

Patient Self-Monitoring to Transfer Physical Therapy Exercise from Clinic to Home

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Organization:	University of Washington
Mechanism:	PAR: HS08-269: Exploratory and Developmental Grant to Improve Health Care Quality through Health Information Technology (IT) (R21)
Grant Number:	R21 HS 021733
Project Period:	September 2012 – March 2014
AHRQ Funding Amount:	\$298,834

Summary: Each year, more than 17 million patients are diagnosed with conditions that might benefit from physical therapy. Although adherence to home exercise is the most important factor in functional recovery, patients often fail to perform the exercises correctly or at the frequency prescribed. Adherence depends on feedback from the exercise prescriber, which patients typically only receive at clinic visits that may be weeks apart. Infrequent contact and minimal monitoring of patients' home exercises also makes it difficult for the physical therapist (PT) to determine why patients fail to recover as expected.

This project is developing an image-based electronic health record (IBEHR) to give patients visual feedback in real time, comparing their performance at each repetition at home with a personal avatar created from a recording of themselves performing the exercise correctly in the clinic under the PT's supervision. The patient can then transmit recordings of home exercise to the PT for rapid review and feedback. By recording the exercise performed at home, the IBEHR provides monitoring data that informs the PT whether the patient adhered poorly to the prescribed exercise frequency or duration, performed the exercise incorrectly, or if a different exercise would be more beneficial.

Specific Aims:

- Develop the software for synchronizing the clinic and home avatars, aligning them, and measuring deviations. **(Ongoing)**
- Perform alpha and beta testing. The alpha test measures the limits of accuracy of body tracking by the IBEHR. The beta test verifies that the user interface is easy to use by both PTs and patients. **(Ongoing)**
- Assess the efficacy of the IBEHR to improve adherence in 60 patients with anterior knee pain or anterior cruciate ligament (ACL) injury. **(Upcoming)**

2012 Activities: Dr. Sheehan and her team are completing the design of the IBEHR. Testing to measure the accuracy of IBEHR body tracking began with upper-body portions of the product. Dr. Sheehan has received institutional review board approval and the University of Washington has initiated a patent process for this device. Dr. Sheehan is working with a co-investigator at the University of Washington Sports Medicine Clinic to refine the IBEHR in preparation for patient recruitment.

Preliminary Impact and Findings: This project has no findings to date.

Target Population: Adults

Strategic Goal: Develop and disseminate health IT evidence and evidence-based tools to support patient-centered care, the coordination of care across transitions in care settings, and the use of electronic exchange of health information to improve quality of care.

Business Goal: Implementation and Use

** This target population is one of AHRQ's priority populations.*