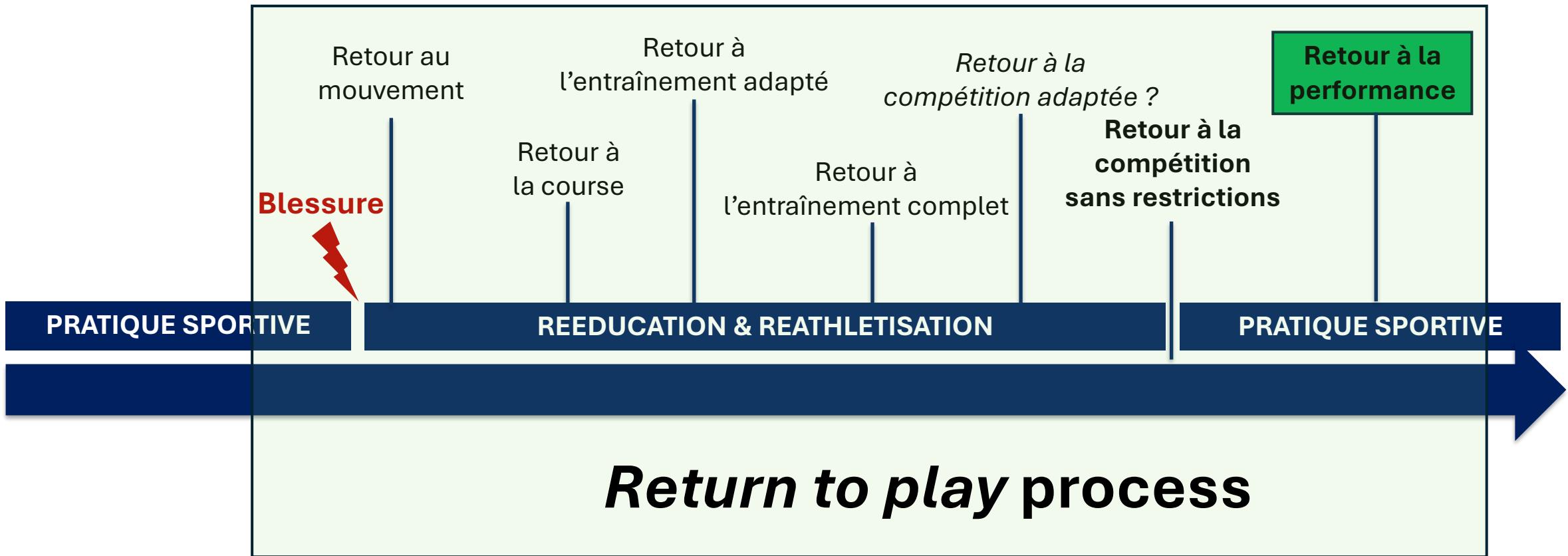


# Retour au sport & retour à la performance

François Delvaux, PT, S&C, PhD  
Université et CHU de Liège



RETURN TO  
PARTICIPATION

RETURN TO  
SPORT

RETURN TO  
PERFORMANCE

Pratique du même  
sport qu'avant blessure

Pratique du même  
sport qu'avant blessure  
**et au même niveau  
de performance**

2016 Consensus statement on return to sport  
from the First World Congress in Sports Physical  
Therapy, Bern

Ardern CL, et al. Br J Sports Med 2016;50:853–864.

# **Retour au sport ou retour à la performance ? Que dit la littérature ?**

## 1) Retour au sport

### Élites

Eighty-three per cent of elite athletes return to preinjury sport after anterior cruciate ligament reconstruction: a systematic review with meta-analysis of return to sport rates, graft rupture rates and performance outcomes

To cite: Lai CCH,  
Ardern CL, Feller JA,  
*et al. Br J Sports Med*  
2018;52:128–138.

### Amateurs

Fifty-five per cent return to competitive sport following anterior cruciate ligament reconstruction surgery: an updated systematic review and meta-analysis including aspects of physical functioning and contextual factors

To cite: Ardern CL,  
Taylor NF, Feller JA, *et al. Br J Sports Med*  
2014;48:1543–1552.

