

COVID-19: the importance of new technologies for physical activity as a public health strategy

COVID-19: importância das novas tecnologias para a prática de atividades físicas como estratégia de saúde pública

COVID-19: importancia de las nuevas tecnologías para la práctica de actividades físicas como estrategia de salud pública

Breno Augusto Bormann de Souza Filho ^{1,2}
Érika Fernandes Tritany ³

doi: 10.1590/0102-311X00054420

The pandemic of the novel coronavirus SARS-CoV-2, the cause of COVID-19 ¹, has negatively impacted the population's health and the global economy ². As of April 28, 2020, the disease had been reported in 213 countries, with 2,954,222 confirmed cases and more than 202,597 deaths in the world ³, and with the elderly as the most vulnerable group. Underreporting of data is a relevant issue for all countries dealing with the pandemic, so the numbers published by the World Health Organization and countries are underrepresented. In Brazil, since the first case was reported in February 2020, the numbers of confirmed and suspected cases and deaths from COVID-19 have continued to grow ⁴.

Given the lack of a vaccine or specific treatment and the high transmission rate, Brazil declared a Public Health Emergency of National Concern ^{5,6} and followed international guidelines and experience by adopting social isolation as the main measure for prevention and control of the disease ⁷. Thus, most work, physical, and recreational activities were suspended ^{7,8,9,10,11,12}, along with a ban on presence at beaches, parks, and town squares, subject to penalties for disobedience ^{13,14}, thereby further altering social dynamics.

Important efforts by health surveillance and healthcare services have focused mainly on containing the epidemic and promoting strategies for coordinated and timely action by the health system, which is already overburdened. However, chronic noncommunicable diseases and preexisting comorbidities are still a huge problem, especially for the elderly, the group most affected by the virus. These chronic conditions require treatment, control, and continuous monitoring, associated with lifestyle ¹⁵, besides the economic impact from the population's physical inactivity on health systems and individuals ¹⁶.

Although social isolation is a strategic measure to contain COVID-19, it can have unintended negative consequences, increasing the population's sedentary behavior and physical inactivity, which many authors consider a pandemic in itself ¹⁷. Prolonged stay at home can lead to a decrease in interaction and longer periods of immobility (sitting or lying), directly or indirectly related to greater use of virtual equipment such as TV, computers, cellphones, and similar devices ¹⁸. The motivational level for physical exercise can also decline, since it often requires a physical infrastructure and high-cost and complex equipment and specific sites such as parks, clubs, gyms, and/or face-to-face professional support ¹⁹.

¹ Escola Nacional de Saúde Pública Sergio Arouca, Fundação Oswaldo Cruz, Rio de Janeiro, Brasil.

² Academia Parolímpica Brasileira, Rio de Janeiro, Brasil.

³ Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brasil.

Correspondence

B. A. B. Souza Filho
Av. Prado Júnior 330, apto. 406, Rio de Janeiro, RJ 22011-040, Brasil.
brenobormann@hotmail.com



However, the benefits of physical activity are related to its actual practice and not exclusively to these factors. Physical activity has both immediate and long-term health effects²⁰. Besides decreasing the harmful effects from long periods of immobility, it favors the control of chronic diseases and associated comorbidities¹⁵ and improves the immune response to infections²¹, which can impact the severity of symptoms and the clinical outcome for patients with COVID-19²² and other communicable diseases, in addition to promoting overall functional gains and quality of life and helping to decrease stress and anxiety, common symptoms in situations of social crisis²³.

Physical inactivity is considered a key risk factor for chronic noncommunicable diseases such as cardiovascular diseases, cancer, and diabetes^{15,20}, the main comorbidities associated with complex cases of severe acute respiratory syndrome (SARS) from COVID-19²² and the leading causes of death in the world²⁴. Thus, the development and adoption of alternative methodologies that favor people's autonomy and promote the adoption and maintenance of physical activity are extremely important for health promotion, prevention, and disease control²⁵. In this sense, encouragement of physical activities at home is an important and feasible proposal, especially for vulnerable groups and/or during emergency periods of social isolation, as experienced in the COVID-19 pandemic.

