

The future of post-COVID-19 rehabilitation

El futuro de la rehabilitación post-COVID-19

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A year and a half after the pandemic, in which efforts have been fundamentally based on avoiding the collapse of hospitals and the development, in record time, of innovative vaccines, a worrying consequence has appeared: clinical sequelae among survivors of this disease.



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From the overwhelming number of infected people (over 430 million people until February 2022) ¹, it was possible to predict that a significant percentage of them was going to develop sequelae, which would make it difficult for them to reintegrate to their jobs, families, and society, of course. Not all infected persons will present sequelae; however, the odds will be significantly higher for the ones affected by the most severe forms of the disease, such as those who suffered acute respiratory distress syndrome (ARDS), and particularly those with comorbidities, as well as older adults ². In recent months, this topic has been so important that a new concept related to the persistence of symptoms for more than three months has appeared: persistent COVID, or “long COVID” ³. Without a doubt, this new condition allows us to think of persistent COVID as a chronic disease; therefore, rehabilitation takes on an even more preponderant role, not only because of the different systems involved but also because of the duration of the sequelae.

These data should not surprise anyone. We already had a history that ARDS frequently generates long-term comorbidity related to extrapulmonary complications ⁴. The literature has shown that, regardless of the age of the patients, they are left with physical and psychological sequelae that affect their quality of life up to 5 years after hospitalization ⁴. Although in the case of COVID-19, not so much time has passed, current reports show that patients with prolonged COVID present fatigue and dyspnea in 39% and 32%, respectively ⁵. These data have a pathophysiological correlation since 39% also present abnormal lung function tests, especially in diffusion capacity and 59% present pathological images in chest tomography ⁵. Due to these sequelae, returning to their previous activities will be difficult for those post-COVID-19 patients who were hospitalized.

Faced with this scenario, rehabilitation emerges as a non-pharmacological strategy for managing sequelae. The first results have been favorable in terms of improvement in physical capacity, activities of daily living, quality of life, and, of course, reducing symptoms ^{6,7}. These data are consistent with what has been observed in other pathologies in which rehabilitation has shown effectiveness, and are part of the clinical guidelines and the recommendations of expert consensus ^{8,9}.

However, knowing what the consequences of COVID-19 are, and knowing the effects of rehabilitation on this population, we are left with the most difficult challenge, which is to transfer this knowledge to people who are at home with sequelae; particularly for those who have not received care due to the collapse of health systems, but whose number increases day after day as invisible victims of this pandemic.

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The pandemic posed a complex challenge for the health team to implement face-to-face rehabilitation programs. However, there has been a rapid adaptation of rehabilitation teams thanks to recent advances in communication and technology, which allows the use of low-cost Internet connections, smartphones, and tablets, as well as the appearance of applications that facilitate video calls¹⁰. Before the pandemic, many countries did not have tele-rehabilitation programs, but they are now a reality and have proven to be as effective as face-to-face programs¹¹. For this, various consensus and recommendations have been established that are the basis for establishing comprehensive rehabilitation programs that include multiple specialists and account for the diversity of sequelae suffered by these people^{12,13}.

However, implementation is not that easy. For rehabilitation to be a reality, a series of conditions must be met. The first one is that health systems see rehabilitation as an investment, and not as an expense. An economic and social investment that will improve the quality of life of millions of people around the world, and who will be able to return to their jobs and their lives with the best possible conditions. And from an economic point of view, other pathologies have already shown that rehabilitation is cost-effective^{14,15}. It is not yet possible to verify this in COVID-19, considering that there have not yet passed two years since the start of the current pandemic

Another important condition that must be met is the proactivity, impetus, and dedication of our professionals dedicated to rehabilitation. Until now, this has been the main route of implementation of rehabilitation. However, history is full of personal efforts that have been successful and have been transformed into regional or national programs.

However, there is a more important condition, which allows professionals and health systems to decide to implement an intervention such as rehabilitation, and that is the evidence. For this, it is essential that we report what we do, so that the benefit of our patients be that of all patients.

