Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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EDITORIAL COMMENT

Stay at home, connected, and get moving!

Fique em casa, ligado e mexa-se!

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The COVID-19 pandemic has changed our lives. Governments around the world have implemented various safety and preventive measures, such as lockdowns and social distancing, leading to isolation and decreasing levels of physical activity. This increased sedentary behavior has significant adverse clinical consequences, reversing the multiple benefits of physical activity and exercise training, particularly in patients with chronic diseases. Among the most seriously affected of these patients are those with cardiovascular disease who are enrolled on cardiac rehabilitation (CR) programs. The negative effects of these policies on both mental and physical health, especially among older patients, have prompted the adoption of different strategies to counteract these consequences.[1] Among these strategies, evidence-based recommendations for exercise training at home have been introduced, aiming to achieve and maintain good physical health.[2] The closing of center-based CR programs has led several medical societies to develop alternative delivery home-based models supported by new technological options, especially virtual or digital tools.[3]

The study by Pinto and colleagues published in this issue of the *Journal*[4] is a good example of how to deliver CR during the COVID-19 pandemic, demonstrating the impact of home-based CR on levels of physical activity. This prospective cohort study analyzed a home-based program that delivered digital CR using technology (including telephone, video-conferencing, email, text and other forms of messaging, smartphone applications, and online platforms) to maintain the quality and effectiveness of care, after the closure of a center-based program due to COVID-19. Of the 116 patients, 90% with coronary artery disease, assessed at baseline and at three months who were included in the multidisciplinary digital CR program, 98 completed all the online assessments. At three months nearly 70% met the recommendations for physical activity (assessed with the International Physical Activity Questionnaire-Short Form) and 41% performed more than 300 min per week of moderate to vigorous physical activity. Almost half of the participants (46.9%) completed at least one online exercise training session per week and attended at least one of the 13 online educational sessions (49%), while more than half (58.2%) stated that this program helped them to maintain a healthier lifestyle during lockdown.

The main results of this study, which showed an increase in moderate to vigorous physical activity and a decrease in sedentary time at three months after the home-based digital CR program, may prefigure the significant positive impact of these models in the future. Alternative methods of delivering CR, including home-based programs, were already well established before the COVID-19 pandemic, providing improvements in survival, quality of life, functional status and cardiovascular risk profile. However, it is well known that the number of patients referred for CR in Portugal (and in other countries) is low, due to various barriers. In this context, although the COVID-19 pandemic may be the motive for the development of alternative methods, we should look forward and analyze the lessons learned concerning the

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influence of technology in health care. In the specific case of CR, as the situation remains far from ideal, these models could help to improve adherence, increase motivation and expand access for patients without a CR center near where they live. One important point is to ensure that quality indicators are met and that care processes are protocolized, followed by the development of sustainable virtual or digital solutions to account for gaps in CR that existed before the pandemic.[5]

There are several points, as illustrated and discussed in the present study, that require further analysis and clarification. It is important to compare the efficacy of home-based and center-based CR programs. The great majority of the patients included had coronary artery disease; home-based models should be assessed in patients with other clinical conditions, such as heart failure, the management of which is more complex. However, even in patients with heart failure, implementation of home-based CR programs can be expected to improve quality of life and reduce hospitalizations, minimizing the negative impact of social isolation and low levels of exercise.[6] Distance care and the virtual management of higher-risk patients necessitate closer control and monitoring, in ways that will need to be defined in the future. Beyond the clear improvement in physical activity as shown in this study, CR has other core components that should also be tested in these models to ensure the overall success of the intervention. The technological interface must be attractive and easy to use, given the difficulties to be expected among the elderly, while the cost of and access to these tools must also be taken into consideration.

Home-based digital programs are the future of CR and essential for a patient-centered approach, with the potential capacity to enhance the participation of patients in this intervention. Despite the many challenges and questions that persist, even in the COVID-19 era, it is possible to stay at home and be physically active, even in the presence of cardiovascular disease; the rule is 'stay connected'!

Conflicts of interest

The author has no conflicts of interest to declare.

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