

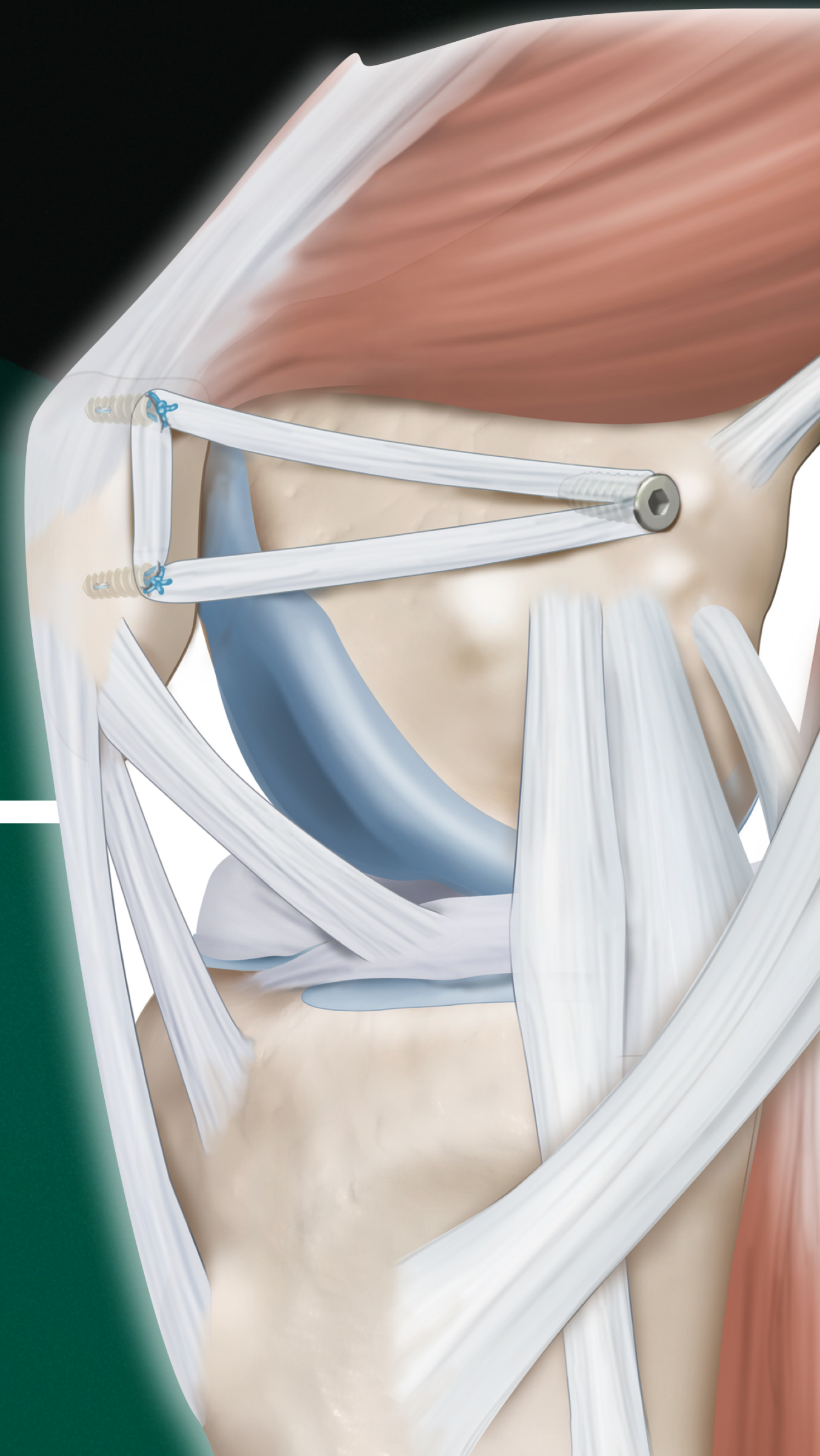


MIDWEST
ORTHOPAEDICS
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Minimum Clinically Important Difference Two-Years Following Medial Patellofemoral Ligament Reconstruction

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Disclosures



Tristan Elias MD, Erik Haneberg BS, Andrew Phillips BA, Daniel Kaplan MD, Divesh Sachdev BS have nothing to disclose.

