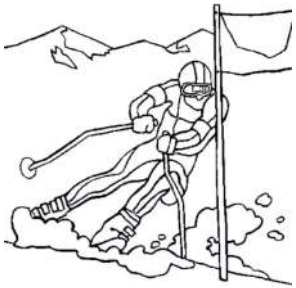
Rupture du LCA

Faut-il opérer ? Pourquoi ?



Alban Fouasson-Chailloux

MD, PhD

Services de MPR Locomotrice
et de Médecine du Sport
CHU Nantes

Ce qu'il faut savoir…

- Rupture du LCA : 68,5 à 85 / 100 000 / an
- Sports pivot-contacts
- Des facteurs de risques intrinsèques et extrinsèques

Sanders et al., *Am J Sports Med,* 2016
Kyritsis et al., *Br J Sports Med*, 2016
Dauty et al., *J Clin Med*, 2022

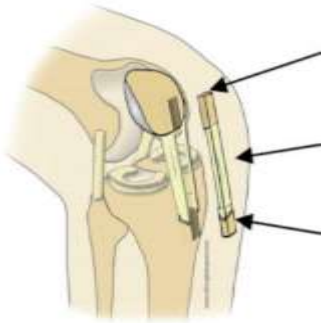
Ce qu'il faut savoir…

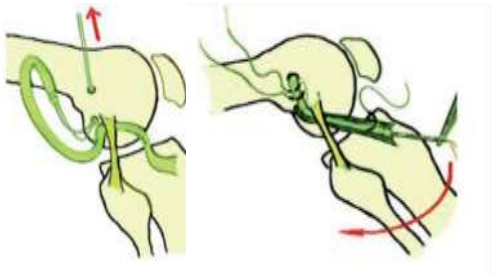
- Age – Sexe – Anatomie – Laxité
- BMI – Force Musculaire
- Activités Sportives / Physiques

Hohmann et al., *Orthop J Sport Med,* 2021
Amrae et al., *KSSTA,* 2017
Pfeifer et al. *Int J Sports Phys Ther*, 2018
Evans et al., *KSSTA,* 2012
Uhorchak et al., *Am J Sports Med,* 2003

Ce qu'il faut savoir…

- 300 000 ACLR / an aux USA



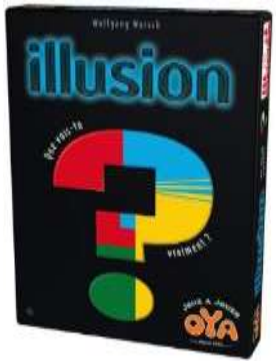


- Une chirurgie fréquente… Trop ?!

Cohen, *Clin Sports Med,* 2007

Les patients sont souvent très demandeurs d’une solution chirurgicale

Quel (ir)rationnel derrière le souhait de reconstruction?



Wang et al., *Arthritis Res Ther,* 2020

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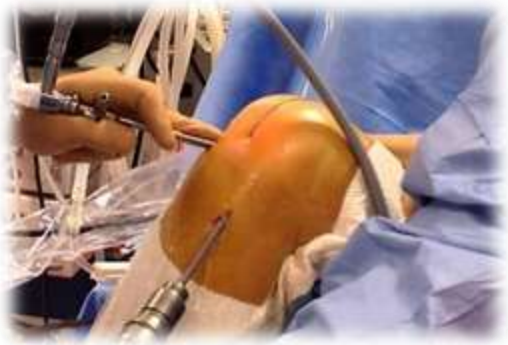
Grâce à la chirurgie je vais reprendre le sport comme avant !

Quels résultats après chirurgie ?

- 80% de retour au sport
  - Méta-analyse sur 7556 participants
- Mais…



Ardern, *Br J Sports Med*, 2014

Quels résultats après chirurgie ?