Clare L Ardern,<sup>1</sup> Nicholas F Taylor,<sup>1</sup> Julian A Feller,<sup>1,2</sup> Kate E Webster<sup>1</sup>

## 2) Retour à la performance



### *Manque global de données*

**Return to badminton play following an ACL injury is common, but only a few return to previous performance**

**Conclusion:** Return to badminton was achieved by 396 (63%), but only 117 (19%) returned to the same performance as their preinjury level after ACL injury. Females are less successful in RTS and RTP. Future research on

Kaldau 2024

**Anterior cruciate ligament injuries in elite badminton athletes: 84% Return to sport, half return to performance**

Tan 2024

**Reduced performance after return to competition in ACL injuries: an analysis on return to competition in the 'ACL registry in German Football'**

seasons after injury, 92 players (36.7%) in semi-professional and 24 (20%) in professionals had to end their career. Keeping the level of play was only possible for 48 (47.5%) of professionals, while only 47 (29.6%) of semi-professionals and 43 (28.1%) of amateurs were able to. Only in professional football, no significant difference could be seen in the played minutes

Szymski 2023

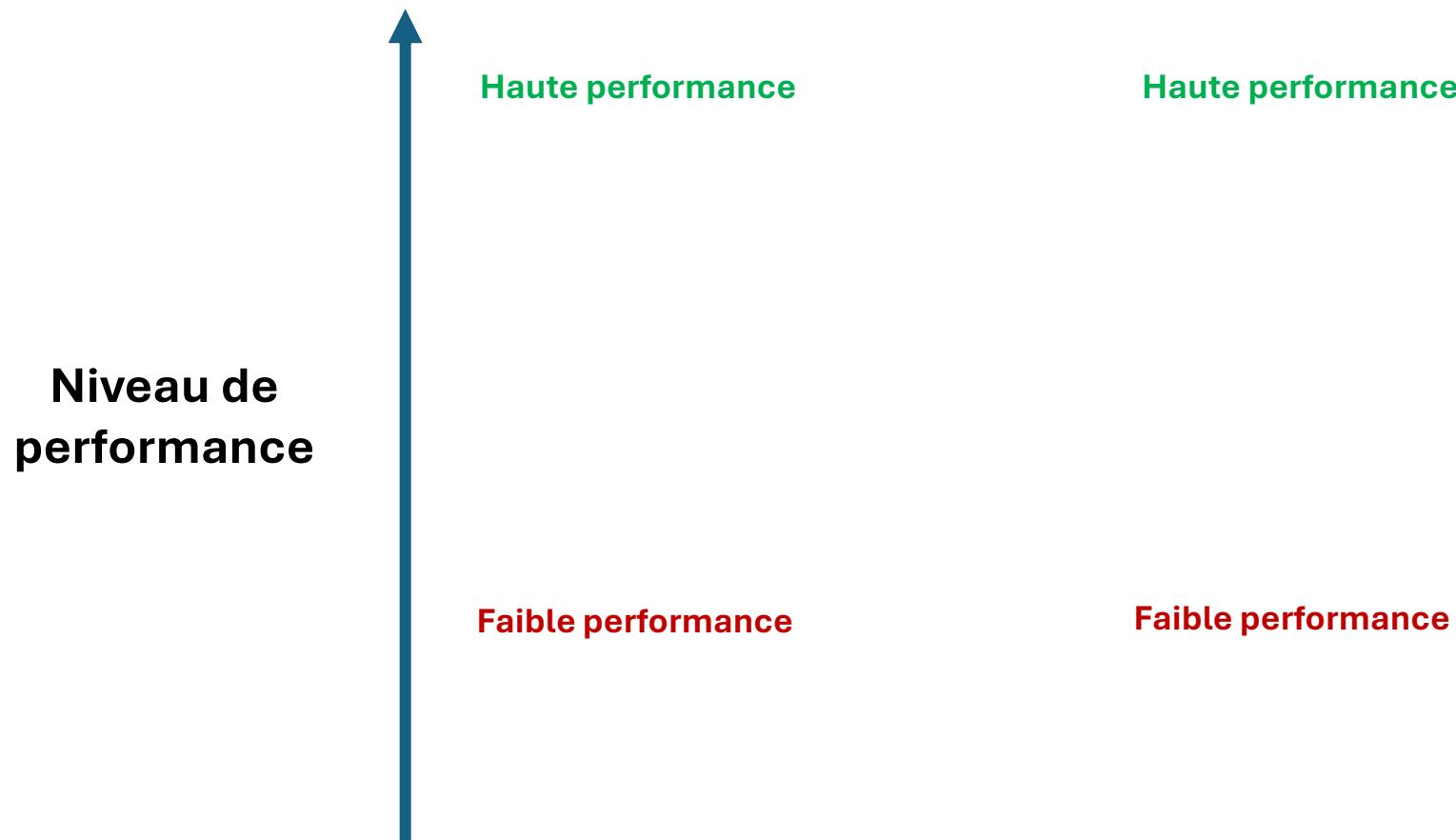
# Patient expectations of primary and revision anterior cruciate ligament reconstruction

