

Internet-based rehab is a viable treatment option following knee surgery

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Knee replacement patients undergoing telerehabilitation – a unique Internet-based postoperative rehabilitation program that can be conducted from the patient's home – experience the same results as patients who undergo traditional postoperative rehabilitation, according to a new study published in the *Journal of Bone and Joint Surgery* (JBJS). Telerehabilitation is becoming a popular alternative for patients who live in remote areas and who have no access to traditional rehabilitation centers.

"The concept for telerehabilitation is a decade old; however, well-conducted research studies demonstrating its benefits and potential are rare," said study author Trevor Russell, PhD, School of Health and Rehabilitation Science, University of Queensland, Brisbane, Australia. "This study offers measurable evidence that such technology can be used to provide effective rehabilitation services for [knee replacement](#) patients."

Total knee arthroplasty (TKA), or knee replacement, offers relief to thousands of men and women suffering from degenerative arthritis of the knee, and rehab following surgery is essential for regaining optimum function of the knee. According to the American Academy of Orthopaedic Surgeons (AAOS), about 581,000 TKAs are performed each year in the United States, and experts say that number is expected to grow significantly as the population ages. But for some patients who live in rural or remote areas where rehabilitation centers are not readily available, undergoing such treatment can be difficult.

"Rehabilitation following knee replacement surgery is essential to ensure patients regain flexibility, strength and mobility," Dr. Russell said.

"Patients who do not have regular access to rehab services after surgery are unlikely to achieve maximum results following knee replacement. Telerehabilitation ensures patients can have access to rehabilitation programs."

Study Details:

- The researchers enrolled 65 patients who underwent TKA and randomized them to receive six weeks of either traditional outpatient rehab services or Internet-based outpatient rehab.
- For the purposes of this study, patients in the telerehab group performed their therapy in a hospital room designed and furnished to replicate a typical home environment.
- Patients in the telerehabilitation group received rehab through real-time (live video and audio) interaction with a physical therapist via an Internet-based system. Therapy sessions were limited to 45 minutes and consisted of self-applied techniques under the guidance of the remote therapist, along with exercises and education in the postoperative management of the affected knee.

Although specially-designed equipment was used during the study, Dr. Russell said in the future, telerehabilitation should be available to patients with a home computer and other readily available components.

"The telerehabilitation system used in this study was custom-made and consisted of a computer, an echo-cancelling microphone, a web camera, custom software and an Internet connection," Dr. Russell said. "The

components are packaged in a robust case for transportation. It is feasible that in the future patients could use their own home computer with downloaded software, provided they had a webcam and microphone of suitable quality and a broadband Internet connection."

Important Findings:

- Following the six-week program, researchers discovered participants in the Internet-rehab group achieved outcomes comparable to those of the conventional rehabilitation group, and fared better in some results, including a reduction in joint stiffness.
- Patients in the telerehabilitation group also showed significant improvement in specific functional areas, designed to mimic their actual daily activities.

Dr. Russell said the success of this Internet-based program could be due to several factors, including a higher reliance on education about the proper way to perform exercises, resulting in better overall outcomes. Higher levels of patient satisfaction among the patients in the telerehabilitation group, perhaps due to a heightened level of independence, also may have contributed to their success, Dr. Russell noted.

"Patients in the telerehabilitation group reported a higher level of contentment with their program than those in the traditional rehab program, and indicated that they would have this rehab method again and even recommend it to friends," he noted.

Patients in the telerehabilitation group were also more compliant, completing an average of 2.2 exercise sessions per day compared with

1.7 exercise sessions per day in the group that received traditional rehabilitation.

Although in this study any patient who underwent TKA at the hospital where the study was conducted had the option of participating in telerehabilitation, Dr. Russell noted future research might focus on determining whether specific types of patients might respond better to telerehabilitation than traditional therapy. Additional research should also focus on how the program works in a real home situation, he added.

"Managing the rehabilitation needs of a growing number of total knee replacement patients presents a major challenge to physicians, physical therapists and health-policy decision-makers," Dr. Russell noted.

"Alternate service-delivery models need to be considered to address these demands, improve access to services and control medical costs. Our results indicate telerehabilitation can be used successfully to achieve results comparable to traditional rehabilitation, while eliminating the obstacles faced by many [patients](#) in rural or remote areas."

Provided by American Academy of Orthopaedic Surgeons

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