental health. Planning and implementing physical activity routines helps adherence to daily schedules

3. Who Can Benefit from Outdoor Physical Activity?

"Physical activity is crucial, especially for children since childhood is a period when organs, immune and other health systems to fully develop, making access to outdoor physical activity essential."

Everyone benefits from outdoor physical activity. However, **people with active or recovering COVID-19 infections should consult a physician** before resuming exercise. The risk of contracting or transmitting COVID-19 outside appears to be lower compared to indoors[7].

Benefits of outdoor physical activity, particularly in green and blue spaces, *i.e.* parks, waterfronts or lakes are numerous, and give particularly those in small apartments without **access to a terrace or balcony an opportunity to be physically active**. Therefore, access to outdoor physical activity as soon as possible is imperative to prevent greater health threats due to NPIs beyond direct COVID-19 infections.

Physical activity is crucial, especially for children since childhood is a period when organs, immune and other health systems to fully develop, making access to outdoor physical activity essential. Underprivileged individuals such as those in small apartments with no access to gardens, balconies or rooftop terraces should receive priority deconfinement plans are discussed and implemented. Individuals with pre-existing health conditions, such as those **with medical prescriptions for routine exercise**, should be considered

[7] Qian, H. *et al.* Indoor transmission of SARS-CoV-2. *medRxiv* 2020.04.04.20053058 (2020) doi:10.1101/2020.04.04.20053058.

4. What Is Needed?

"Deconfinement strategies must include urgently opportunities to safely engage in physical activity."

"Walking and cycling are active transport modes that increase physical activity levels, while reducing infection risk when compared to shared, public or private transit."

Deconfinement strategies must include urgently opportunities to safely engage in physical activity while permitting citizens to adhere to modified NPIs to minimize COVID-19 infection risk. **Measures need to be implemented to permit physical distancing**, *i.e.* maintaining a 1.5 meters distance to others at all times, also when engaging in physical activity. For example, walking and cycling are active transport modes that increase physical activity levels, while reducing infection risk when compared to shared, public or private transit. Therefore, considerations should include:

- **Provision of space:** wider sidewalks and extra cycling lanes, particularly those providing access to green and blue spaces; routes that facilitate active transport to essential services and work need to be urgently implemented. This can be achieved by removing car lanes and parking spaces to make space for bikes on roads while freeing up shared pedestrian and bike space for pedestrian use only.

- **Access to large outdoor spaces:** Market squares, open areas in parks, roads along waterfronts and lake sides need to be cleared from cars and other obstacles to serve as areas for physical activity with distancing.

- **Use of technology to help manage and schedule space use:** smartphone applications can be developed to alert citizens to the occupancy of public spaces for exercise near them and suggest alternatives to avoid crowding.

- **Tactical Measures to permit physical distancing:**
  - Physical activity should be done alone or with members of the same household and caregivers when necessary.
  - Generate specific hours for vulnerable citizens when physical activity spaces are exclusively open for them.
  - Making cycling, jogging, and walking routes one way/one direction use only to generate more capacity.
  - Extended hours to parks, market squares and physical activity spaces.
  - Marks on the ground indicating 1,5 meters distance to the next.
  - Arrows on bicycle routes indicating a safe distance to be maintained at all times, similarly to those previously used for drivers.

- **Access to hand hygiene services:** Accessible hand wash and hand sanitizing stations.

- **Upregulation of cleaning procedures:** public washrooms, handrails at staircases, outdoor gym equipment need to be cleaned more frequently ●

5. Recommendation

"We recommend allowing up to one hour of physical activity a day outdoors."

Physical activity is essential for good physical, mental, and social health and should be urgently included in the deconfinement strategy. We recommend **allowing up to one hour of physical activity a day outdoors**, with an emphasis that people only exercise by themselves and **keep a distance of at least 1.5 meters** to others at all times ●

To learn more:

- Warburton, D., Nicol, C. & Bredin, S. Health benefits of physical activity: The evidence. CMAJ vol. 174 801–809 (2006).
- Hancox, R. J. & Rasmussen, F. Does physical fitness enhance lung function in children and young adults? Eur. Respir. J. 51, 1701374 (2018).
- Chastin, S. F. M., Palarea-Albaladejo, J., Dontje, M. L. & Skelton, D. A. Combined Effects of Time Spent in Physical Activity, Sedentary Behaviors and Sleep on Obesity and Cardio-Metabolic Health Markers: A Novel Compositional Data Analysis Approach. PLoS One 10, (2015).
- Rojas-Rueda, D., Nieuwenhuijsen, M. J., Gascon, M., Perez-Leon, D. & Mudu, P. Green spaces and mortality: a systematic review and meta-analysis of cohort studies. Lancet Planet. Heal. 3, e469–e477 (2019).
- Gascon, M., Zijlema, W., Vert, C., White, M. P. & Nieuwenhuijsen, M. J. Outdoor blue spaces, human health and well-being: A systematic review of quantitative studies. International Journal of Hygiene and Environmental Health vol. 220 1207–1221 (2017).

ISGlobal Barcelona Institute for Global Health

A partnership of: "la Caixa" Foundation

Clínic Barcelona Hospital Universitari · Universitat de Barcelona · Generalitat de Catalunya · Gobierno de España · Parc de Salut Mar · upf. Universitat Pompeu Fabra Barcelona · Ajuntament de Barcelona