Feucht 2016

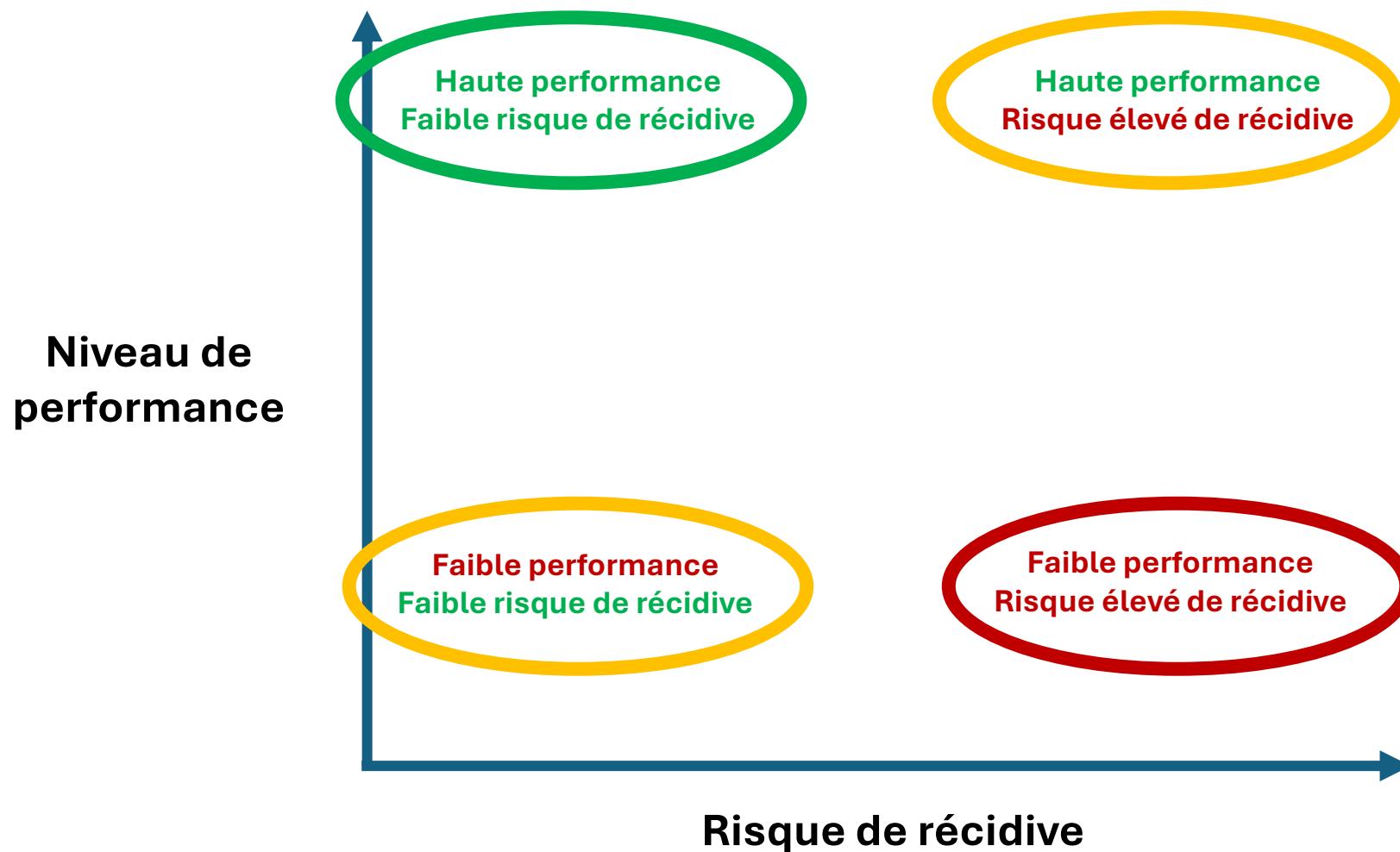
- 100% des patients attendent un genou normal ou quasi normal après plastie
- 91% attendent de rejouer au même niveau

