PROMIS-10 Risks Massive Liability for Total Hip Arthroplasty Reimbursement in a Pay for Performance Reality

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INTRODUCTION: In value-based care, patient-reported outcome measures (PROMs) are increasingly tied to reimbursement, quality reporting, and registry participation. The HOOS JR is a brief, hip-specific PROM used in total hip arthroplasty (THA), while PROMIS-10 offers a validated global measure of physical and mental health. To support HOOS JR's use in these settings, this study evaluates its correlation with PROMIS-10 Physical scores, responsiveness to change, and minimum clinically important difference (MCID) thresholds. Additionally, we examine whether this relationship remains consistent across the spectrum of patient recovery by stratifying outcomes based on HOOS JR improvement.

METHODS: We retrospectively reviewed 701 primary HKA cases performed by seven fellowship-trained surgeons, at a single surgical facility, between May 26, 2023, and May 21, 2024. All patients completed HOOS JR, PROMIS-10 Physical, and PROMIS-10 Mental assessments preoperatively and at 1 year postoperatively. We calculated descriptive statistics and change scores. Paired t-tests assessed significance, and Cohen's d quantified effect sizes. MCIDs were determined using a distribution-based method (½ pre-op SD) for HOOS JR and PROMIS-10 Physical, and an anchor-based HOOS JR threshold of 23 points. To assess whether correlation between HOOS JR and PROMIS-10 Physical scores varied by magnitude of recovery, patients were stratified into quartiles based on HOOS JR delta.

RESULTS: All patients completed the assessments. HOOS JR scores improved significantly from 51.03 ± 14.97 to 84.61 ± 15.71 ($\Delta = 33.57$; $p < .001$; $d = 1.83$) (Table 1). PROMIS-10 Physical scores improved from 40.38 to 49.58 ($\Delta = 9.20$; $p < .001$; $d = 1.15$), and Mental scores increased modestly ($\Delta = 2.29$; $p < .001$; $d = 0.30$). MCID thresholds were met by 93% (HOOS JR, distribution), 72% (HOOS JR, anchor), and 74% (PROMIS-10 Physical) (Table 2). HOOS JR and PROMIS-10 Physical scores showed moderate correlations ($r = 0.62$ pre-op, 0.58 post-op, 0.47 delta) (Table 3). Stratified analysis showed that this correlation was strongest the lowest quartile of improvement ($r = 0.31$), weaker in the middle quartiles responders ($r=0.14$ and $r=0.19$), and weakest in the quartile with the greatest score improvement ($r=0.10$) (Table 4 and Figure 1).

DISCUSSION AND CONCLUSION:

HOOS JR and PROMIS-10 Physical both improve following total hip arthroplasty, but their relationship varies across the recovery spectrum. Correlation is strongest among patients with limited improvement and weakens in those with greater HOOS JR gains, suggesting a possible mismatch between hip-specific recovery and perceived global physical function. Clinically, this highlights the importance of using both hip-specific and general health PROMs to ensure a comprehensive understanding of patient outcomes, especially in high-functioning or rapidly recovering individuals where a single PROM may underestimate the total benefit of surgery. Unfortunately, this also highlights a severe discordance between hip-specific improvements and broader gains in physical and mental health, thus representing a reimbursement liability in pay-for-performance models.

Table 1. Preoperative and 1-Year Postoperative PROM Scores with Change Scores, Statistical Significance, and Effect Sizes

n = 701	Pre-Op	1 Year Post-Op	Delta	P value	Effect Size
PROMIS-10 Physical	40.38 ± 6.90	49.58 ± 8.38	9.20 ± 8.80	<.001	1.15
PROMIS-10 Mental	39.80 ± 8.96	52.58 ± 8.61	2.29 ± 7.64	<.001	0.3
HOOS JR	51.03 ± 14.97	84.61 ± 15.71	33.57 ± 18.37	<.001	1.83

* P value calculated with a paired T test

Table 2. Minimum Clinically Important Difference (MCID) Achievement for PROMIS-10 Physical and HOOS JR Scores

measure	MCID Value	Percent Achieving MCID
P-10 Physical Distribution Method *	3.49	74%
HOOS JR Distribution Method *	7.48	93%
HOOS JR Anchor Method *	23	72%

* Distribution method calculated by one-half of the preoperative standard deviation.
* Anchor Method: HOOS MCID of 23 from Dahlen et al. 2024.

Table 3. Pearson Correlation Coefficients Between HOOS JR and PROMIS-10 Physical Scores

	Correlation
Pre-op	0.62
1 year Post-op	0.58
Delta (1 year Post-op – Pre-op)	0.47

Table 4. Stratified Correlation Between HOOS JR Delta and PROMIS-10 Physical Delta Across Recovery Quartiles

Stratified Group			HOOS JR					PROMIS-10 Physical				
	n	AVG	STDEV	MIN	MAX	AVG	STDEV	MIN	MAX	Correlation
Poor Recovery	175.00	10.61	8.14	-18.61	26.39	5.90	5.90	-13.18	24.40	0.31
Moderate Poor	175.00	27.41	3.03	20.59	33.41	8.37	6.21	-8.90	24.30	0.14
Moderate High	175.00	39.45	3.67	33.41	45.69	10.62	7.34	-18.30	29.30	0.19
High Recovery	176.00	56.71	10.90	45.69	100.00	15.08	8.78	-10.00	41.00	0.10

Figure 1. Scatter Plot of HOOS JR Delta vs. PROMIS-10 Physical Delta colored by stratified group.