

## Commentary

Telerehabilitation During COVID-19 Pandemic:  
Benefits and DrawbacksManal K. Youssef<sup>1\*</sup> *1. Department of Internal Medicine, Cairo University Hospitals, Giza, Egypt.***Citation** Youssef MK. Telerehabilitation during COVID-19 Pandemic: Benefits and Drawbacks. *Physical Treatments*. 2022; 12(1):61-64. <http://dx.doi.org/10.32598/ptj.12.1.439.4> <http://dx.doi.org/10.32598/ptj.12.1.439.4>**Article info:****Received:** 24 Oct 2021**Accepted:** 30 Nov 2021**Available Online:** 01 Jan 2022**Keywords:**Telerehabilitation,  
Rehabilitation, COVID-19,  
Chronic diseases,  
Physical therapy**ABSTRACT**

The COVID-19 pandemic has impacted negatively our society and resulted in numerous deaths. It has had an effect on every facet of health care delivery. Rules, regulations, and payment policies were changed to allow extensive use of telecommunications technology in lieu of inperson clinical visits to protect health care personnel and patients throughout the country from the risk of disease transmission. Telerehabilitation (TR) is equally effective in delivering specific health, medical, and rehabilitation expertise from worldclass medical centers to homes and small clinics throughout metropolitan regions. Maintaining social distance and self-isolation during the worldwide coronavirus epidemic requires online courses, films with exercise instructions, or individual online consultations.

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## Highlights

- Many rehabilitation therapists may find it difficult to continue a supervised exercise program in areas where infection control measures against COVID-19 transmission are feared.
- Maintaining social distance and self-isolation during the worldwide coronavirus epidemic requires online courses, films with exercise instructions, or individual online consultations.
- Telerehabilitation (TR) is equally effective in delivering specific health, medical, and rehabilitation expertise from world-class medical centers to homes and small clinics throughout metropolitan regions.

## Plain Language Summary

Evidence suggests that the COVID-19 patients in intensive care may develop physical deconditioning, exercise-induced dyspnea, and muscle atrophy, among other complications, at the time of hospital release. Controlled rehabilitation studies have shown that managing an injury or disease quickly is crucial for achieving adequate results in terms of boosting a patient's self-efficacy. The goal of the inpatient telerehabilitation program for COVID-19 patients was to carefully assess discharge barriers, give patient education, and provide a home exercise regimen while limiting staff exposure.

### 1. Introduction

Many rehabilitation therapists may find it difficult to continue a supervised exercise program in areas where infection control measures against COVID-19 transmission are feared, such as nursing homes or patient health care facilities. This attitude could be explained by the possibility of cross-infection that could be acquired from constant close contact with the patient during rehabilitation sessions. Maintaining social distance and self-isolation during the worldwide coronavirus epidemic requires online courses, films with exercise instructions, or individual online consultations [1].

Telerehabilitation (TR) is a fast-evolving technology that allows rehabilitation knowledge and services to be extended to underserved and inaccessible locations. TR is equally effective in delivering specific health, medical, and rehabilitation expertise from world-class medical centers to homes and small clinics throughout metropolitan regions. TR has shown to be beneficial in pain reduction, functional improvement, and quality of life improvement in musculoskeletal disorders, cardiac and respiratory diseases, and neurological dysfunctions [2, 3].

### Consequences of COVID-19

COVID-19 can have serious consequences for the patient, one of the most serious of which is respiratory system involvement due to bilateral pneumonia. Strength loss, dyspnea, polyneuropathy, and multi-organ involvement (liver, myocarditis, and even brain injury) are all

prevalent symptoms. Physiotherapy is essential in the rehabilitation of functions and the improvement of patients' quality of life [4-6].

The short-term goal for patients with mild-moderate respiratory disease is to gradually improve the patients psychologically and physically using different types of exercise guidelines to regain their previous capacity for exercise [7].

Evidence suggests that COVID-19 patients in intensive care may develop physical deconditioning, exercise-induced dyspnea, and muscle atrophy, among other complications, at the time of hospital release. Patients should be educated about the drainage of secretion and respiratory exercises. If the patient's clinical manifestations require it, training of peripheral muscle strengthening exercises, changes in position, and remaining active whenever possible will be the main line of treatment in these patients with a severe degree of the disease [8, 9].