References

1. John Hopkins University. COVID-19 dashboard by centre for systems science and engineering at the John Hopkins University; 2021. Cited: 2022 Feb 28; Available from:
2. Torres-Castro R, Solis-Navarro L, Sitjà-Rabert M, Vilaró J. Functional limitations post-COVID-19: A comprehensive assessment strategy. *Arch Bronconeumol*. 2021; 57: 7. Doi: 10.1016/j.arbres.2020.07.025.
3. Mahase E. Covid-19: What do we know about "long covid"? *BMJ*. 2020; 370: m2815. Doi: 10.1136/bmj.m2815
4. Herridge MS, Tansey CM, Matté A, Tomlinson G, Diaz-Granados N, Cooper A, *et al*. Functional disability 5 years after acute respiratory distress syndrome. *N Engl J Med*. 2011; 364:1293-304. doi: 10.1056/NEJMoa1011802.
5. Sanchez-Ramirez DC, Normand K, Zhaoyun Y, Torres-Castro R. Long-Term Impact of COVID-19: A Systematic Review of the Literature and Meta-Analysis. *Biomedicines*. 2021; 9(8): 900. doi: 10.3390/biomedicines9080900
6. Hermann M, Pekacka-Egli A-M, Witassek F, Baumgaertner R, Schoendorf S, Spielmanns M. Feasibility and Efficacy of Cardiopulmonary Rehabilitation After COVID-19. *Am J Phys Med Rehabil*. 2020; 99(10): 865-9. doi: 10.1097/PHM.0000000000001549.
7. Zampogna E, Paneroni M, Belli S, Aliani M, Gandolfo A, Visca D, *et al*. Pulmonary rehabilitation in patients recovering from COVID-19. *Respiration*. 2021; 100(5): 416-422. doi: 10.1159/000514387.
8. Garvey C, Bayles M, Hamm L, Hill K, Holland A, Limberg T, *et al*. Pulmonary rehabilitation exercise prescription in chronic obstructive pulmonary disease: review of selected guidelines: an official statement from the american association of cardiovascular and pulmonary rehabilitation. *J Cardiopulm Rehabil Prev*. 2016; 36(2): 75-83. doi: 10.1097/HCR.000000000000171.

9. Mehra V, Gaalema D, Pakosh M, Grace S. Systematic review of cardiac rehabilitation guidelines: Quality and scope. *Eur J Prev Cardiol.* 2020; 27(9): 912-928. doi: 10.1177/2047487319878958.
10. DeFre GM. Telemedicine in Rehabilitation. *Phys Med Rehabil Clin N Am.* 2019; 30(2): 473-483. doi: 10.1016/j.pmr.2018.12.002.
11. Seron P, Oliveros MJ, Gutierrez-Arias R, Fuentes-Aspe R, Torres-Castro R, Merino-Osorio C, *et al.* Effectiveness of telerehabilitation in physical therapy: A rapid overview. *Phys Ther.* 2021; 101(6): pzab053. doi: 10.1093/ptj/pzab053.
12. Barker-Davies RM, O'Sullivan O, Senaratne KPP, Baker P, Cranley M, Dharm-Datta S, *et al.* The Stanford Hall consensus statement for post-COVID-19 rehabilitation. *Br J Sports Med.* 2020; 54(16): 949-959. doi: 10.1136/bjsports-2020-102596.
13. Vitacca M, Carone M, Clini EM, Paneroni M, Lazzeri M, Lanza A, *et al.* Joint statement on the role of respiratory rehabilitation in the COVID-19 crisis: the italian position paper. *Respiration.* 2020; 99(6): 493-499. doi: 10.1159/000508399.
14. Shields G, Wells A, Doherty P, Heagerty A, Buck D, Davies L. Cost-effectiveness of cardiac rehabilitation: a systematic review. *Heart.* 2018; 104(17): 1403-1410. doi: 10.1136/heartjnl-2017-312809.
15. Liu S, Zhao Q, Li W, Zhao X, Li K. The cost-effectiveness of pulmonary rehabilitation for COPD in different settings: a systematic review. *Appl Health Econ Health Policy.* 2021; 19(3): 313-324. doi: 10.1007/s40258-020-00613-5.