

ACL & Knee Hyperlaxity

G DEMEY

Lyon Ortho Clinic – Clinique de la Sauvegarde

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LYON **ORTHO** CLINIC





Knee hyperextension or knee hyperlaxity or generalized joint laxity ?





Generalized joint laxity

- Genetically determined
- Overall joint flexibility : Higher ROM than mean ROM of the general population
- ROM is determined by the tightness of ligaments

Review Article

Clinics in Orthopedic Surgery 2010;2:130-139 • doi:10.4055/cios.2010.2.3.130

Anterior Cruciate Ligament Reconstruction in Patients with Generalized Joint Laxity

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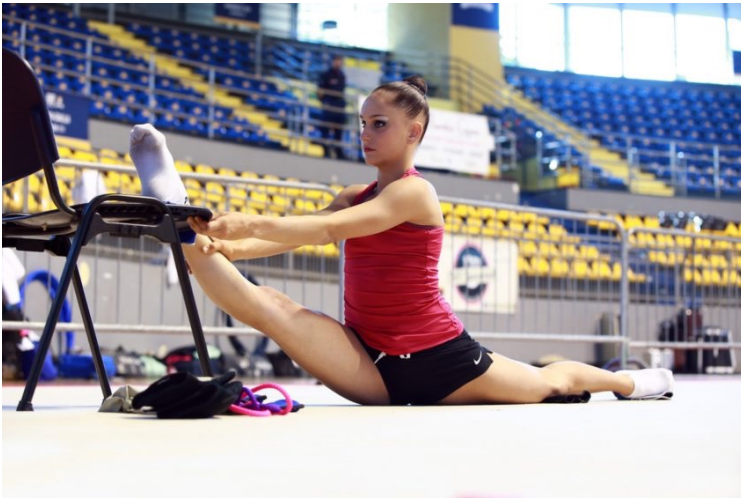
**Department of Orthopedic Surgery, Lisie Hospital, Kochi, India*



Generalized joint laxity

- Can be an advantage
- But dangerous in some other sports
- Excessive laxity > higher knee ligament injury
- GJL and hyperextension are important risk factors of non contact tears +++

Stewart DR, Burden SB. Does generalised ligamentous laxity increase seasonal incidence of injuries in male first division club rugby players? Br J Sports Med. 2004;38(4):457-60



VS





Generalized joint laxity

- More prevalent in females
- Negative effects of altered foot biomechanics on the ACL
- Conservative treatment often fails
- Surgical treatment : higher risk of failure
- **Caution !!!**

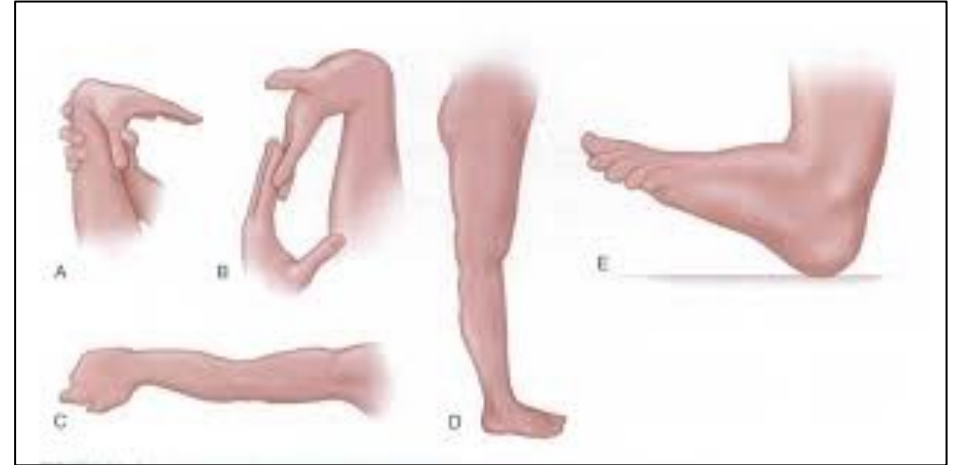
Kim SJ, Kim TE, Lee DH, Oh KS. Anterior cruciate ligament reconstruction in patients who have excessive joint laxity. J Bone Joint Surg Am. 2008;90(4):735-41

Myer GD, Ford KR, Paterno MV, Nick TG, Hewett TE. The effects of generalized joint laxity on risk of anterior cruciate ligament injury in young female athletes. Am J Sports Med. 2008;36(6):1073-



Carter and wilkinson in 1964

More than 3 of the following tests are positive
Upper and lower limbs involved



- 1/ Passive apposition of the thumb to the flexor aspect of the forearm**
- 2/ Passive hyperextension of the fingers so that they lie parallel with the extensor aspect of the forearm**
- 3/ Ability to hyperextend the elbow more than 10°**
- 4/ Knee hyperextension >10°**
- 5/ Excessive range of passive dorsiflexion of the ankle and eversion of the foot**



1973 Beighton and Horan Criteria better reproducibility and concurrent validity

Table 1. The Beighton and Horan Criteria for Generalized Joint Laxity

1. Passive dorsiflexion of the little fingers beyond 90°
2. Passive apposition of the thumbs to the flexor aspects of the forearms
3. Hyperextension of the elbows beyond 10°
4. Hyperextension of the knees beyond 10°
5. Forward flexion of the trunk, with the knees straight so that the palms of the hands rest easily on the floor

A Patient receives 1 point for the ability to perform each of the listed actions.



