

# What Are The Thresholds Values For The Patient Acceptable Symptom State After ACL Reconstruction For The SKV And The ACL-RSI?

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# Disclosure

- Nicolas GRAVELEAU is consultant for SBM, FH and Arthrex
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## WHY ?

- Postoperative Evaluation : MANDATORY & COMPOSITE
- A lot of tools : Patient-Reported Outcomes +++ (PROMs)

➡ Psychological evaluation : **ACL-RSI**<sup>1</sup>

➡ Subjective Functionnal Evaluation : **SKV**<sup>2</sup>

*What are the threshold values for these 2 scores in our patients' follow-up and studies ?*



## WHY ?

### ACL-RSI

- Webster et al.<sup>1</sup> (French version in 2015<sup>3</sup>)
- 12 items = Psychological assessment of perceived ability before Return To Sport
- Evaluation on a 100-points scale
- **No threshold defined**

### SKV

- Marrot et al. in 2020<sup>2</sup>
- 1 question =  
« *How would you rate your knee today as a percentage of normal (0% to 100% scale with 100% being normal)?* »
- Percentage rating
- **No threshold defined**

## WHY ?

« Patient Acceptable Symptom State » <sup>4</sup> has taken an interest.

It corresponds to a score value,  
from which the patient defines himself as feeling well.

Already defined after ACL Reconstruction for :

- IKDC-SKF <sup>5</sup>

- KOOS <sup>5</sup>



What are the values for the ACL-RSI and the SKV ?

## Population

Primary ACL  
Reconstruction between  
January 2019 and January  
2023

Age between 15 and 50  
years.

Hamstring autografts

No secondary surgery on  
the same knee during  
follow-up



Homogeneous  
population

## Instruments

Questionnaire mailed in  
Feb 2024 including :

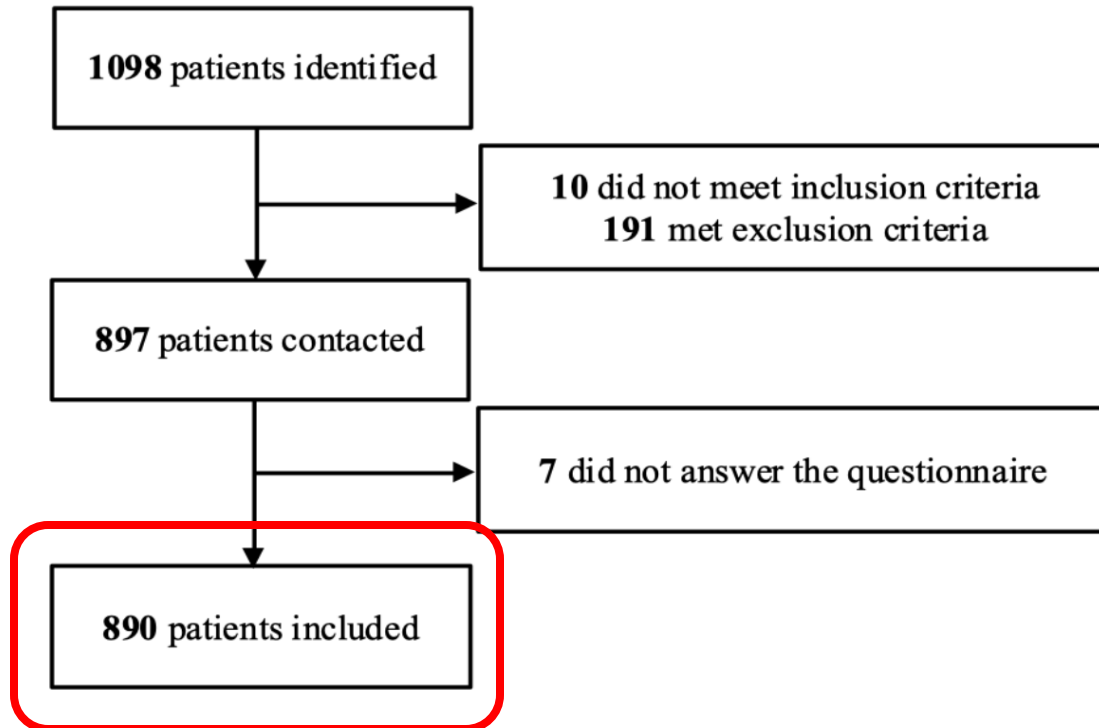
- ACL-RSI scale
- SKV score
- The corresponding PASS questions
- Questions searching for a subsequent surgery on the index knee