Adam Yanke MD PhD has the following to disclose: AlloSource: Paid consultant, Arthrex, Inc: Research support, Icarus Medical: Stock or stock Options, JRF Ortho: Paid consultant, Organogenesis: Research support, Patient IQ: Unpaid consultant, PatientIQ: Stock or stock Options, Sparta Biomedical: Stock or stock Options; Unpaid consultant, Stryker: Paid consultant; Paid presenter or speaker

Jorge Chahla MD PhD has the following to disclose: American Orthopaedic Society for Sports Medicine: Board or committee member, Arthrex, Inc: Paid consultant, Arthroscopy Association of North America: Board or committee member, CONMED Linvatec: Paid consultant, International Society of Arthroscopy, Knee Surgery, and Orthopaedic Sports Medicine: Board or committee member, Ossur: Paid consultant, Smith & Nephew: Paid consultant; Paid presenter or speaker

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Nikhil N Verma MD has the following to disclose: American Orthopaedic Society for Sports Medicine: Board or committee member, American Shoulder and Elbow Surgeons: Board or committee member, Arthrex, Inc: IP royalties; Research support, Arthroscopy Association of North America: Board or committee member, Breg: Research support, Ossur: Research support, SLACK Incorporated: Editorial or governing board, Smith & Nephew: IP royalties; Research support, Stryker: IP royalties; Paid consultant; Research support

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Background



Medial patellofemoral ligament reconstruction (MPFLR) for the treatment of *recurrent patellar instability* is a successful procedure that generally results in **low rates of failure** and **reliable return to sport**

Minimum clinically important difference (**MCID**), substantial clinical benefit (**SCB**), and patient acceptable symptomatic state (**PASS**) are three **clinically significant outcomes (CSOs)** used to understand the efficacy of a given treatment

Background



MCID

The **minimum increase** from baseline in a PRO that a patient may perceive as **beneficial**

SCB

The **increase** in PRO score from baseline that patients distinguish **significant improvement**

PASS

The **final PRO score** that a patient must achieve to be **satisfied with their outcome**

Objectives



To establish the **MCID**, **SCB**, and **PASS** for **Kujala scores** at **two years** following isolated **MPFLR**

Methods



Retrospective cohort study of a prospectively maintained database

Inclusion Criteria:

- **Isolated MPFLR** at a single institution between **April 2016 - June 2021**
- Completed **pre-operative** and **minimum 2 year Kujala scores**

Exclusion Criteria:

- **Concomitant procedures** (osteotomy, trochleoplasty, meniscus repair, other ligamentous reconstruction, cartilage restoration)
- **Missing baseline or 2 year PRO**