**Attentes des patients versus réalité...**

# Retour à la performance & risque de récidive



# Retour à la performance & risque de récidive



**Quels facteurs influencent le retour à la performance  
et le risque de récidive ?**

# Facteurs non modifiables

Influence positive	Influence négative
Lésion isolée LCA	Lésions associées
Primo-lésion	> 1 épisode
<i>Jeune âge *</i>	<i>Âge plus avancé *</i>
<i>Âge plus avancé **</i>	<i>Jeune âge **</i>
Niveau de jeu élite *	Niveau de jeu amateur *
Faible laxité pré-op	Laxité pré-op importante
<i>Hommes</i>	<i>Femmes</i>

\* RTPerf

\*\* récidive

Fältström 2024  
Buckthorpe 2023  
Smeets 2022  
Fu 2021

# Facteurs modifiables

LE facteur le plus puissant =

Avoir suivi une rééducation/réathlétisation de qualité optimale



Comment évaluer cette qualité de suivi ?



Indirectement via l'analyse de 5 catégories de facteurs avant le retour au sport à 100%:

1. Durée entre chirurgie & RTS
2. Facteurs cliniques
3. Force musculaire
4. Performance fonctionnelle
5. Facteurs psychologiques

## 1. Durée entre chirurgie et RTS

# Return to Official Italian First Division Soccer Games Within 90 Days After Anterior Cruciate Ligament Reconstruction: A Case Report

J Orthop Sports Phys Ther • Volume 35 • Number 2 • February 2005

**Outcomes:** The surgical technique and the progressive rehabilitation program allowed the patient to play for 20 minutes in an official First Division soccer game 77 days after surgery and to play a full game 90 days after surgery. Eighteen months postsurgery, the player had participated in 62 First Division matches, scoring 26 times, and had received no further treatment for his knee.

## 1. Durée entre chirurgie et RTS

Grindem H, et al. Br J Sports Med 2016;

Simple decision rules can reduce reinjury risk by 84% after ACL reconstruction: the Delaware-Oslo ACL cohort study

- 100% des patients RTS  $\leq$  5 mois  $\rightarrow$  reblessure
- Entre 5 mois et 9 mois post-op, chaque mois passé avant RTS  $\rightarrow$   $\downarrow$  50% de risque de récidive

Young Athletes Who Return to Sport  
Before 9 Months After Anterior  
Cruciate Ligament Reconstruction  
Have a Rate of New Injury 7 Times  
That of Those Who Delay Return

**Time for a Different Approach to Anterior Cruciate Ligament Injuries:  
Educate and Create Realistic Expectations**

Joshua Robert Zadro<sup>1,2</sup> · Evangelos Pappas<sup>3</sup>

Sports Medicine (2019) 49:357–363

Rehabilitation must target strength and functional performance, avoid rapid increases in training load, and be guided by a return to sport (RTS) timeframe that is no shorter than 9 months (postoperative rehabilitation only)

## 1. Durée entre chirurgie et RTS

Is 9 months the sweet spot for male athletes to return to sport after anterior cruciate ligament reconstruction?

