



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.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



## Letter to the Editor regarding Menendez et al: “Orthopedic surgery post COVID-19: an opportunity for innovation and transformation”

*To the Editor:*

We read the editorial “Orthopedic Surgery Post COVID-19: An Opportunity for Innovation and Transformation” with great interest and appreciate the information provided for the benefit of all practicing physicians.<sup>7</sup> We agree with most of what has been written in the “Online Tools for Recovery” and the “Decreased Utilization of Formal Physical Therapy” sections of the article. However, although we agree with what has been stated, here’s what our literature search yielded about the advantages of telerehabilitation in shoulder and the available evidence on apps like mHealth.

### Advantages and limitations with telerehabilitation

There are 4 domains to telehealth: (1) tele-education, (2) teleconsultation, (3) telemonitoring, and (4) teletreatment.<sup>9</sup> Telerehabilitation is a form of tele-treatment in which rehabilitation services are dispensed at patients’ homes using video telecommunication services with real-time synchronous exchange of information.<sup>3</sup> Because telerehabilitation was found to be equally effective as conventional therapy, it was being practiced even before the COVID times<sup>3</sup>; however it is truly valuable now during the lockdown. Home-based exercises for stiff shoulders have been found to be effective in a large multicenter trial,<sup>6</sup> and combining them with teletherapy services is the logical next step. The advantages of telerehabilitation include reducing unnecessary travel to the hospital and person-to-person contact while maintaining social distancing. Although some of the patients actually reside in remote areas, others might be unable to manage travel in the lockdown period. Telemedicine offers the opportunity to deliver rehabilitative services in the patient’s home, closing geographic, physical, and motivational gaps.

Punctuality on either side is also ensured because travel times are saved at both ends. Telerehabilitation has been preferred in older patients residing in remote locations.<sup>1</sup> Specialist supervision also enables maintaining the motivation and self-confidence needed to progress through regular video calls. There is a change in the patient’s self-perception from a dependent person to being a strengthened person at home, as he or she is transformed to an active receiver from being a passive one.<sup>4</sup> Rehabilitation in one’s own home also empowers the patient and shifts the balance of power from the physiotherapist to the patient.<sup>4</sup>

Both self-rehabilitation and telerehabilitation have shown good results in patients who have undergone either shoulder surgery or conservative therapy for shoulder fractures.<sup>9</sup> Telerehabilitation has been proven to produce good functional results, lower pain scores, and high patient satisfaction in patients with conservatively treated fracture of the proximal humerus and also in patients after shoulder arthroplasty.<sup>4</sup> No difference in patient satisfaction and patient-reported health index (EuroQol-5D) between telerehabilitation and conventional consultations was observed by Buvik et al.<sup>2</sup>

### mHealth

It is worthwhile to mention here that mHealth is another subset of tele-treatment that includes application (app)-based technology for smartphones and tablets to advance medical and public health practice.<sup>8</sup> Although several apps are concerned with a specific aspect of health (weight loss, blood glucose), some of them may offer multiple functions to support goals of rehabilitation health care teams by progress tracking, patient education, and calendar management. However, most of the mHealth apps that use the remote technology available in smartphones are not grounded in scientific evidence and may not be as effective as telerehabilitation via 2-way video conferencing.<sup>8</sup>

---

DOI of original article: <https://doi.org/10.1016/j.jse.2020.03.024>

## Barriers and Limitations in Telerehabilitation

The limitations in telerehabilitation are related to patient literacy, his or her level of function, communication barriers, and technical challenges of Internet connectivity.<sup>1,4,5</sup> It may be worthwhile to train the patient on the installation and use of the video technology or app-based video conferencing platform, in particular, elderly patients who may find the technology daunting while using it for the first time. However, WhatsApp, Skype, and Facetime are also excellent platforms for video conferencing, and most people are familiar with their functions. The dispensation of telehealth services is limited, however, in patients with visual or hearing impairments. An interrupted video link can reduce the compliance of the patient especially if he or she is elderly, and this may weaken his or her confidence in the potential of health care delivery via technology.

### Disclaimer

The authors, their immediate families, and any research foundations with which they are affiliated have not received any financial payments or other benefits from any commercial entity related to the subject of this article.

*Dipit Sahu, MS*

*Department of Orthopaedic Surgery, Sir H.N. Reliance  
Foundation Hospital, Mumbai, India  
Mumbai Shoulder Institute, Mumbai, India  
E-mail: [dip.it@me.com](mailto:dip.it@me.com)*

*Vaibhavi Rathod, MPT*

*Mumbai Shoulder Institute, Mumbai, India*

## References

1. Azma K, RezaSoltani Z, Rezaeimoghaddam F, Dadarkhah A, Mohsenolhosseini S. Efficacy of tele-rehabilitation compared with office-based physical therapy in patients with knee osteoarthritis: A randomized clinical trial. *J Telemed Telecare* 2018;24:560-5. <https://doi.org/10.1177/1357633X17723368>
2. Buvik A, Bugge E, Knutsen G, Småbrekke A, Wilsgaard T. Patient reported outcomes with remote orthopaedic consultations by telemedicine: a randomised controlled trial. *J Telemed Telecare* 2019;25:451-9. <https://doi.org/10.1177/1357633X18783921>
3. Cottrell MA, Galea OA, O'Leary SP, Hill AJ, Russell TG. Real-time telerehabilitation for the treatment of musculoskeletal conditions is effective and comparable to standard practice: a systematic review and meta-analysis. *Clin Rehabil* 2017;31:625-38. <https://doi.org/10.1177/0269215516645148>
4. Eriksson L, Lindström B, Ekenberg L. Patients' experiences of tele-rehabilitation at home after shoulder joint replacement. *J Telemed Telecare* 2011;17:25-30. <https://doi.org/10.1258/jtt.2010.100317>
5. Galea MDF. Telemedicine in rehabilitation. *Phys Med Rehabil Clin N Am* 2019;30:473-83. <https://doi.org/10.1016/j.pmr.2018.12.002>
6. Gleyze P, Georges T, Flurin PH, Laprelle E, Katz D, Clavert P, et al. Comparison and critical evaluation of rehabilitation and home-based exercises for treating shoulder stiffness: prospective, multicenter study with 148 cases. *Orthop Traumatol Surg Res* 2011;97(Suppl):182-94. <https://doi.org/10.1016/j.otsr.2011.09.005>
7. Menendez ME, Jawa A, Haas DA, Warner JJP. Orthopedic surgery post COVID-19: an opportunity for innovation and transformation. *J Shoulder Elbow Surg* 2020;29:1083-6. <https://doi.org/10.1016/j.jse.2020.03.024>
8. Ramey L, Osborne C, Kasitnon D, Juengst S. Apps and mobile health technology in rehabilitation: the good, the bad, and the unknown. *Phys Med Rehabil Clin N Am* 2019;30:485-97. <https://doi.org/10.1016/j.pmr.2018.12.001>
9. Tousignant M, Giguère A-M, Morin M, Pelletier J, Sheehy A, Cabana F. In-home telerehabilitation for proximal humerus fractures: a pilot study. *Int J Telerehabil* 2015;6:31-8. <https://doi.org/10.5195/ijt.2014.6158>