## Analyses

Determining the PASS  
threshold values using the  
area under the ROC curve  
and the Youden Index

Secondary outcomes  
included sex, Body Mass  
Index (BMI), Tegner  
Activity Scale and age at  
the time of surgery

# RESULTS



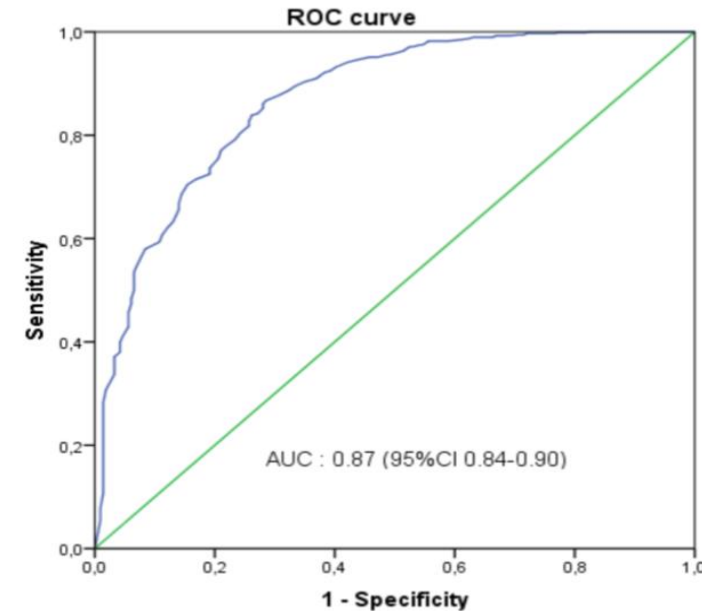
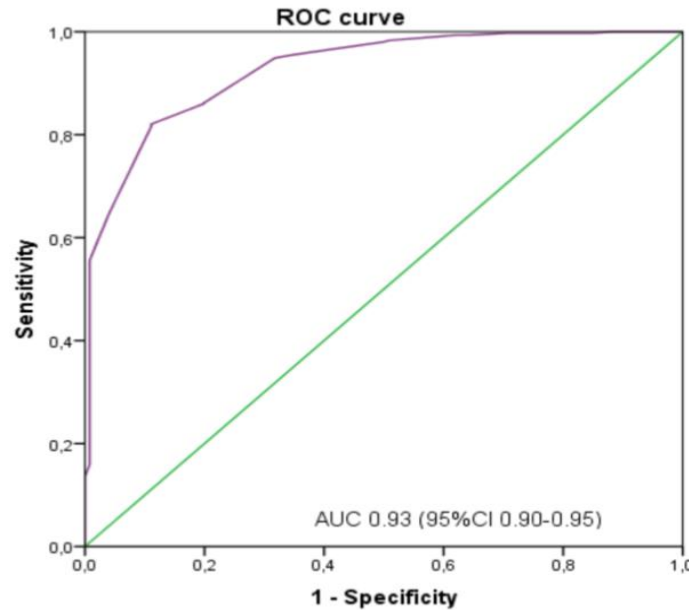
**890** Patients included

**Mean FU : 39 ± 17 months**

**86%** patients reached the PASS for the **SKV**

**76%** patients reached the PASS for  
the **ACL-RSI**

# RESULTS



## THRESHOLDS VALUES:

- 71% for the **SKV** (*Se 0.86, Sp 0.80*)

- 60% for the **ACL-RSI** (*Se 0.84, Sp 0.74*)



# RESULTS

## SECONDARY ANALYSES :

-Patients reaching the PASS = **Lower BMI**

**SKV** : Mean BMI of  $24 \pm 4$  vs  $25 \pm 4$  ( $p = 0,04$ )

**ACL-RSI** : Mean BMI of  $24 \pm 4$  vs  $25 \pm 4$  ( $p = 0,007$ ).

-Patients reaching the PASS = **Younger**

28ans ( $\pm 10$ ) for the SKV vs 30 ans ( $\pm 10$ ) ( $p = 0,03$ )

28 ans ( $\pm 10$ ) ans for the ACL-RSI vs 30 ans ( $\pm 10$ ) ( $p = 0,03$ )

*Significant for patients over 40 years old who were less likely to achieve the PASS for both scores ( $p = 0,08$  SKV /  $p = 0,14$  l'ACL-RSI).*

- **PASS is clinically more relevant** than an absolute PRO result,  
Validated in the literature
- **First study to define thresholds values after ACL Reconstruction**
  - Between 1 and 5 years
  - ACL-RSI Thresholds : Arbitrarily defined in the literature : **Between 51,3 and 65 points** <sup>3,6</sup>