Despite these issues, the measures for dealing with COVID-19 issued thus by the Brazilian Ministry of Health and state and local governments have failed to include proposals and recommendations for the population and establishments on the importance of physical activity during periods of social isolation. Meanwhile, the Federal Board of Physical Education (CONFEEF) recommended that physical education professionals should encourage and orient beneficiaries to remain physically active, including at home, while respecting specific contraindications²⁶. However, these recommendations have not been extended to establishments.

Given the uncertainty on when it will be safe to ease restrictions and isolation, the situation of physical inactivity may become even worse. The importance of guidelines by regulatory bodies and government agencies centers on the potential to influence establishments and professionals to adopt active practices. The guidelines also play an important role in lending legitimacy and regulating innovative practices, backing professional exercise and encouraging professionals to expand their practices.

It is important for the Ministry of Health and state and municipal health departments to implement inter-sector plans to promote physical activity, strengthening the fight against physical inactivity, and the encouragement of health lifestyles as prevention and treatment of chronic diseases¹⁷. It is thus urgent to issue official guidelines for the population on physical activity, particularly at home, during the period of social isolation, as well as for professionals and establishments.

Programs for physical exercise at home are considered effective, safe, and low-cost when conducted under orientation, according to each individual's specificities, promoting gains in health-related physical fitness and skills, positively impacting overall functioning and quality of life^{27,28}. Such programs thus present a promising and effective alternative for increasing and maintaining levels of physical activity in the population and the immune response to SARS-CoV-2, to be adopted as a public health policy.

In addition to important general strategies such as the WHO guidelines on maintenance of healthy lifestyle, with at least 150 minutes a week of moderate physical activity for adults²⁴, some individuals may need specific programs adapted to their physical and psychosocial conditions, which can favor adherence and attenuate risks related to preexisting comorbidities²⁹.

Whenever possible, the following components should be taken into account for the prescription of physical activity: frequency, intensity, time, type, amount, and progression of the activity, besides the possible effects each component can have and receive in relation to the specificities of individuals and groups, such as age bracket, disease progression, specific treatments, symptoms, situation of social vulnerability, work status, emotional frailty, risk of falls, and religious beliefs, among others²⁹.

We thus propose a holistic approach that not only relates physical activity to its practitioners' functional status and self-rated health status, ranging from their level of physical fitness to the performance of the proposed program, but also presents feasible exercises according to each person's preferences and possibilities.

When possible, a variety of modalities should be presented, such as dance, resistance exercise, yoga, games, and others, encompassing factors that may influence overall functional decline and conditions that lead to disabilities³⁰, as well as physical, social, emotional, and spiritual aspects that can impact physical activity, assisting adherence and adjustment of the proposal for the group to which it is targeted.

The creation of remote communication channels between professionals and users/clients can thus allow the program's adjustment when necessary and the evaluation of its possible impacts on health. These actions can be adopted by liberal physical education professionals, such as personal trainers, as well as public and private health and physical activity establishments. For example, the physical education professionals affiliated with primary healthcare units can develop physical activity programs based on instructional materials and online communication, with prescriptions and evaluations according to groups, favoring the continuity of care and maintenance of the bond.

These recommendations apply both to periods of social isolation imposed by epidemics and pandemics and to periods of "normalcy", directed to vulnerable groups or those with frailties that prevent them from leaving home, or even according to individual preferences.

We emphasize that physical activities, including exercise at home, should be a public health policy widely publicized and disseminated and adjusted to the new social dynamics, seeking to encourage people's autonomy and independence and strengthening self-care with support.

Importantly, periods of social isolation are usually not experienced in the long term. However, their impacts can be experienced throughout life. They require coordinated actions based on an expanded concept of health, attuned to the differences between groups and health inequities. We thus urgently need strategies that help people become or remain physically active at home, promoting their autonomy in managing and making decisions on their lives.

Contributors

Both authors participated in the study's conception, project, writing, critical revision, and approval of the final version.

