

Do All Patients Need ACLR? Is There An Alternative?

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Clinical question

- Is there a non-operative option for patients with acute ACL tears?



Is the world flat?

Garrison Hearst



- 3rd in Heisman Trophy voting
- Doak Walker award winner
- 3rd pick in 1993 NFL draft

Spencer Lee



- 2021 NCAA wrestling champion
- Won with bilateral ACL tears
- “Excuses are for wusses”

Case presentation

- High school football player – senior
- In season contact injury
- Exam consistent with isolated ACL tear
- Wrestler



Case presentation

- High school womens basketball player – junior
- In season non-contact injury
- Exam consistent with isolated ACL, MCL, MM tear
- Collegiate cross country recruit



Case presentation

- Collegiate football player – middle linebacker
- Prior ACL reconstruction
- Lacks full extension and flexion
- Revision ACL recon recommended



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The Symptomatic Anterior Cruciate-Deficient Knee

PART II: THE RESULTS OF REHABILITATION, ACTIVITY MODIFICATION,
AND COUNSELING ON FUNCTIONAL DISABILITY*

BY FRANK R. NOYES, M.D.[†], DAVID S. MATTHEWS, M.D.[‡], PEKKA A. MOOAR, M.D.[§], AND EDWARD S. GROOM, PH.D.,
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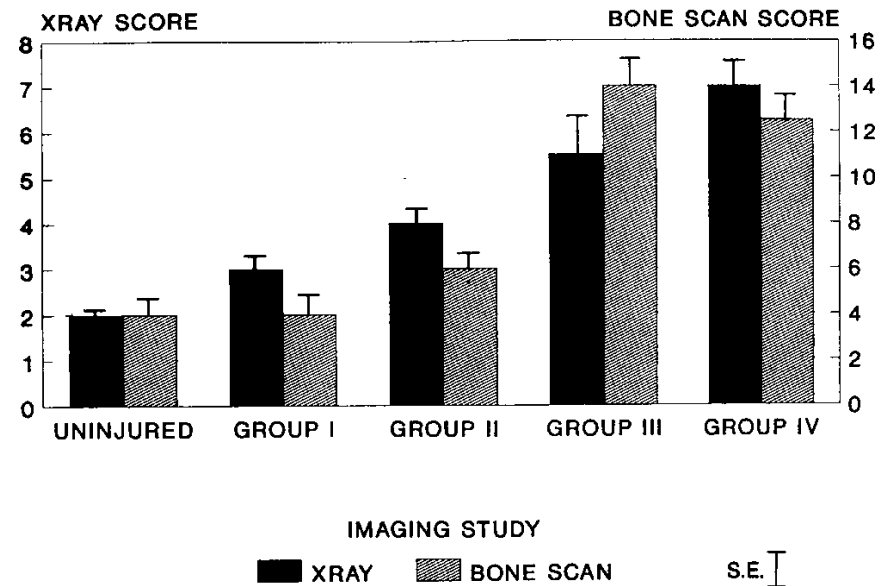
- Copers 1/3
- Adapters 1/3
- Non-copers 1/3

Fate of the ACL-injured Patient

A Prospective Outcome Study*

Dale M. Daniel,†† MD, Mary Lou Stone,† RPT, Barbara E. Dobson,† LVN,
Donald C. Fithian,† MD, David J. Rossman,† MD, and Kenton R. Kaufman,§ PhD

- Early stable – No recon
- Early unstable – No recon
- Early recon
- Late recon



Twenty-Year Follow-up Study Comparing Operative Versus Nonoperative Treatment of Anterior Cruciate Ligament Ruptures in High-Level Athletes

Daan T. van Yperen,^{*†} MD, Max Reijman,[†] PhD, Eline M. van Es,[†] MSc,
Sita M.A. Bierma-Zeinstra,[‡] PhD, and Duncan E. Meuffels,[†] MD, PhD
*Investigation performed at the Department of Orthopaedic Surgery,
Erasmus University Medical Center, Rotterdam, the Netherlands*

	Operative		Nonoperative			P Value	
	10 y	20 y	10 y	20 y	10 y	20 y	
Lysholm	88.0 (80.5-91.0)	86.0 (75.5-91.0)	85.0 (77.0-90.0)	89.0 (75.5-95.5)	.442	.851	
IKDC subjective	77.1 (65.1-87.3)	81.6 (59.8-89.1)	77.1 (67.5-84.9)	78.2 (61.5-92.0)	.683	.679	

	Operative			Nonoperative			P Value	
	Baseline	10 y	20 y	Baseline	10 y	20 y	10 y	20 y
Tegner	9 (7-9)	6 (4-7)	5 (3-6)	9 (7-9)	5 (4-7)	4 (4-6)	.191	.331

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- Even within high-level athletes, there is no clear evidence to state that ACL reconstruction is superior to nonoperative treatment
- Therefore, also for the long term, nonoperative treatment is a suitable therapy for ACL ruptures.