- Seulement 65% au **niveau antérieur** en 1ère intention
- 55% à la compétition
- 53% au **niveau antérieur** en cas de reprise

Ardern, *Br J Sports Med*, 2014
Grassi, *Br J Sports Med*, 2015

Table 2 Relationships between contextual factors and pooled return to sport rates

Contextual factor	Person related		Surgery related		Other				
	Gender		Graft type		Sports performance level		Length of follow-up		
Return to sport rate (articles contributing to meta-analyses: any, preinjury, competitive sport)*	Men (7, 16, 8)	Women (5, 13, 5)	Hamstring tendon (15, 20, 9)	Patellar tendon (17, 14, 3)	Elite (6, 11, 9)	Non-elite (51, 42, 19)	Up to 12 months (9, 12, 9)	12–36 Months (21, 16, 7)	>36 Months (21, 16, 8)
Return to any sport (%), (mean, 95% CI)	80 (68 to 90)	75 (67 to 82)	89 (80 to 95)	83** (64 to 95)	85 (71 to 95)	80* (72 to 86)	84 (72 to 93)	82 (72 to 90)	79 (63 to 90)
Return to preinjury level sport (%) (mean, 95% CI)	61 (50 to 71)	52** (41 to 63)	62 (51 to 72)	67** (53 to 80)	79 (70 to 86)	60** (53 to 67)	66 (52 to 79)	63 (53 to 73)	61 (50 to 72)
Return to competitive level sport (%) (mean, 95% CI)	78 (58 to 93)	68** (37 to 93)	47 (33 to 62)	27** (20 to 34)	81 (70 to 90)	42** (33 to 49)	65 (46 to 82)	53 (37 to 69)	43 (29 to 58)

*p<0.05, **p<0.01.
*The number of articles contributing data to each subgroup, for each return to sport rate, are reported in parentheses; article references are presented in online supplementary appendix C.

Quels résultats après chirurgie ?

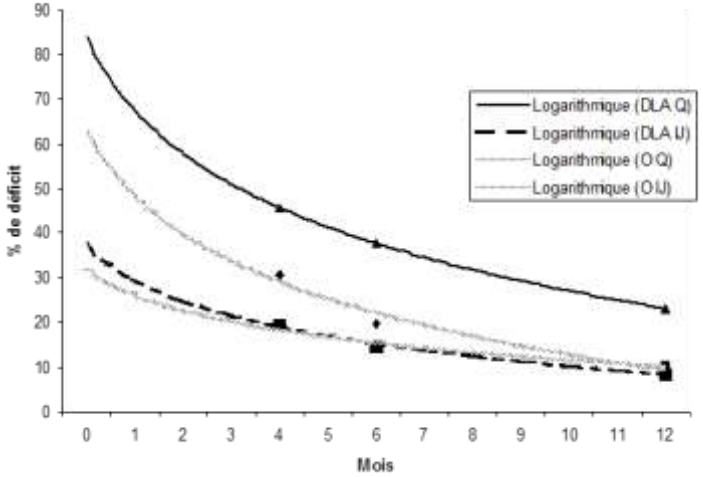
- Enfants < 14 ans :
  - 96% de retour au même niveau…
  - Mais **30%** de re-rupture !

Lang et al., *J Sports Med*, 2017

Il y a vraiment peu de risque, tout ira vite et bien !

Des complications à court terme

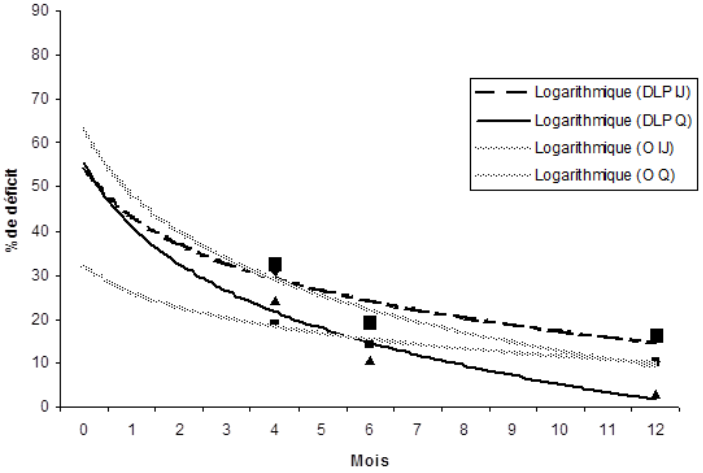
- Douleurs antérieures
- Jusqu'à **15%**
- x 3 si chirurgie au tendon patellaire mais fréquentes après DIDT