Additional informations

ORCID: Breno Augusto Bormann de Souza Filho (0000-0002-1700-8688); Érika Fernandes Tritany (0000-0002-7099-4800).

References

1. Andersen KG, Rambaut A, Lipkin WI, Holmes EC, Garry RF. The proximal origin of SARS-CoV-2. *Nat Med* 2020; 26:450-2.
2. Ayittey FK, Ayittey MK, Chiwero NB, Kamasah JS, Dzuvoor C. Economic impacts of Wuhan 2019-nCoV on China and the world. *J Med Virol* 2020; 92:473-5.
3. World Health Organization. Novel coronavirus (COVID-19) situation. <https://experience.arcgis.com/experience/685d0ace521648f8a5beee1b9125cd> (accessed on 21/Mar/2020).
4. Ministério da Saúde. Coronavírus: o que você precisa saber e como prevenir o contágio. <https://coronavirus.saude.gov.br/> (accessed on 28/Apr/2020).

5. Brasil. Lei nº 13.979, de 6 de fevereiro de 2020. Dispõe sobre as medidas para enfrentamento da emergência de saúde pública de importância internacional decorrente do coronavírus responsável pelo surto de 2019. Diário Oficial da União 2020; 7 feb.
6. Ministério da Saúde. Portaria nº 188, de 3 de fevereiro de 2020. Declara Emergência em Saúde Pública de importância Nacional (ESPIN) em decorrência da Infecção Humana pelo novo Coronavírus (2019-nCoV). Diário Oficial da União 2020; 4 feb.
7. Anderson RM, Heesterbeek H, Klinkenberg D, Hollingsworth TD. How will country-based mitigation measures influence the course of the COVID-19 epidemic? *Lancet* 2020; 395:931-4.
8. Monteiro N, Aquino V, Pacheco S, Schenck L. Saúde anuncia orientações para evitar a disseminação do coronavírus. Agência Saúde 2020; 13 mar. <https://www.saude.gov.br/noticias/agencia-saude/46540-saude-anuncia-orientacoes-para-evitar-a-disseminacao-do-coronavirus>.
9. Rio de Janeiro. Decreto nº 46.973, de 16 de março de 2020. Reconhece a situação de emergência na saúde pública do Estado do Rio de Janeiro em razão do contágio e adota medidas enfrentamento da propagação decorrente do novo coronavírus (COVID-19); e dá outras providências. Diário Oficial do Estado do Rio de Janeiro 2020; 18 mar.
10. São Paulo. Decreto nº 64.862, de 13 de março de 2020. Dispõe sobre a adoção, no âmbito da Administração Pública direta e indireta, de medidas temporárias e emergenciais de prevenção de contágio pelo COVID-19 (Novo Coronavírus), bem como sobre recomendações no setor privado estadual. Diário Oficial do Estado de São Paulo 2020; 14 mar.
11. São Paulo. Decreto nº 64.864, de 16 de março de 2020. Dispõe sobre a adoção de medidas adicionais, de caráter temporário e emergencial, de prevenção de contágio pelo COVID-19 (Novo Coronavírus), e dá providências correlatas. Diário Oficial do Estado de São Paulo 2020; 17 mar.
12. São Paulo. Decreto nº 64.865, de 18 de março de 2020. Acrescenta dispositivo ao Decreto nº 64.862, de 13 de março de 2020, que dispõe sobre a adoção, no âmbito da Administração Pública direta e indireta, de medidas temporárias e emergenciais de prevenção de contágio pelo COVID-19 (Novo Coronavírus), bem como sobre recomendações no setor privado estadual. Diário Oficial do Estado de São Paulo 2020; 19 mar.
13. Niterói. Decreto nº 13.513, de 19 de março de 2020. Dispõe sobre o fechamento de bares, restaurantes, shoppings centers, centros comerciais, clubes e quiosques de alimentação, bem como sobre a proibição de permanência em praias e praças e fechamento de acesso às praias da região oceânica como forma de evitar a aglomeração de pessoas e evitar o crescimento dos casos de coronavírus em niterói e dá outras providências. Diário Oficial 2020; 19 mar.
14. Rio de Janeiro. Decreto nº 46.980, de 19 de março de 2020. Atualiza as medidas de enfrentamento da propagação decorrente do novo coronavírus (COVID-19) em decorrência da situação de emergência em saúde e dá outras providências. Diário Oficial do Estado do Rio de Janeiro 2020; 19 mar.
15. Ekelund U, Steene-Johannessen J, Brown WJ, Fagerland MW, Owen N, Powell KE, et al. Does physical activity attenuate, or even eliminate, the detrimental association of sitting time with mortality? A harmonised meta-analysis of data from more than 1 million men and women. *Lancet* 2016; 388:1302-10.
16. Ding D, Lawson KD, Kolbe-Alexander TL, Finkelstein EA, Katzmarzyk PT, van Mechelen W, et al. The economic burden of physical inactivity: a global analysis of major non-communicable diseases. *Lancet* 2016; 388:1311-24.
17. Reis RS, Salvo D, Ogilvie D, Lambert EV, Goenka S, Brownson RC. Scaling up physical activity interventions worldwide: stepping up to larger and smarter approaches to get people moving. *Lancet* 2016; 388:1337-48.
18. Brazendale K, Beets MW, Weaver RG, Pate RR, Turner-McGrievy GM, Kaczynski AT, et al. Understanding differences between summer vs. school obesogenic behaviors of children: the structured days hypothesis. *Int J Behav Nutr Phys Act* 2017; 14:100.
19. Marcus B, Forsyth L. Motivating people to be physically active. 2nd Ed. Champaign: Human Kinetics; 2009. (Physical Activity Intervention Series).
20. Lee I-M, Shiroma EJ, Lobelo F, Puska P, Blair SN, Katzmarzyk PT. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *Lancet* 2012; 380:219-29.
21. Campbell JP, Turner JE. Debunking the myth of exercise-induced immune suppression: redefining the impact of exercise on immunological health across the lifespan. *Front Immunol* 2018; 9:648.