### Goals of TR

Controlled rehabilitation studies have shown that managing an injury or disease quickly is crucial for achieving adequate results in terms of boosting a patient's self-efficacy. As a result, a rehabilitation program should begin as soon as feasible, be as intensive as possible, last as long as possible, and last throughout the recovery period. The earliest stages of rehabilitation, in most circumstances, are the most difficult. Even if patients require specific and extensive therapy, the onset of a disease or injury could be performed by patients at home. For these reasons, TR was created to achieve the same effects as a traditional rehabilitation process in a hospital or with a physiotherapist face to face. There have

been reports on several types of TR treatments, as well as their respective intensities and durations [10].

The goal of the inpatient TR program for COVID-19 patients was to carefully assess discharge barriers, give patient education, and provide a home exercise regimen while limiting staff exposure. The success criteria for the program were defined by the creation of an algorithm that successfully trained staff regarding the intervention safety and made sure that the patients were able to securely go home [11], allowing them to return home after the acute phase of their illness, and reducing hospitalization periods and expenditures for both patients and health care providers. TR helps the treatment of acute disorders by replacing the usual face-to-face connection between the patient and the rehabilitator [12].

### Types of TR

Clinical rehabilitation services with a focus on examination, diagnosis, and treatment are referred to as TR. It has several forms, including two-way real-time visits with voice, video, or both, asynchronous e-visits, virtual check-ins, remote evaluations of recorded films or photos, and telephone assessment and management [13]. Videoconferencing, email, and texting are some methods that are all effective for long-distance communication. It is now possible to control robots, robotic arms, and drones from a distance [14].

The TR group is given an eight-week tailored program that includes at least one session per day and is delivered via a web and mobile app. Health practitioners can use the TR tool to develop tailored exercise plans, hold video conferences with patients, generate videos, photos, and parameters for each activity, distribute them via email, and follow up with patients using the mobile applications. Weekly phone calls and evaluations of self-kept activity diaries, as well as further communication by text message, are examples of a less technology-driven method.

The patient's literacy, degree of function, communication hurdles, and technological challenge of Internet connectivity are all factors that impede TR. However, WhatsApp, Skype, and FaceTime are all fantastic video conferencing platforms that most people are familiar with.

Web-based physiotherapy is an exercise program recommended by a physiotherapist and provided through an Internet platform. It was created to allow people to participate in workouts. The website features a library of over 300 exercises, each of which includes a video clip, audio, and text description. The physiotherapist could access the activity diary from afar and make changes to the participant's regimen as needed [15].

### Advantages of TR

TR allows members of the rehabilitation team to communicate regularly and assess the patient's environment in real time. As a result, it increases patient satisfaction and quality of life while lowering the cost and time required to obtain treatment. TR makes it easier to achieve the goals of mainstreaming people with disabilities in areas outside of healthcare.

### TR drawbacks

TR is not covered by all insurance companies. These laws, on the other hand, are continually changing. Hackers and other criminals may be able to gain access to a patient's medical information if they use TR on a public network or through an unencrypted channel. A poor connection can make it difficult to provide appropriate treatment to someone who needs it in an emergency. During TR sessions, providers must rely on patient self-reports, this may necessitate asking more questions in order to obtain a complete health history. If a patient fails to mention an important symptom that was visible during in-person therapy, treatment may be jeopardized. TR is a newer method of therapy; hence, its effectiveness is unknown at this time. Time will tell how psychological issues affect healing. Some patients who do not have direct therapist intervention may exercise less. They believe they are not given the attention they deserve [16].

## 2. Conclusion

TR is a new way of providing rehabilitation services that rely on technology to help clients, clinicians, and systems to overcome distance, time, and cost barriers. The motivating reason behind TR has been to lower expenses, expand geographic accessibility, or act as a tool to stretch limited resources as an alternative to face-to-face rehabilitation procedures.

### Ethical Considerations

#### Compliance with ethical guidelines

This article is a meta-analysis with no human or animal sample.

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#### Conflict of interest

The author declared no conflict of interest.