Chantrelle et al., *Plos One*, 2022 (soumis)
Rousseau et al., *Am J Sports Med*, 2019
Dauty et al., *Rev Chir Orthop,* 2006

Des complications à court terme

- Douleurs postérieures
- **10%** - moins invalidantes
- Surtout chirurgie aux ischio-jambiers



Dauty et al., *Rev Chir Orthop,* 2006
Dauty et al., Ann Phys Med Rehab, 2021

Des complications à court terme

- Arthrofibrose environ **10%**

Ekhtiari et al., *KSSTA*, 2017
Dauty et al., *Eur J Sport Sci*, 2021

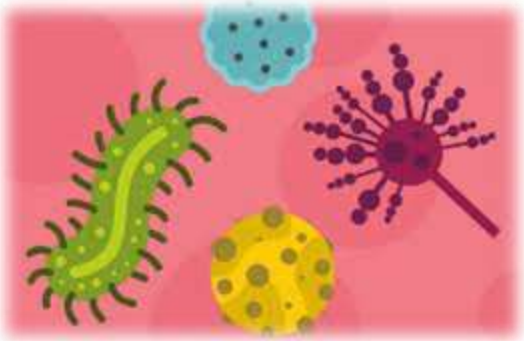
LSI Q60 (%)			
4 months	38 +/- 12[a]	63 +/- 14[a]	<0.0001
7 months	53 +/- 14[a]	73 +/- 14[a]	<0.0001
12 months	68 +/- 13[a]	85 +/- 11[a]	<0.0001

Et la vie quotidienne ?!

RTS at 7 months n(%)[B]			
No RTS	39 (66.1%)	35 (7.3%)	
Bicycling	16 (27.1%)	109 (22.8%)	<0.0001*
Footing	4 (6.8%)	335 (69.9%)	

Des complications à court terme

- Autres classiques de la chirurgie…
- Rares mais potentiellement graves
  - Dont 1% d'infections (précoces)



Rousseau, *Am J Sports Med*, 2019
Bohu, *Am J Sports Med,* 2019

Des complications à moyen terme

- **> 10 à 15%** de re-ruptures – (15% côté sain)
- > 20% avant 18 ans
- 30% si femme
- x 15 si RTS avant 12 mois
- Nouveau traumatisme = 25 % des re-ruptures

Paschos et al., *Sports Arthrosc,* 2016
Wiggins et al., *Am J Sports Med ,* 2016
Lang et al., *J Sports Med*, 2017
Mille et al., *Curr Rev Muscul Med,* 2017
Geffroy et al., *Orthop Traumatol Surg Res* 2018

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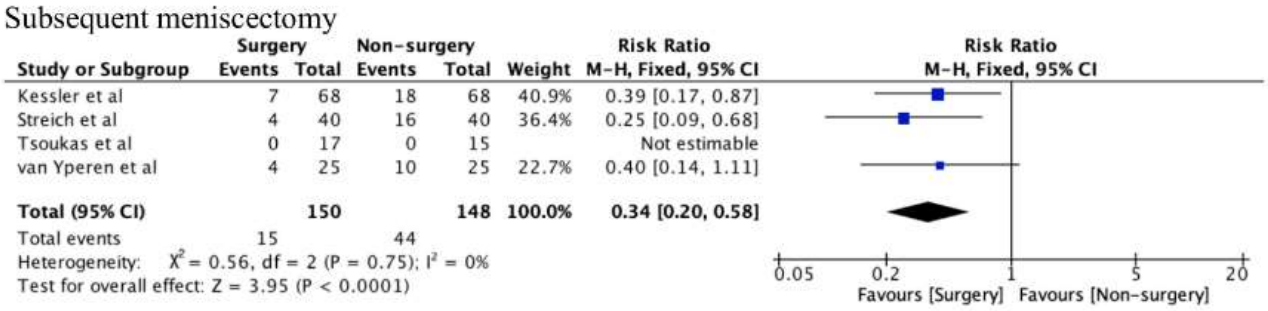
Au moins cela protégera mes ménisques

Rien n’est moins sûr…

Lésion méniscale 2ndr - 5 et 52% dans les 5 à 10 ans – 54 études soit 9624 patients

- Pas de bénéfice de la chirurgie par rapport au traitement conservateur

Ekås, Br J Sports Med, 2020



Et sans doute pas !