22. Zhou F, Yu T, Du R, Fan G, Liu Y, Liu Z, et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *Lancet* 2020; 395:1054-62.
23. Bushman BA; American College of Sports Medicine, organizadores. *ACSM's complete guide to fitness & health*. 2nd Ed. Champaign: Human Kinetics; 2017.
24. World Health Organization. *More active people for a healthier world: Global Action Plan on Physical Activity 2018-2030*. Geneva: World Health Organization; 2018.
25. Wang G, Zhang Y, Zhao J, Zhang J, Jiang F. Mitigate the effects of home confinement on children during the COVID-19 outbreak. *Lancet* 2020; 395:945-7.
26. Conselho Federal de Educação Física. *Recomendações do CONFEF aos profissionais de educação física no contexto da COVID-19*. <https://www.confef.org.br/confef/comunicacao/noticias/1475> (accessed on 20/Mar/2020).
27. Matias GHL, Guerra ACCG, Souza Filho BAB, Lima JTO, Carmo CN, Mattos IE. Repetibilidade e reprodutibilidade de um manual de exercícios físicos domiciliares. *Fisioter Pesqui* 2018; 25:209-16.
28. Souza Filho BAB, Silva Júnior JR, Smethurst WS, Santos DC, Carmo CN, Mattos IE, et al. Efeito de 12 semanas de exercício físico domiciliar na aptidão física de idosas com câncer de mama em hormonioterapia. *Acta Fisiátr* 2019; 26(1). <https://www.revistas.usp.br/actafisiatrica/article/view/163420>.
29. American College of Sports Medicine; Riebe D, Ehrman JK, Liguori G, Magal M, organizadores. *ACSM's guidelines for exercise testing and prescription*. 10th Ed. Philadelphia: Wolters Kluwer; 2018.
30. Rikli RE, Jones CJ. *Senior fitness test manual*. 2nd Ed. Champaign: Human Kinetics; 2012.

Submitted on 21/Mar/2020

Final version resubmitted on 29/Apr/2020

Approved on 30/Apr/2020