**SKV** → **71%** (Se 0.86, Sp 0.80)

**ACL-RSI** → **60%** (Se 0.84, Sp 0.74)

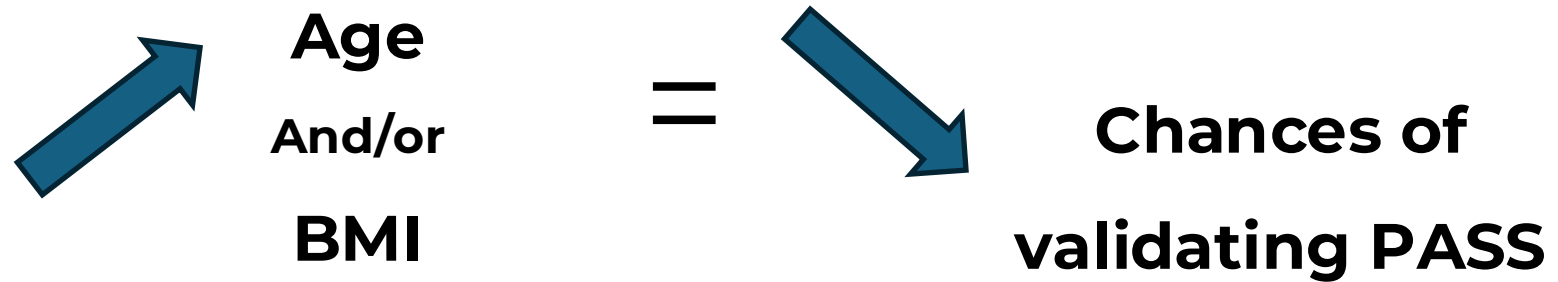


Be careful with values defined from PROs results, ACL-RSI ≥ 65% <sup>3,7</sup>

# CONCLUSION



Impact of the population on the PASS ACL-RSI and SKV thresholds



Understand and analyze results from future cohorts

Detect patients who require additional care

- (1) Webster KE, Feller JA, Lambros C. Development and preliminary validation of a scale to measure the psychological impact of returning to sport following anterior cruciate ligament reconstruction surgery. *Phys Ther Sport*. 2008;9(1):9-15.
- (2) Marot V, Accadbled F, Murgier J, Reina N, Berard E, Cavaignac E. Self Knee Value, un score simple pour l'évaluation fonctionnelle du genou. *Revue de Chirurgie Orthopédique et Traumatologique*. 2019;105(8):S134.
- (3) Bohu Y, Klouche S, Lefevre N, Webster K, Herman S. Translation, cross-cultural adaptation and validation of the French version of the Anterior Cruciate Ligament-Return to Sport after Injury (ACL-RSI) scale. *Knee Surg Sports Traumatol Arthrosc*. 2015 Apr;23(4):1192-6. doi: 10.1007/s00167-014-2942-4. Epub 2014 Mar 28. PMID: 24676789.
- (4) Tubach F, Ravaud P, Baron G, et al. Evaluation of clinically relevant states in patient reported outcomes in knee and hip osteoarthritis: the patient acceptable symptom state. *Ann Rheum Dis*. 2005;64(1):34-37.
- (5) Muller B, Yabroudi MA, Lynch A, et al. Defining Thresholds for the Patient Acceptable Symptom State for the IKDC Subjective Knee Form and KOOS for Patients Who Underwent ACL Reconstruction. *Am J Sports Med*. 2016;44(11):2820-2826.
- (6) Müller U, Krüger-Franke M, Schmidt M, Rosemeyer B. Predictive parameters for return to pre-injury level of sport 6 months following anterior cruciate ligament reconstruction surgery. *Knee Surg Sports Traumatol Arthrosc*. 2015 Dec;23(12):3623-31. doi: 10.1007/s00167-014-3261-5. Epub 2014 Sep 2. PMID: 25178537.
- (7) Sadeqi M, Klouche S, Bohu Y, Herman S, Lefevre N, Gerometta A. Progression of the Psychological ACL-RSI Score and Return to Sport After Anterior Cruciate Ligament Reconstruction: A Prospective 2-Year Follow-up Study From the French Prospective Anterior Cruciate Ligament Reconstruction Cohort Study (FAST). *Orthop J Sports Med*. 2018 Dec 17;6(12):2325967118812819. doi: 10.1177/2325967118812819. PMID: 30574516; PMCID: PMC6299316.