**To cite:** Kotsifaki R, King E, Bahr R, et al. *Br J Sports Med* 2025;59:667–675.

Roula Kotsifaki <sup>1,2</sup> Enda King <sup>1</sup> Roald Bahr <sup>2,3</sup> Rod Whiteley <sup>1</sup>

- ⇒ Decisions to RTS after ACLR should focus more on 'how' the athlete returns instead of 'when' the athlete returns. Time is necessary, but apparently not sufficient to ensure success.
- ⇒ In clinical practice, progression from phase to phase during rehabilitation and the decision to RTS should be dictated by relevant, objective criteria and individual athlete needs.



Utilisation de critères plutôt qu'un délai théorique figé...mais pas trop court !

## 2. Facteurs cliniques

- **Absence de douleur**
- **Absence de laxité**
- **Absence de gonflement**
- **Mobilité complète FL - EXT**

### 3. Force musculaire

Dynamomètre isométrique



Dynamomètre isokinétique

- Évaluation dynamique : CON (IJ & Q) & EXC (IJ)
- Évaluation à vitesse lente et rapide
- Évaluation agonistes/antagonistes
- Peu d'influence examinateur

Comparaison bilatérale:

- < 10% d'asymétrie : RTS
- > 30% d'asymétrie : RTS

Ratios IJ/Q(Cybex):

- CON > 0,50
- Mixte > 0,90

### 3. Force musculaire

**Pour chaque % d'asymétrie de force isocinétique du quadriceps :**  
**+3% de majoration du risque de récidive**

*Grindem H, et al. Br J Sports Med 2016;*

**Pour chaque diminution de 10 % du ratio IJ/Q (CON 60°/s) :**  
**risque de récidive multiplié par 10.**

*Kyritsis P, et al. Br J Sports Med 2016;*

## 4. Performance fonctionnelle

### A. Qualitative



***La gestuelle du patient est-elle optimale ?***

## 4. Performance fonctionnelle

### A. Qualitative

Observation directe

Vidéo + grille d'analyse

Analyse 3D



Lateral Step  
Down test

Tuck Jump test

Landing Error  
Scoring System

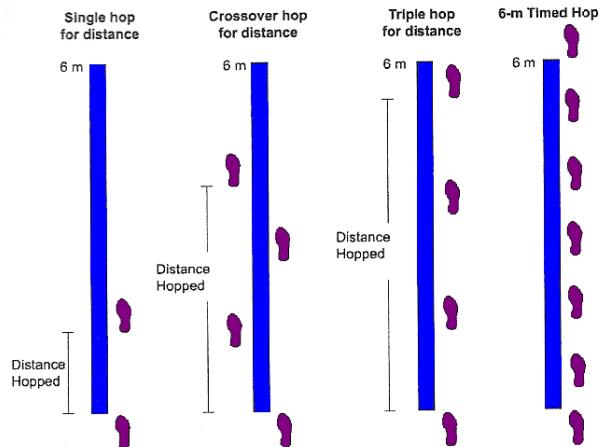
Cutting Movement  
Assessemment Score

## 4. Performance fonctionnelle

### B. Performance quantitative

#### Sauts unilatéraux

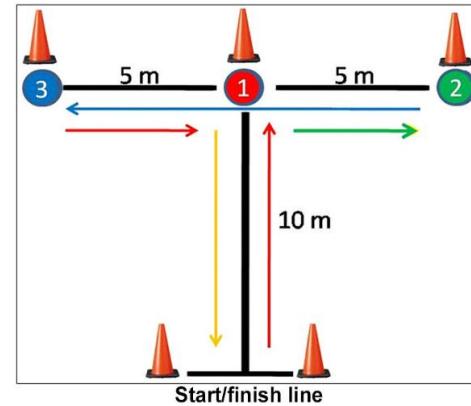
##### Horizontaux (Hop tests)