Methods

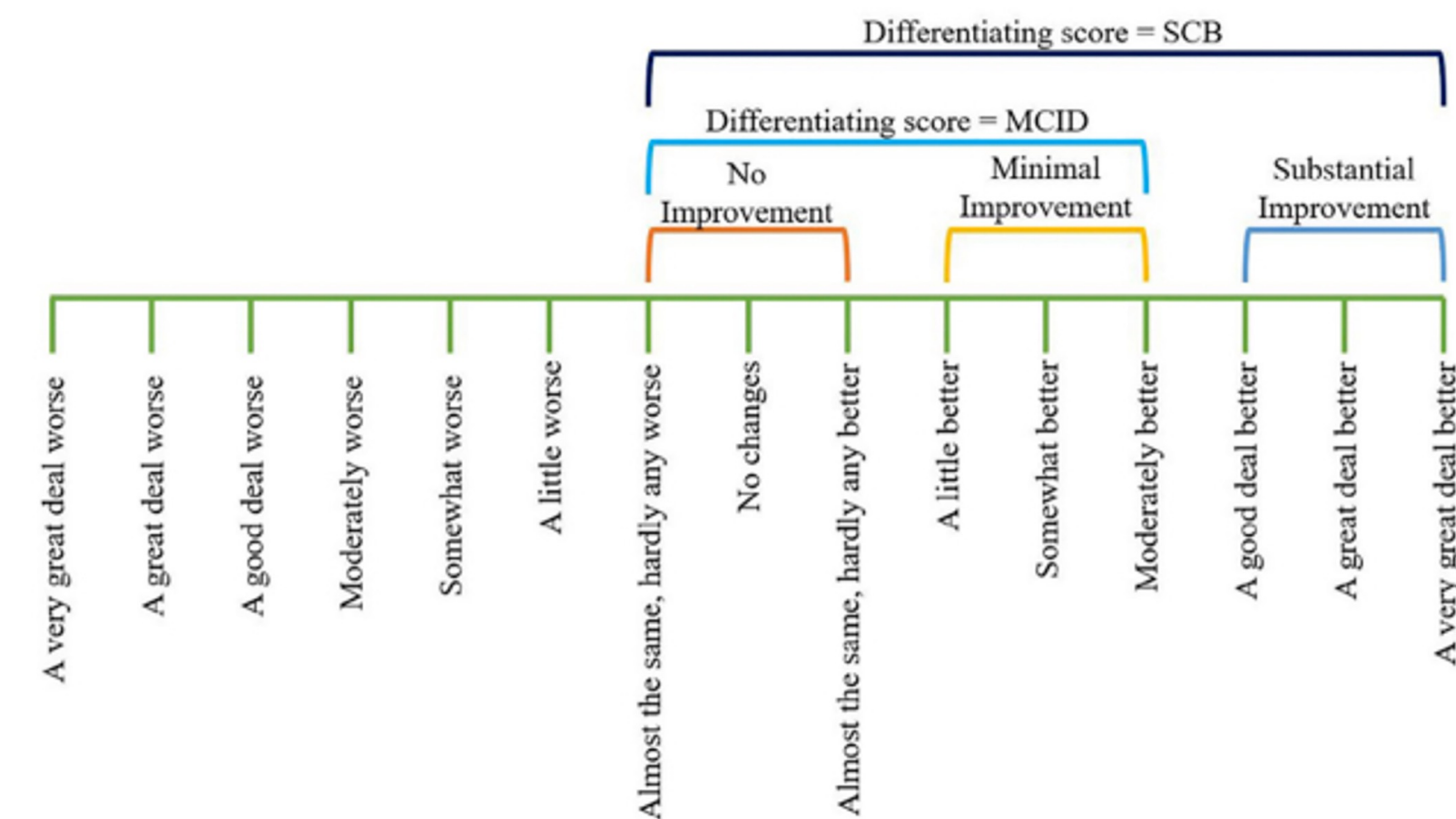


MCID

Two Methods used to calculate MCID

1. **Distribution-based:** 1/2 standard deviation to approximate MCID
2. **Anchor-based:** (right) used anchor questions to categorize responses by no vs minimal improvement from pre-op state. A receiver operator characteristic (ROC) curve is used to determine the Youden index which represents the MCID threshold

A Anchor Question: Since your last surgery, has there been any change in your pain/symptoms/activities of daily living/sport and recreation/quality of life/overall activity level as it is related to your knee?



B Anchor Question: Taking into account all the activities you have during your daily life, your level of pain, and also your functional impairment, do you consider that your current state is satisfactory?