Radiological Assessment Results

	Operative, n (%)		Nonoperative, n (%)	
	10 y	20 y	10 y	20 y
Kellgren and Lawrence score				
0	4 (16)	1 (4)	8 (32)	3 (12)
1	9 (36)	4 (16)	10 (40)	5 (20)
2	9 (36)	16 (64)	4 (16)	12 (48)
3	3 (12)	3 (12)	3 (12)	4 (16)
4	0 (0)	0 (0)	0 (0)	1 (4)
Total knee arthroplasty	0 (0)	1 (4)	0 (0)	0 (0)

A COMPARISON OF OPERATIVE AND NONOPERATIVE TREATMENT OF ANTERIOR CRUCIATE LIGAMENT INJURIES

Secrist ES, Frederick RW, Tjoumakaris FP, Stache SA, Hammoud S, Freedman KB

TABLE I Clinical Recommendations and SORT Criteria²² Strength of Recommendations

Clinical Recommendation	SORT Evidence Rating*
Patients with ACL injuries and concomitant meniscal injuries should undergo early reconstruction ³⁸⁻⁴⁰ .	B
Patients with isolated ACL injuries intending to return to ≥ 4 hours per week of level-1 sports participation should undergo early reconstruction ^{12,15,31,44} .	B
Patients considering nonoperative rehabilitation of an ACL injury may delay reconstruction and use the immediate post-injury period to determine whether or not they will be able to cope with an ACL-deficient knee ^{13,34,39,49,75-78} .	B
Perturbation training exercises should be included in nonoperative treatment of ACL injuries ⁸⁶⁻⁹⁰ .	B
*A= recommendation based on consistent and good-quality patient-oriented evidence; B = recommendation based on inconsistent or limited-quality patient-oriented evidence; C = recommendation based on consensus, usual practice, opinion, disease-oriented evidence, or case series.	

Screening tool

- Unilateral hop testing(Noyes)
 - Single-legged hop for distance
 - Triple crossover hop for distance
 - Straight triple hop for distance
 - 6-meter timed hop
- KOS – ADLS
- Global rating of knee function
- # of giving way episodes with ADLs



Rehab protocol

	Rockerboard	Rollerboard/Platform	Rollerboard
Sets/duration	2-3 sets/1 min each	2-3 sets/1 min each; performed bilaterally	2-3 sets/30 seconds-1 min each
Direction of board movement	A/P, M/L	Initial: A/P, M/L Progression: diagonal, rotation	Initial: A/P, M/L Progression: diagonal, rotation
Application	Begin in bilateral stance for first session. Perform in single leg stance for remaining sessions.	Subject force is counter-resistance opposite of rollerboard, matching intensity and speed of application so rollerboard movement is minimal. Leg muscles should not be contracted in anticipation of perturbation, nor should response be rigid co-contraction.	Begin in bilateral stance for first session. Perform in single-leg stance for remaining sessions. Perturbation distances are 1-2 inches.

Cognitive (Early) Phase (Sessions 1-4)

Treatment Goals:

- Expose athlete to perturbations in all directions
- Elicit an appropriate muscular response to applied perturbations (no rigid co-contraction)
- Minimize verbal cues

Associative (Middle) Phase (Sessions 5-7)

Treatment Goals:

- Add light sport-specific activity during perturbation techniques
- Improve athlete accuracy in matching muscle responses to perturbation intensity, direction, and speed

Autonomous (Late) Phase (Sessions 8-10)

Treatment Goals:

- Increase difficulty of perturbations by using sport-specific stances
- Obtain accurate, selective muscular responses to perturbations in any direction and of any intensity, magnitude, or speed



Clinical evaluation

- Isolated ACL tear
 - Minimal MCL or LCL laxity
- Small side to side Lachman's
- Pivot glide
- MRI
 - Femoral avulsion type
 - Minimal collateral ligament injury
 - No significant MM tear
 - No root tear



