

# Application of the Patient Reported Outcomes Information System (PROMIS) on Hip Arthroscopy Patients

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MEDICINE *of* THE HIGHEST ORDER



## Disclosures

Brian Giordano, MD

- Arthrex Inc – Arthrex consultant, royalties & research support

Diana Silas, DO

- Arthrex Inc – family member employed

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## Background

Accurately measuring clinical improvement in highly functioning patients is difficult. Patients with femoroacetabular impingement (FAI) and labralchondral pathology typically represent such a population. Legacy measures, such as the modified Harris Hip Score, have traditionally been utilized in the assessment of hip arthroscopy patients, but have been criticized for their application in this active patient population. Recently, the NIH funded the establishment of the Patient Reported Outcomes Information System (PROMIS). This computer adaptive testing (CAT) scale has multiple components and has been validated using various other orthopedic patient populations. To date, no published studies have utilized PROMIS as an assessment tool among patients who have undergone hip arthroscopy for the treatment of FAI, labralchondral pathology, and/or other associated conditions.

## Purpose

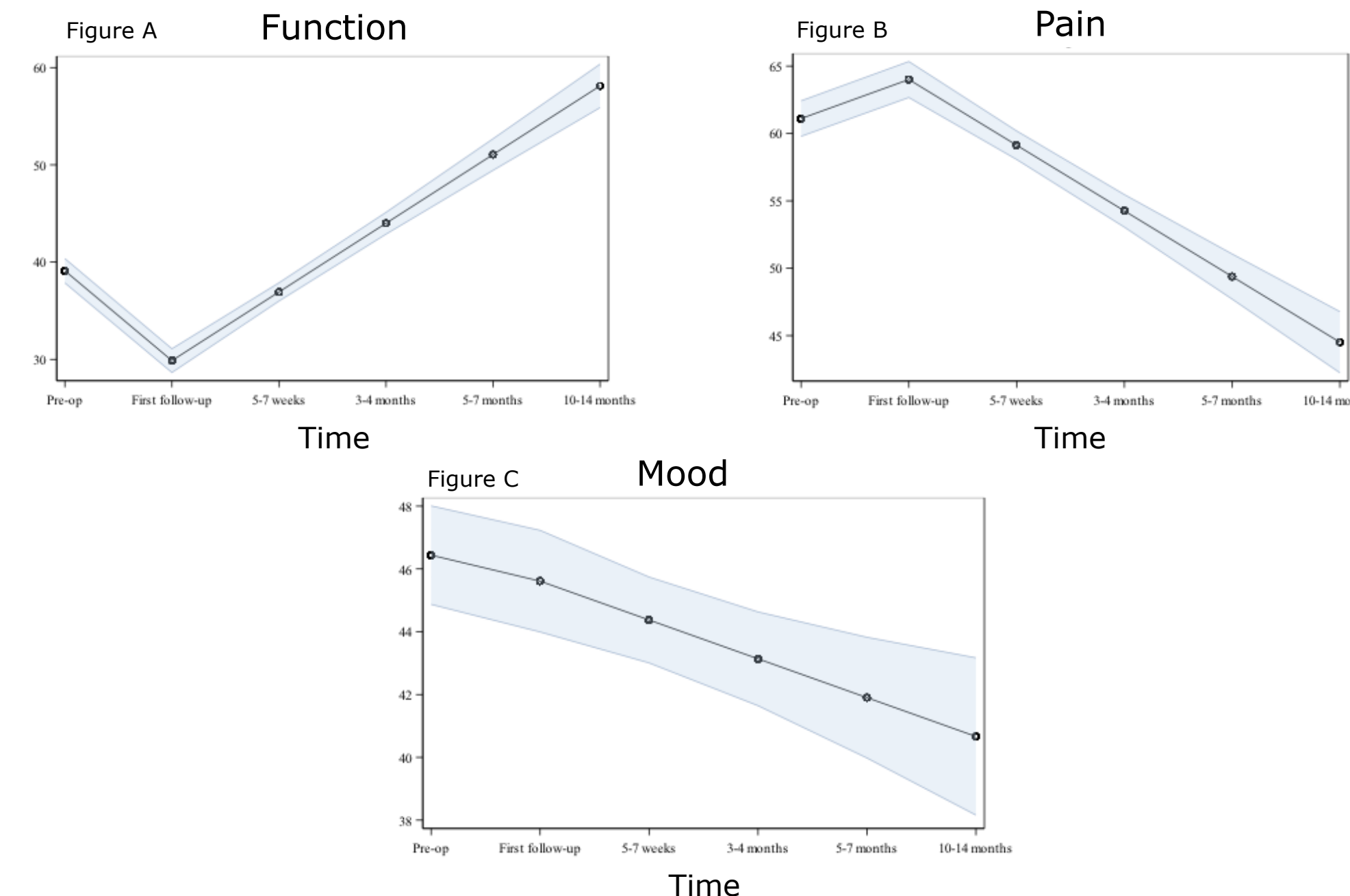
The purpose of this study was to determine whether there is an association between a patient's pre-operative outcome score and their likelihood of experiencing a clinically meaningful change at specified postoperative intervals following arthroscopic hip preservation surgery. Excluding those who underwent a subsequent periacetabular osteotomy as well as more than one orthopedic surgery within the study window.