Original research

Meniscal procedures are not increased with delayed ACL reconstruction and rehabilitation: results from a randomised controlled trial

Sabine J A van der Graaff ,[1] Max Reijman ,[1] Eline M van Es,[1]
Sita M A Bierma-Zeinstra,[2] Jan A N Verhaar,[1] Duncan E Meuffels [1]

- 25 vs 22% à 2 ans

van der Graaff SJA, et al. Br J Sports Med 2023

L’avantage, c’est que c’est plus solide qu’avant !

Et bien non !

- Le taux de re-ruptures est généralement le même que le taux de ruptures controlatérales quelques soient les séries…

9 - 15 %

- Et pb femmes et enfants

Mille, *Curr Rev Muscul Med,* 2017

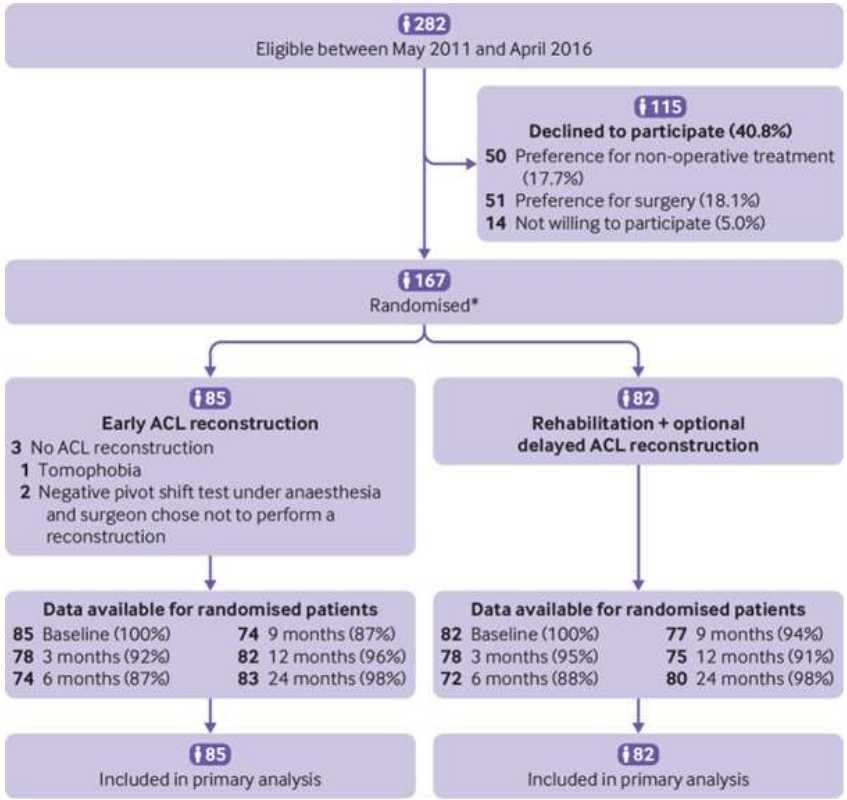
Randsborg, *Am J Sports Med*, 2022

Les données de laboratoire ne sont pas corrélées à la réalité clinique…

Mais si je ne me fais pas opérer rapidement, ce sera trop tard !

Pas tant que ça…

- 50% des *delayed* se font opérer – l'autre moitié va bien
- Les patients opérés vont mieux sur le sport…
- Pas de différence symptômes et douleur



Reijman et al., BMJ, 2021

Pas tant que ça…

- Oui mais… «*Patients who chose ACL reconstruction reported superior outcomes for knee symptoms and function, and in knee-specific and health-related quality of life, compared to patients who chose non-surgical treatment*»

Ardern, *Scand J Med Sci Sports*, 2017

- Mais… Pas de différence formelle en terme de fonction à 2 et 5 ans chez l'adulte.