Differentiating post-operative score = PASS

Yes

No

Methods

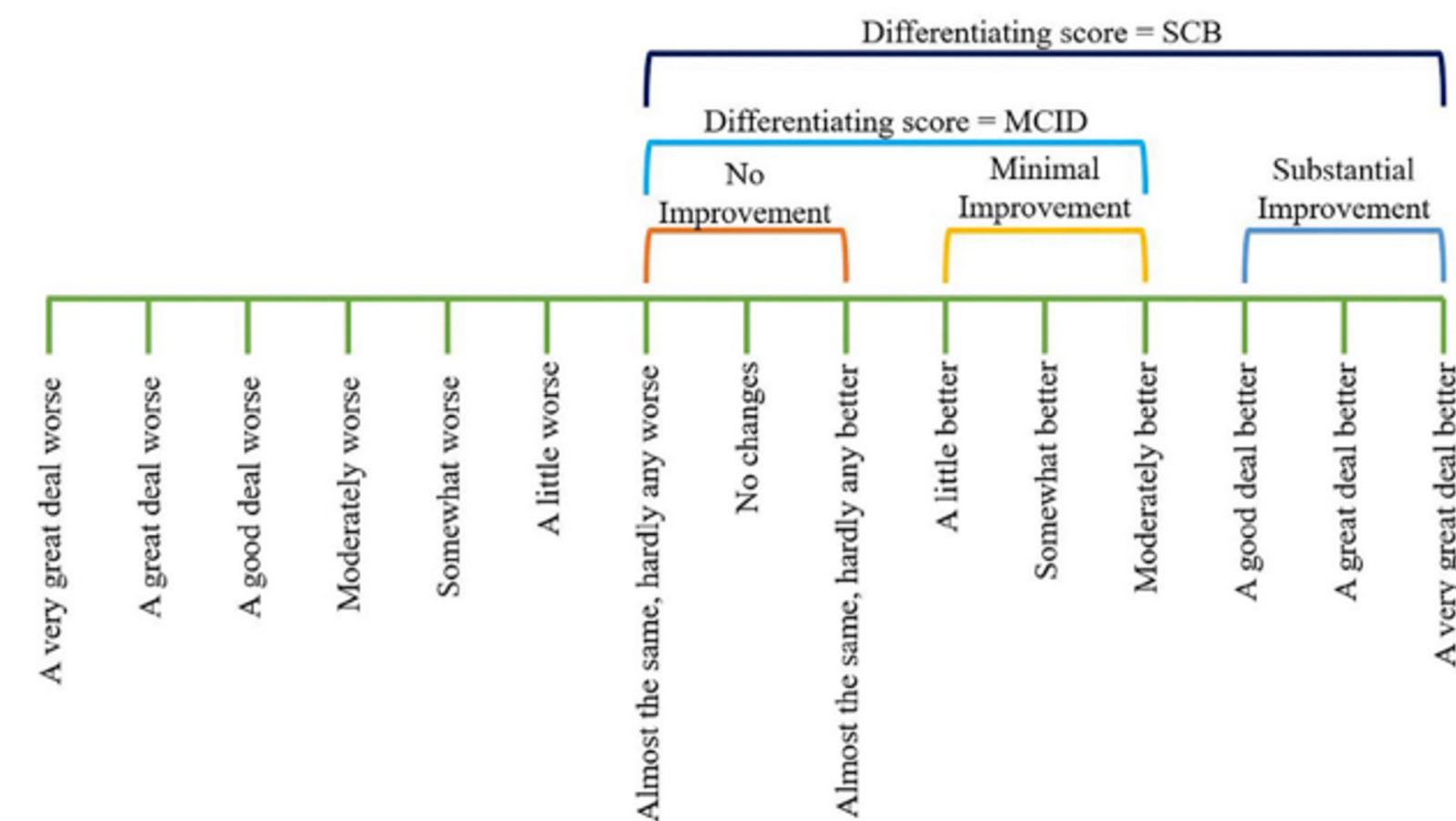


SCB & PASS

Only **anchor-based** method was utilized

Anchor-based: (right) used anchor questions to categorize responses by no vs minimal improvement from preop state. A receiver operator characteristic (ROC) curve is used to determine the Youden index which represents the MCID threshold

A Anchor Question: Since your last surgery, has there been any change in your pain/symptoms/activities of daily living/sport and recreation/quality of life/overall activity level as it is related to your knee?



B Anchor Question: Taking into account all the activities you have during your daily life, your level of pain, and also your functional impairment, do you consider that your current state is satisfactory?

Differentiating post-operative score = PASS

Yes

No

Results



112 knees in 106 patients included

Table 1. Demographic Characteristics and PROMs

Age (years), mean \pm SD	21.6 \pm 9.2
Sex, n (%)	
Female	76 (67.92%)
Male	38 (32.08%)
BMI (kg/m²), mean \pm SD	25.91 \pm 6.64
Laterality, n (%)	
Left	68 (60.71%)
Right	44 (29.29%)
Baseline Kujala, mean \pm SD	58.71 \pm 16.56
Final Kujala, mean \pm SD	88.13 \pm 13.39
Follow-up Time (years), mean \pm SD	2.86 \pm 1.13

Results



Table 2. MCID, SCB, and PASS values for minimum 2 year Kujala scores

MCID	MCID (Distribution)	MCID (Anchor)	Sensitivity	Specificity	AUC
Kujala - Function Kujala - Symptoms	9.98	26.00 12.00	43% 86%	100% 67%	62% 74%
SCB		SCB (Anchor)	Sensitivity	Specificity	AUC
Kujala - Function Kujala - Symptoms	- -	26.00 12.00	68% 94%	100% 67%	88% 84%
PASS		PASS (Anchor)	Sensitivity	Specificity	AUC
Kujala - Function	-	79.00	88%	80%	89%

Results



Table 3. MCID, SCB, and PASS Achievement Rates

MCID	Score	Achievement
Distribution	9.98	99 (88%)
Anchor	12.00	91 (82%)
SCB		
Anchor	26.00	62 (56%)
PASS		
Anchor	79.00	85 (75%)

Results



Table 4. Risk Factors for Achieving MCID

	Achieved MCID (n=91)	Failed to Achieve MCID (n=20)	p-value
Instability Resolution Angle	55.5 ± 21.8°	67.5 ± 19.9°	0.062
Caton-Deschamps Index	1.19 ± 0.21	1.28 ± 0.20	0.080
Sagittal TT-TG	6.11 ± 5.40 mm	9.39 ± 4.69 mm	0.014

Instability Resolution Angle: The degree of knee flexion at which the patella no longer can be manually translated laterally

Conclusions



CSOs were established for 2 year outcomes of isolated medial patellofemoral ligament reconstruction (MPFLR)

2 year Kujala Score: MCID 12.00, SCB 26.00, PASS 79.00

Instability resolution angle, Caton-Deschamps Index, and sagittal TT-TG were identified as potential risk factors for failure to achieve MCID

Significance of Findings



First study to identify **clinically significant outcomes (CSOs)** for **isolated MPFLR** at minimum **2-years**

Further studies must **establish** risk factors for **failing to achieve CSOs**



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