## Methods

We employed piecewise longitudinal regression models to examine changes over time in the primary outcomes of function, pain, and mood evaluated by PROMIS. This was accomplished by determining the regression of these outcomes from pre-op measurement to the first follow-up visit and then from the first follow-up visit through the 5-7 week, 3-4 month, 5-7 month and 10-14 month visits. Patient enrollment at each of the intervals were 405, 396, 336, 192, 93 and 42 respectively. Assessed variables included demographic characteristics, labral repair vs debridement, iliopsoas lengthening, number of allergies, body mass index (BMI), institutional team based physical therapy vs. non-specialized therapy, and insurance type. All analyses were carried out using SAS/STAT software, Version 9.4 of the SAS System (Copyright © July, 2013, SAS Institute Inc.).

## Results

As anticipated, function was found to be poorer and pain scores greater at the first postoperative follow-up visit ( $\beta_{\text{Function}} = -12.66, p < 0.0001$ ;  $\beta_{\text{Pain}} = 4.23, p < 0.0001$ ) compared with pre-op values. Subsequent visits demonstrated statistically significant improvements in function and reduction in pain ( $\beta_{\text{Function}} = 19.70, p < 0.0001$ ; and  $\beta_{\text{Pain}} = -13.54, p < 0.0001$ ). Associated p-values indicated that the slopes were significantly different than 0, indicating that a trend was present, and showing a change in performance as anticipated. The mood scale presented a slightly different picture with the first segment ( $\beta_{\text{Mood}} = -1.28, p = 0.20$ ) suggesting that there was no change in depression from pre-op to first follow-up but there was a marked decrease from first follow-up to the 10-14 month visit ( $\beta_{\text{Mood}} = -3.27, p = 0.0012$ ).



The above figures represent change in PROMIS as a function of time. Function (A) steadily improved following surgery. Pain (B) steadily declined. Mood (C) had greater variability but still improved with time. A patients' level of depression and PROMIS score are inversely related.

## Discussion

Results from this study suggest that use of the PROMIS CAT tool was applicable to patient centered outcomes and informed decision making following arthroscopic hip surgery and may be used to facilitate discussions with patients regarding expected benefits for patient specific attributes. Prior to surgery, it is equally important that surgeons convey accurate prognostic information to patients, and that surgeons are able to identify patients who are unlikely to improve by a clinically important margin if surgery is undertaken. This study suggests that PROMIS offers potential to achieve these valuable objectives in a population of hip arthroscopy patients, and should be considered as a highly efficient and generalizable tool to collect pre- and postoperative data during clinical patient encounters.

Level of evidence: Level II; prognostic study

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