Monk, Review Cochrane Database Syst Rev, 2016

De l’espoir !

› Knee Surg Sports Traumatol Arthrosc. 2019 Aug;27(8):2511-2519. doi: 10.1007/s00167-018-5258-y. Epub 2018 Nov 1.

Nearly 90% participation in sports activity 12 years after non-surgical management for anterior cruciate ligament injury relates to physical outcome measures

Susan L Keays [1] [2], Peter Newcombe [3], Anthony C Keays [4]

Keays et al., *KSSTA*, 2019

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Je veux éviter l'arthrose quand je serai vieux !

L’arthrose post traumatique

- Après rupture LCA 87%
- FDR ++

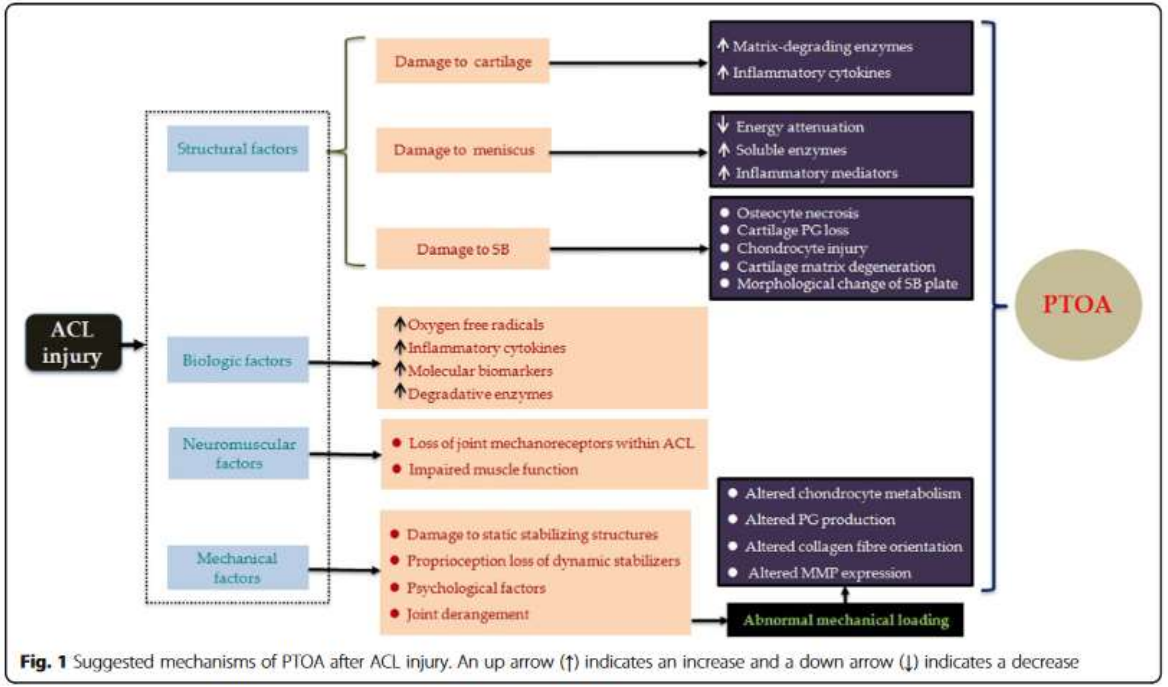


Fig. 1 Suggested mechanisms of PTOA after ACL injury. An up arrow (↑) indicates an increase and a down arrow (↓) indicates a decrease

Wang, *Arthritis Res Ther*, 2020

La chirurgie en prévention…

- En théorie :
  - translation antérieure, stabilité du genou, torsion tibiale, genou le plus normal possible…

- Mais peu de preuve de la supériorité de la prise en charge :
  - Pas de restauration complète de la stabilité, rôle du transplant ?
  - Altération persistante de troubles cinématiques et dynamiques à long terme
  - Hémarthrose post chirurgicale
  - Entretien de l'inflammation
  - Absence de réversibilité des lésions traumatiques