Recovery and Rehab

- Recover from acute injury
- Physical therapy
- Derotational brace
- Time



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Guardian of the Meniscus

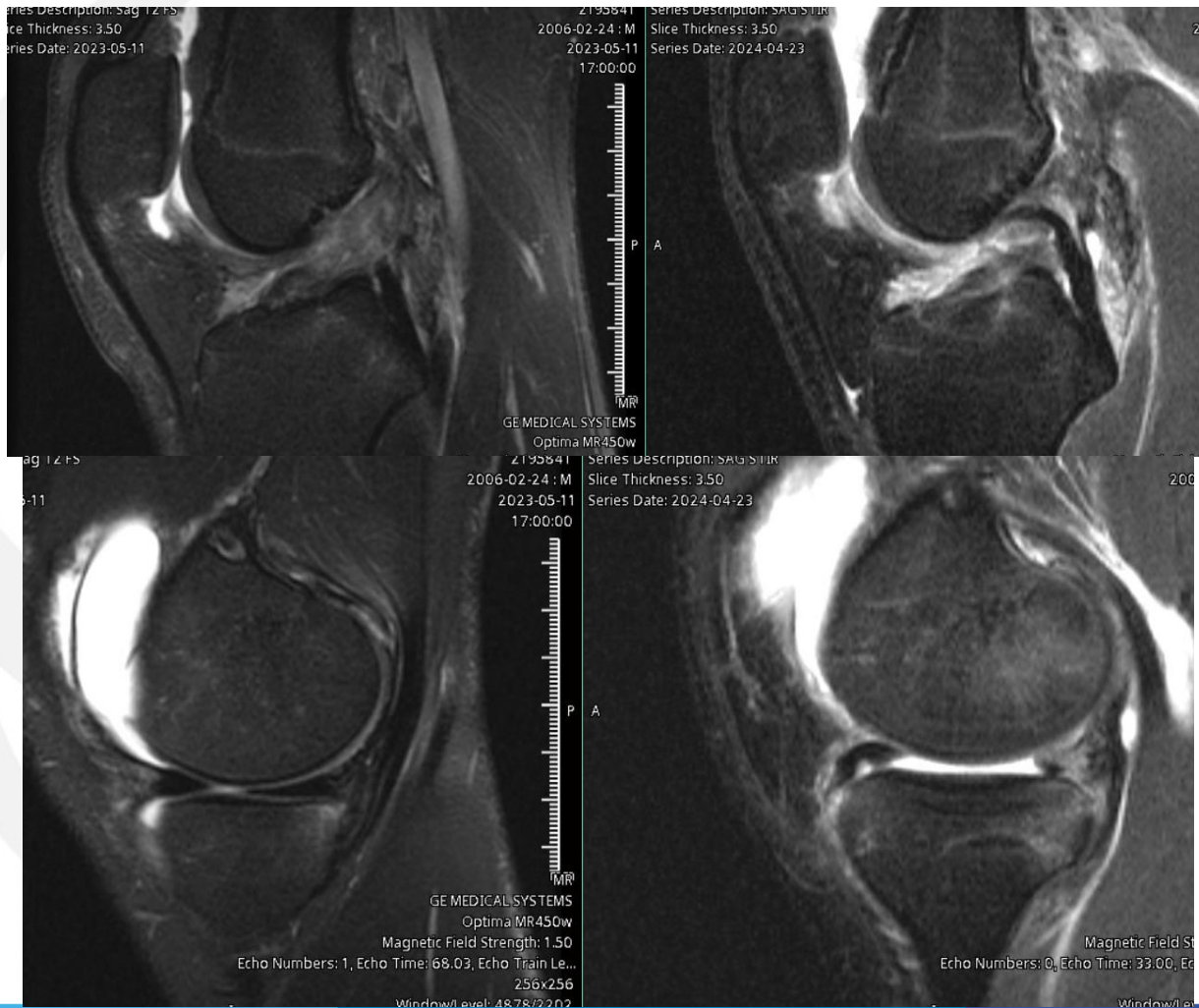
“The menisci were invariably severely damaged, the medial meniscus usually more than the lateral.”

—Marshall JL, Olsson S-E. Instability of the knee: a long-term experimental study in dogs. *J Bone Joint Surg Am.* 1971;53:1561-1470.

Consequences

May 2023

April 2024



Summary

- Non-operative management is feasible
- Counseling is very important
- Generally not considered the definitive treatment
- Extensive rehab and enough time
- Be realistic about expectations

Thank you



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