Biofeedback in postoperative rehabilitation: Usability of innovative crutches from a Patient's and Physical Therapist's Perspective.

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Introduction
Partial- or permissive weight bearing is frequently prescribed by surgeons in surgically treated patients with fractures of the lower extremities. The use of biofeedback devices seems promising to improve the patient's compliance regarding weight bearing instructions. ComeBack Mobility crutches (CBM) is a biofeedback device that provide real-time feedback. For a successful implementation, usability of the device is important and should be tested from a user's perspective.
The aim of this study was to describe the usability from the physical therapists' and patients' perspective in CBM crutches in providing feedback on weight bearing during postoperative rehabilitation.

Methods
In a convergent mixed-methods design, qualitative and quantitative data were collected. Usability was subdivided into user performance, satisfaction and acceptability. Patients prescribed with partial- or permissive weight bearing and their physical therapists were asked to use the CBM crutches during postoperative rehabilitation. Usability was qualitatively tested by a think-aloud method and a semi-structured interview and quantitatively tested by the System-Usability-Scale (SUS) and closed questions.

Results
In this study 12 physical therapists and 32 patients participated. The mean SUS scores for patients and physical therapists for the CBM crutches were 75 and 65, respectively. Scores were interpreted with the Curved Grading Scale. The qualitative data showed that there were mixed views and perceptions from patients and physical therapists on satisfaction and acceptability. A mean of 6.3 minutes was needed for the patient to adapt to the prescribed WB with the CBM crutches.

Conclusion
This study gives insight in the usability of the CBM crutches from the patient's and physical therapist's perspective. The overall usability from both perspectives seemed to be acceptable for the CBM crutches. Therefore the CBM crutches seems to be promising in biofeedback in postoperative rehabilitation.