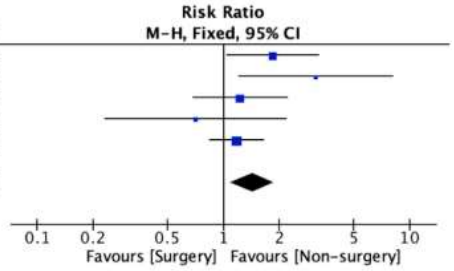
Wang et al., *Arthritis Res Ther*, 2020

La chirurgie en prévention…

Radiographic knee osteoarthritis

Study or Subgroup	Surgery Events	Total	Non-surgery Events	Total	Weight	Risk Ratio M-H, Fixed, 95% CI
Kessler et al	27	60	12	49	25.4%	1.84 [1.04, 3.24]
Neuman et al	6	17	7	62	5.8%	3.13 [1.21, 8.08]
Streich et al	15	40	15	49	25.9%	1.23 [0.69, 2.19]
Tsoukas et al	4	17	5	15	10.2%	0.71 [0.23, 2.16]
van Yperen et al	20	25	17	25	32.7%	1.18 [0.84, 1.64]
Total (95% CI)		**159**		**200**	**100.0%**	**1.42 [1.09, 1.85]**
Total events	72		56			

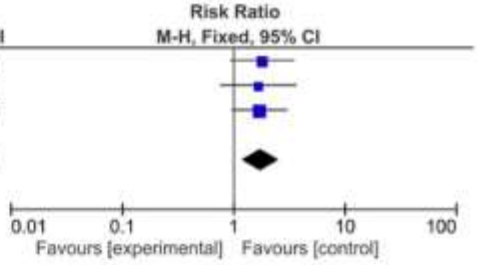
Heterogeneity: $X^2 = 6.44$, df = 4 (P = 0.17); $I^2 = 38\%$
Test for overall effect: Z = 2.62 (P = 0.009)



