

# Validation of a Scale to Assess Psychological Readiness for Return to Sport Following Surgical Treatment of Posterior Cruciate Ligament Injuries

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No conflict of interest

- Return to sport (RTS) after PCL reconstruction remains limited — reported rates of up to 71%<sup>1</sup>
- Psychological readiness is a known predictor of RTS in other injuries (e.g., ACL reconstruction, Achilles tendon rupture)<sup>2,3</sup>
- No validated tool currently exists to assess psychological readiness specifically for PCL injuries

- Anterior Cruciate Ligament - Return to Sport after Injury scale (ACL-RSI) assesses an athlete's psychological readiness to RTS after an ACL injury or reconstruction<sup>3</sup>
  - Emotions
  - Confidence in Performance
  - Risk Appraisal
- adapted for PCL injuries: „PCL-RSI“

## ANTERIOR CRUCIATE LIGAMENT RETURN TO SPORT AFTER INJURY (ACL-RSI) SURVEY



Patient Name: \_\_\_\_\_  
Date: \_\_\_\_\_

Instructions: Check the box that best describes you in relation to your symptoms

1. Are you confident that you can perform at your previous level of sport participation?

Not at all confident ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 Fully confident

2. Do you think you are likely to re-injure your knee by participating in your sport?

Extremely likely ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 Not likely at all

3. Are you nervous about playing your sport?

Extremely nervous ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 Not nervous at all

4. Are you confident that your knee will not give way by playing your sport?

Not at all confident ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 Fully confident

5. Are you confident that you could play your sport without concern for your knee?

Not at all confident ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 Fully confident

6. Do you find it frustrating to have to consider your knee with respect to your sport?

Extremely frustrating ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 Not at all frustrating

***The Posterior Cruciate Ligament – Return to Sport after Injury Scale is a valid tool for assessing psychological readiness to return to sport following surgical treatment of PCL tears.***

- Inclusion Criteria:
  - Surgical treatment for PCL injury (01/2010–12/2020)
  - Minimum 2-year follow-up post-surgery
- Patient-Reported Outcome Measures:
  - PCL-RSI
  - Tegner Activity Scale (TAS)
  - International Knee Documentation Committee subjective knee form (IKDC-SKF)
  - Lysholm Score
  - Visual analog scale (VAS) for pain at rest and during activity
- Bilateral stress radiographs (Telos™) to assess posterior tibial translation (PTT)



- Internal Consistency
  - Assessed using Cronbach's  $\alpha$
- Floor/Ceiling Effects
  - Defined as  $\geq 15\%$  of patients scoring minimum (0) or maximum (100)
- Test-Retest Reliability
  - Measured using Intraclass Correlation Coefficient (ICC)
- Construct Validity
  - Evaluated via Spearman's rank correlations with:
    - IKDC
    - Lysholm Score
    - VAS (at rest and during activity)
- Discriminant Validity
  - Compared PCL-RSI scores between patients who returned to sport and those who did not

- Number of included patients: n=38
- Mean age:  $39.0 \pm 12.9$  years
- Sex: 71% male
- **74%** returned to their **pre-injury TAS level or higher**
- **PTT significantly reduced at follow-up** ( $3.8 \pm 3.5$  mm vs.  $8.5 \pm 6.7$  mm,  $p \leq 0.05$ )
- PCL-RSI Reliability: Cronbach's  $\alpha = 0.99$  (excellent)



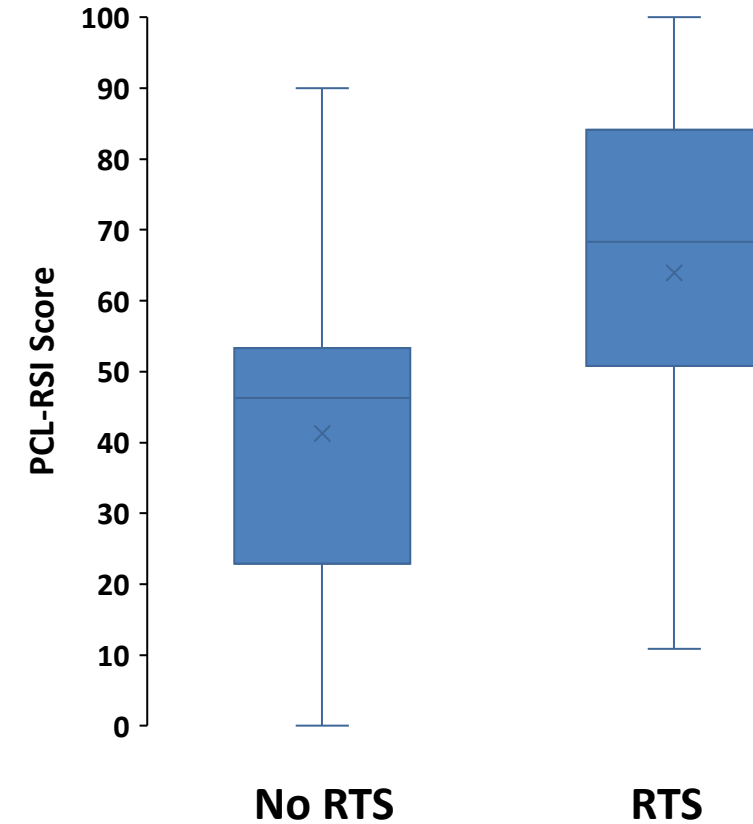
- Construct Validity: Correlation of PCL-RSI with other scales:

Comparison Measure	Correlation coefficient (r)	Significance
IKDC	0.753	$p \leq 0.01$
Lysholm	0.682	$p \leq 0.01$
VAS pain (at rest)	-0.499	$p \leq 0.01$
VAS pain (during activity)	-0.608	$p \leq 0.01$

- Discriminative Validity:

Group	PCL-RSI Score (Mean $\pm$ SD)
Returned to Sport (n=28)	64,9 $\pm$ 24,1
Not returned to Sport (n=11)	43,9 $\pm$ 21,3

**p $\leq$ 0.05**



- Sample Size:
  - Relatively small cohort ( $n = 38$ )
- Study Design:
  - Retrospective data collection
- Return to Sport Definition:
  - Based on self-reported TAS levels, which may not fully capture performance level or sport-specific demands

- The **PCL-RSI** is a **valid and reliable tool** to assess **psychological readiness to RTS** after PCL injuries
- It demonstrated:
  - **Excellent internal consistency** (Cronbach's  $\alpha = 0.99$ )
  - **Strong construct validity**, with significant correlations to functional and pain scores
  - **Discriminative ability** between RTS and non-RTS patients
- The PCL-RSI can assist clinicians in RTS decision-making by addressing the often-overlooked psychological aspect of recovery

## References

<sup>1</sup>Zayni R, Hager JP, Archbold P, Fournier Y, Quelard B, Chambat P, Sonnery-Cottet B. Activity level recovery after arthroscopic PCL reconstruction: a series of 21 patients with a mean follow-up of 29 months. *Knee*. 2011;18:392-395.

<sup>2</sup>Shitrit E, Valentin E, Baudrier N, Bohu Y, Rauline G, Lopes R, Bauer T, Hardy A. The ALR-RSI score can be used to evaluate psychological readiness to return to sport after acute Achilles tendon tear. *KSSTA*. 2023;31:4961-4968.

<sup>3</sup>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;9:9-15.

# Thank You!

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