



ARMSTROKES

A Mobile App for Everyday Stroke Rehabilitation

A CLOSER LOOK

Neuroplasticity and motor learning are promoted with repetitive movement, appropriate challenge, and performance feedback (Arya, Pandian, Verma, & Garg, 2011). A smartphone-based rehabilitation approach called ARMStrokes was developed that provides real-time support for stroke survivors to complete rehabilitation exercises for upper extremity recovery. In a multiple case, mixed methods pilot study, the potential of this technology for stroke motor recovery was examined in 10 stroke survivors. Exercises calibrated to the participant's skill level targeted forearm, elbow, and shoulder motions for a six-week protocol. Visual, auditory, and vibration feedback promoted self-assessment. Pre and post-test data of stroke survivors who used the app in different ways (i.e., active motion, passive motion, or as an endurance tracker) demonstrated improvements in accuracy of movements, fatigue, range of motion, and performance of daily activities. In addition to functional improvement, a web-based collaborative communication system was evaluated for usability and efficiency by therapists, physicians, and caregivers monitoring client adherence to prescribed home exercise programs. Feedback from focus groups involving stroke survivors, caregivers, and therapists were positive. The findings are being used to develop version two, which will be tested this year.

SOLUTIONS & OUTCOMES

- This novel use of mobile technology has been received very positively by the therapy community and supports continued efforts to refine the technology and make it available to the public.
- The use of the app appears to have a broader application beyond stroke survivors which warrants additional study with people from various demographic groups (e.g., children, older adults, people with arthritic conditions).
- Efforts to make the extraction of data more useful to patients and therapists is supported and will help outline the logistics of implementing this technology in clinical settings.

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