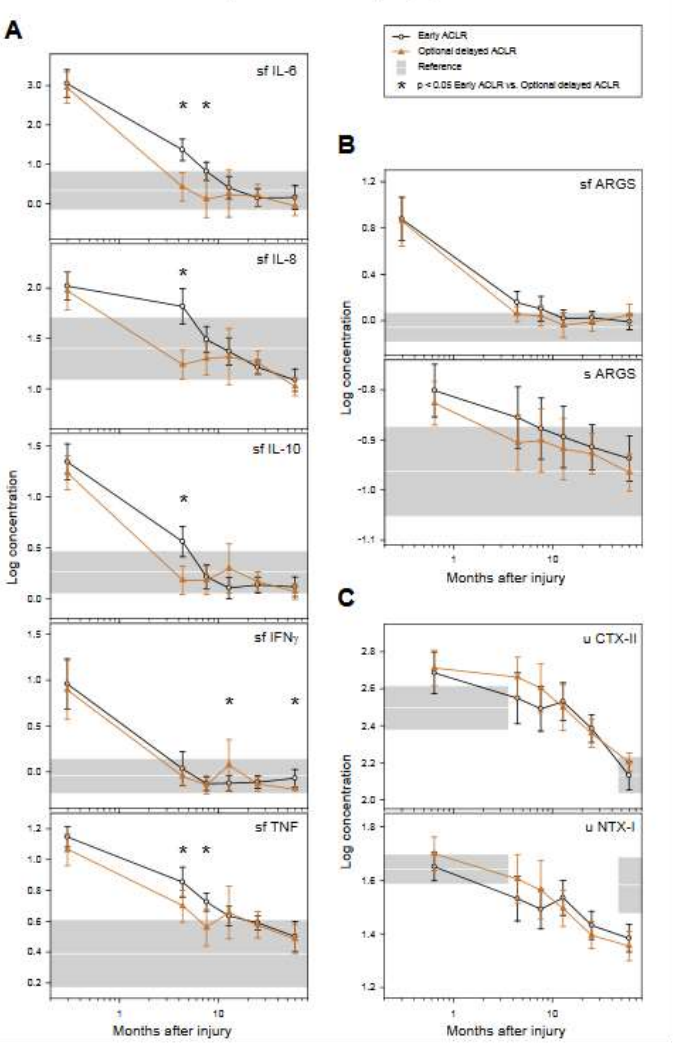
Lien-Iversen, Br J Sports Med, 2020

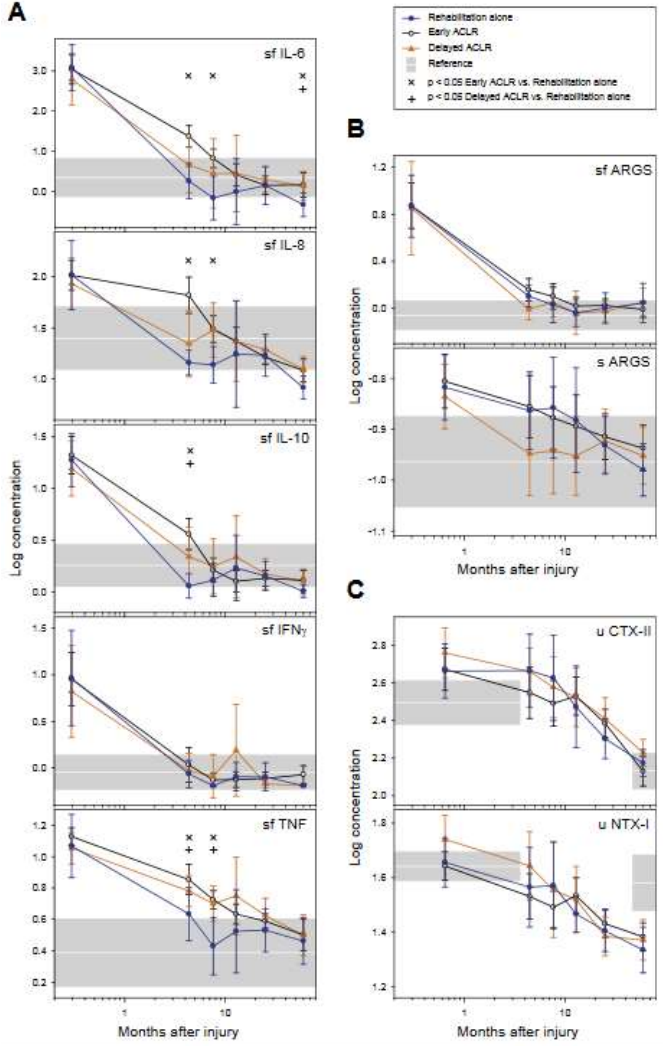
Study or Subgroup	Experimental Events	Total	Control Events	Total	Weight	Risk Ratio M-H, Fixed, 95% CI
Frobell et al. 2010	19	58	10	55	32.4%	1.80 [0.92, 3.52]
Harris et al. 2015	14	62	8	59	25.9%	1.67 [0.75, 3.68]
Kessler et al. 2007	25	60	12	49	41.7%	1.70 [0.96, 3.03]
Total (95% CI)		**180**		**163**	**100.0%**	**1.72 [1.18, 2.53]**
Total events	58		30			

Heterogeneity: $Chi^2 = 0.03$, df = 2 (P = 0.99); $I^2 = 0\%$
Test for overall effect: Z = 2.79 (P = 0.005)



Ferrero, Osteoarthritis and C.O., 2023





Larsson et al., *Osteoarthritis Cartilage*, 2017

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Mais finalement qui opérer ?