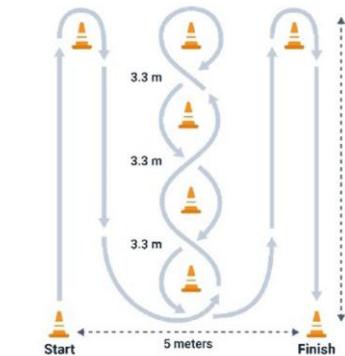
##### Verticaux

Limb Symmetry Index > 0.90

#### Agilité



Illinois  
Agility  
Test



## 5. Facteurs psychologiques



### Confiance & appréhensions

	Probabilité de RTPerf	Risque de récidive
Confiance + & appréhensions -	↑↑	↑
Confiance - & appréhensions +	↓↓	↓

Female Athletes With Better  
Psychological Readiness Are at Higher  
Risk for Second ACL Injury After Primary  
ACL Reconstruction

## 5. Facteurs psychologiques

Name of PRO	What It Measures	Interpretation of Score
ACL-RSI	Psychological readiness for sport participation	Higher score – increased psychological readiness (cut-off of 70 for return to sport)
ACL-QoL	Knee-related QoL	Higher score – better quality of life
TSK	Kinesiophobia, or pain-related fear of movement/reinjury	Higher score – greater kinesiophobia
KASE	Self-efficacy, or confidence, for performing activities involving the knee	Higher score – greater self-efficacy
SER	Confidence or self-efficacy in performing tasks encountered in rehabilitation after knee or hip surgery	Higher score – greater rehabilitation self-efficacy
K-SES	How certain the patient is about certain activities despite pain or discomfort	Higher score – increased self-efficacy
PHOSA-ACLR	Fear of harm	Higher score – more fear of harm
KOOS	Self-reported functioning	Higher score – better function
Lysholm scale	Knee function after knee ligament injury	Higher score – better function
FABQ	Fear-avoidance beliefs	Higher score – more fear-avoidance beliefs
PCS	Patient's frequency in engaging in pain catastrophizing behaviors	Higher score – increased pain catastrophizing
IKDC-SKF	Knee-specific evaluation of symptoms, function, and sport activity	Higher score – fewer limitations
Tegner activity scale	Level of activity before injury and postinjury	Higher score – higher level of activity
Marx activity scale	Level of activity in patients with knee disorders who participate in sports	Higher score – higher level of activity
GRS	Self-reported knee function	Higher score – better function
International Physical Activity Questionnaire	Last 7 days of physical activity	Open-ended questions on physical activity
SANE	Function as pertaining to area of injury in comparison with preinjury baseline	Higher score – better function
GSE	Optimistic self-beliefs to cope with variety of difficult demands	Higher score – increased self-efficacy
Athlete Fear Avoidance Questionnaire	Sport-injury-related fear avoidance in athletes	Higher score – higher fear avoidance
LEFS	Lower extremity function	Higher score – better function
ACSI-28	Athlete's psychological coping skills	Higher score – better coping skills
Godin Leisure-Time Exercise questionnaire	How many times per week the patient engages in strenuous, moderate, or mild/light exercise	Higher score – higher level of activity
SPORTS	Athlete's ability to return to their sport	Higher score – more complete return