## References

- [1] Stott D, Quinn T. Principles of rehabilitation of older people. *Medicine*. 2017; 45(1):1-5. [DOI:10.1016/j.mpmed.2016.10.002]
- [2] Mani S, Sharma S, Omar B, et al. Validity and reliability of Internet-based physiotherapy assessment for musculoskeletal disorders: A systematic review. *Journal of Telemedicine and Telecare*. 2017; 23(3):379-91. [DOI:10.1177/1357633X16642369] [PMID]
- [3] Appleby E, Gill ST, Hayes LK, Walker TL, Walsh M, Kumar S. Effectiveness of tele rehabilitation in the management of adults with stroke: A systematic review. *PLoS One*. 2019; 14(11): e0225150. [DOI:10.1371/journal.pone.0225150] [PMID] [PMCID]
- [4] Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, et al. Clinical characteristics of coronavirus disease 2019 in China. *The New England Journal of Medicine*. 2020; 382(18):1708-20. [DOI:10.1056/NEJMoa2002032] [PMID] [PMCID]
- [5] Mundell EJ. In some cases, COVID-19 may harm the brain [Internet]. 2020. Available from: <https://www.webmd.com/lung/news/20200402/in-some-cases-covid-19-may-harm-the-brain#1>
- [6] Bangash MN, Patel J, Parekh D. COVID-19 and the liver: Little cause for concern. *Lancet Gastroenterol Hepatol*. 2020; 5(6):529-30. [DOI:10.1016/S2468-1253(20)30084-4] [PMID] [PMCID]
- [7] Zhao HM, Xie YX, Wang C. Recommendations for respiratory rehabilitation of coronavirus disease 2019 in adult. *Chinese Medical Journal*. 2020; 133(13):1595-602. [DOI:10.1097/CM9.0000000000000848] [PMID] [PMCID]
- [8] Almekhlafi GA, Albarrak MM, Mandourah Y, Hassan S, Alwan A, Abudayah A, et al. Presentation and outcome of Middle East respiratory syndrome in Saudi intensive care unit patients. *Critical Care*. 2016; 20(1):123. [DOI:10.1186/s13054-016-1303-8] [PMID] [PMCID]
- [9] Lau HMC, Ng GYF, Jones AYM, Lee EWC, Siu EHK, Hui DSC. A randomized controlled trial of the effectiveness of an exercise training program in patients recovering from severe acute respiratory syndrome. *The Australian Journal of Physiotherapy*. 2005; 51(4):213-9. [DOI:10.1016/S0004-9514(05)70002-7]
- [10] Parmanto B, Saptono A. Tele rehabilitation: State-of-the-art from an informatics perspective. *International Journal of Telerehabilitation*. 2009; 1(1):73-84. [DOI:10.5195/ijt.2009.6015] [PMID] [PMCID]
- [11] Rosen K, Patel M, Lawrence C, Mooney B. delivering telerehabilitation to COVID-19 in patients: A retrospective chart review suggest it is a viable option. *HSS Journal: The Musculoskeletal Journal of Hospital for Special Surgery*. 2020; 16(Suppl 1):1-7. [DOI:10.1007/s11420-020-09774-4] [PMID] [PMCID]
- [12] Carey JR, Durfee WK, Bhatt E, Nagpal A, Weinstein SA, Anderson KM, et al. Comparison of finger tracking versus simple movement training via telerehabilitation to alter hand function and cortical reorganization after stroke. *Neurorehabilitation and Neural Repair*. 2007; 21(3):216-32. [DOI:10.1177/1545968306292381] [PMID]
- [13] Cowper-Ripley DC, Jia H, Wang X, Freytes IM, Hale-Gallardo J, Castaneda G, et al. Trends in VA telerehabilitation patients and encounters over time and by rurality. *Federal Practitioner*. 2019; 36:122-8. [PMID] [PMCID]
- [14] Ackerman MJ, Filart R, Burgess LP, Lee I, Poropatich RK. Developing next-generation telehealth tools and technologies: Patients, systems, and data perspectives. *Telemedicine Journal and E-Health*. 2010; 16(1):93-5. [DOI:10.1089/tmj.2009.0153] [PMID] [PMCID]
- [15] Paul L, Coulter EH, Miller L, Mcfadyen A, Dorfman J, Mattison PG. Web based physiotherapy for people moderately affected with multiple sclerosis, quantitative and qualitative data from randomized controlled pilot study. *Clinical Rehabilitation*. 2014; 28(9):924-35. [DOI:10.1177/0269215514527995] [PMID]
- [16] Burdea GC. Virtual rehabilitation - benefits and challenges. *Methods of Information in Medicine*. 2003; 42(5):519-23. [DOI:10.1055/s-0038-1634378] [PMID]