Rehabilitation versus surgical reconstruction for non-acute anterior cruciate ligament injury (ACL SNNAP): a pragmatic randomised controlled trial

*David J Beard, Loretta Davies, Jonathan A Cook, Jamie Stokes, Jose Leal, Heidi Fletcher, Simon Abram, Katie Chegwin, Akiko Greshon, William Jackson, Nicholas Bottomley, Matt Dodd, Henry Bourke, Beverly A Shirkey, Arsenio Paez, Sarah E Lamb, Karen Barker, Michael Phillips, Mark Brown, Vanessa Lythe, Burhan Mirza, Andrew Carr, Paul Monk, Carlos Morgado Areia, Sean O'Leary, Fares Haddad, Chris Wilson, Andrew Price, on behalf of the ACL SNNAP Study Group**

Summary

Background Anterior cruciate ligament (ACL) rupture is a common debilitating injury that can cause instability of the knee. We aimed to investigate the best management strategy between reconstructive surgery and non-surgical treatment for patients with a non-acute ACL injury and persistent symptoms of instability.

Methods We did a pragmatic, multicentre, superiority, randomised controlled trial in 29 secondary care National Health Service orthopaedic units in the UK. Patients with symptomatic knee problems (instability) consistent with an ACL injury were eligible. We excluded patients with meniscal pathology with characteristics that indicate immediate surgery. Patients were randomly assigned (1:1) by computer to either surgery (reconstruction) or rehabilitation (physiotherapy but with subsequent reconstruction permitted if instability persisted after treatment), stratified by site and baseline Knee Injury and Osteoarthritis Outcome Score—4 domain version (KOOS4). This management design represented normal practice. The primary outcome was KOOS4 at 18 months after randomisation. The principal analyses were intention-to-treat based, with KOOS4 results analysed using linear regression. This trial is registered with ISRCTN, ISRCTN10110685, and ClinicalTrials.gov, NCT02980367.

Findings Between Feb 1, 2017, and April 12, 2020, we recruited 316 patients. 156 (49%) participants were randomly assigned to the surgical reconstruction group and 160 (51%) to the rehabilitation group. Mean KOOS4 at 18 months was 73·0 (SD 18·3) in the surgical group and 64·6 (21·6) in the rehabilitation group. The adjusted mean difference was 7·9 (95% CI 2·5–13·2; p=0·0053) in favour of surgical management. 65 (41%) of 160 patients allocated to rehabilitation underwent subsequent surgery according to protocol within 18 months. 43 (28%) of 156 patients allocated to surgery did not receive their allocated treatment. We found no differences between groups in the proportion of intervention-related complications.

Interpretation Surgical reconstruction as a management strategy for patients with non-acute ACL injury with persistent symptoms of instability was clinically superior and more cost-effective in comparison with rehabilitation management.

Funding The UK National Institute for Health Research Health Technology Assessment Programme.

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Lancet 2022; 400: 605–15

See Comment page 543

*ACL SNNAP Study Group members are listed at the end of the Article

Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences, Botnar Research Centre (Prof D J Beard DPhil, L Davies DPhil, J A Cook PhD, J Stokes MSc, H Fletcher BSc, S Abram DPhil, K Chegwin, A Greshon, B A Shirkey PhD, A Paez PhD, Prof A Carr FRCS, P Monk FRCS, C Morgado Areia MSc, Prof A Price FRCS) **and Nuffield Department of Population Health** (J Leal DPhil, V Lythe MSc, B Mirza MBBS), **University of Oxford, Oxford, UK; Nuffield Orthopaedic Centre, Oxford University Hospitals NHS Foundation Trust, Oxford, UK** (W Jackson FRCS, N Bottomley FRCS, Prof K Barker PhD); **College of Medicine and Health, University of Exeter** (Prof S E Lamb DPhil); **Swansea Bay University Health Board, Swansea, UK** (M Dodd FRCS); **Heatherwood & Wexham Park Hospitals, Frimley Health NHS Foundation Trust , Slough, UK**

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Pour résumer, quelles sont les indications ?

En résumé

- **Instabilité du genou** (>1x/mois) : vie courante, pratique professionnelle, pratique sportive
- **Instabilités potentielles:** profession à risque (BTP…) ou **sport pivot-contact**
- **Atteintes méniscales chirurgicales** (ACLr associée)
- **Sujet mineur…** pas si consensuel que ça en réalité

Toutes les autres indications sont discutables

Malgré cela, se rappeler que…

- La moitié des patients ne retrouvera pas son niveau sportif
- Les suites opératoires seront longues voire très longues!
- Et potentiellement difficiles…