# Echelle ACL-RSI

## - Version française -

1. Pensez-vous pouvoir pratiquer votre sport au même niveau qu'auparavant?

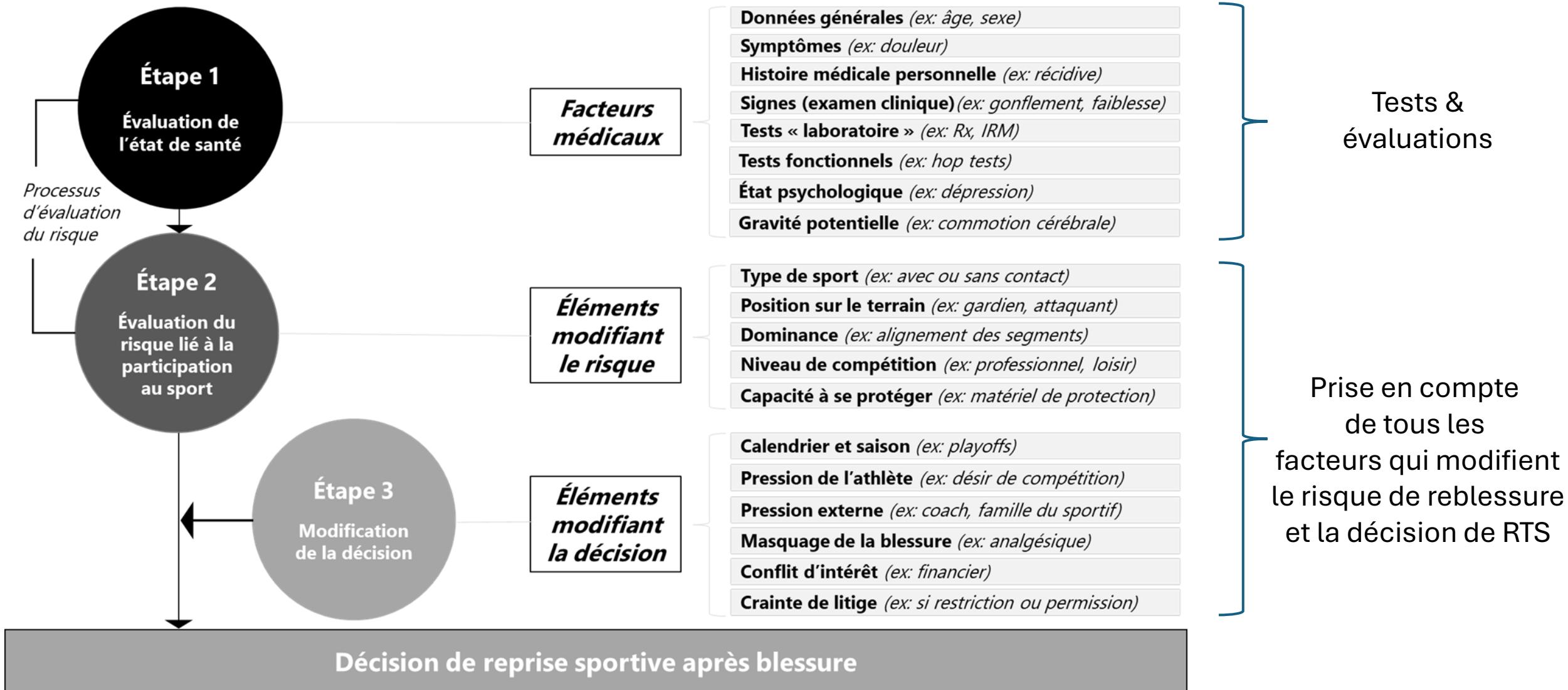
2. Pensez-vous que vous pourriez vous blesser de nouveau le genou si vous repreniez le sport?

### **3. Êtes-vous inquiet à l'idée de reprendre votre sport?**

4. Pensez-vous que votre genou sera stable lors de votre pratique sportive ?

#### **5. Pensez-vous pouvoir pratiquer votre sport sans vous soucier de votre genou ?**

# Chaque patient est un individu unique : importance d'individualiser le RTS



# Évidence scientifique sur l'importance de valider des tests & critères ?

Kotsifaki 2025  
Hurley 2022  
Ashigbi 2020  
Losciale 2019  
Capin 2019  
Webster 2019

# Un facteurs-clé de réussite : l'adhérence au traitement

The Influence, Barriers to and Facilitators of  
Anterior Cruciate Ligament Rehabilitation  
Adherence and Participation: a Scoping  
Review

Adam Walker<sup>1,2\*</sup> , Wayne Hing<sup>1</sup> and Anna Lorimer<sup>1</sup>



## Facteurs d'adhérence et de réussite du RTP :

- Degré élevé de motivation
- Identité athlétique forte
- Soutien social/familial
- Alliance thérapeutique forte

# Conclusion



**Optimiser le suivi rééducatif en considérant 5 éléments :**

- 1. Durée entre chirurgie & RTS**
- 2. Facteurs cliniques**
- 3. Force musculaire**
- 4. Performance fonctionnelle**
- 5. Facteurs psychologiques**