INCIDENCE

- Wide variations
- Affected by age, gender and ethnicity
- Adolescent girls +++ and decreases with age
- More often in asians and africans than caucasians
- 2%-29% of males and 6%-57% of females
- Overall prevalence of 5% to 20%

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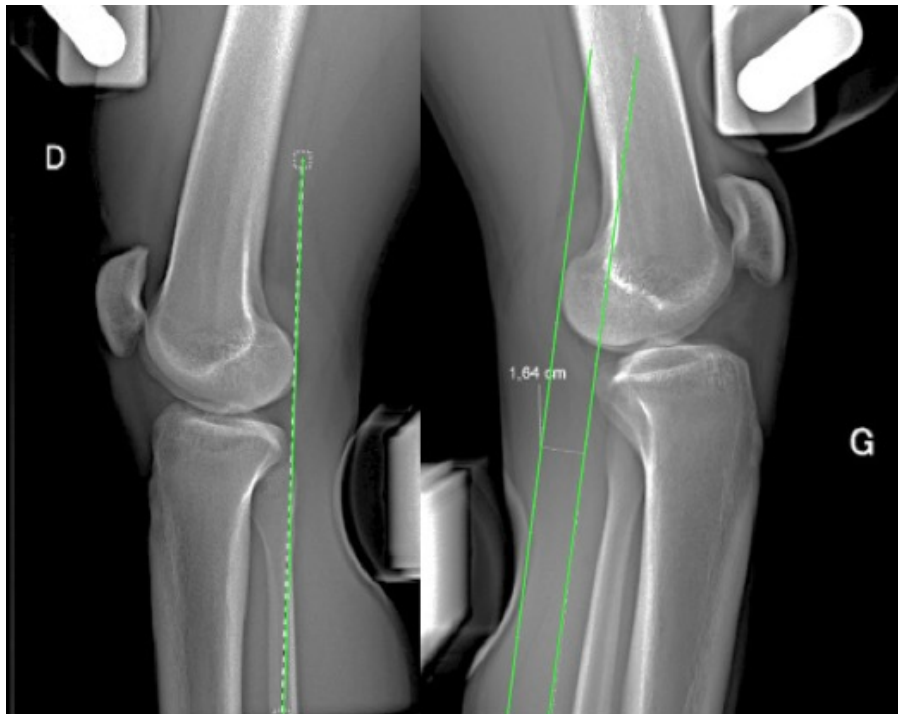
How to deal with Knee Hyperlaxity/extension ?





Preoperative planning

Laxity grading + Bony deformity + Anterior tibial translation





Graft choice ?

- **No consensus**
- Autograft > Allograft
 - Delayed incorporation
 - No report on allograft on GLJ

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BTB or QT

[Home](#) > [European Journal of Orthopaedic Surgery & Traumatology](#) > Article

Evaluation of the short-term outcomes of anatomic ACL reconstruction with hamstring autograft in patients with generalized joint laxity: A retrospective case-control study

Original Article | Published: 20 September 2022
Volume 33, pages 2049–2055, (2023) [Cite this article](#)



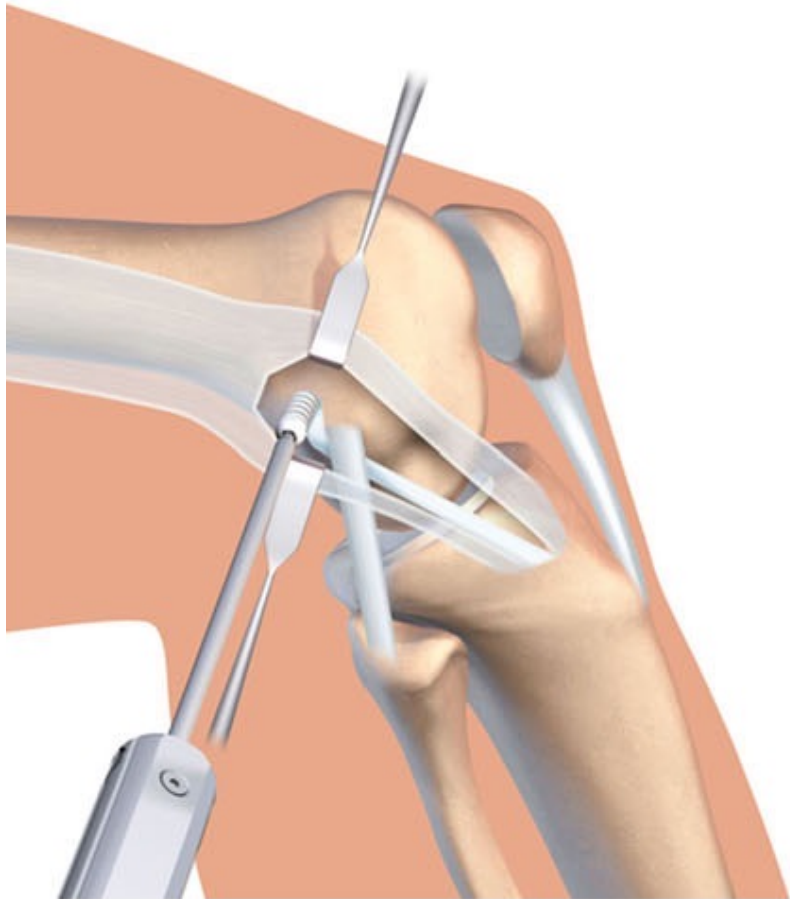
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Hamstring



Lateral Extra-Articular Tenodesis



Joseph et al. *Journal of Experimental Orthopaedics* (2020) 7:84
<https://doi.org/10.1186/s40634-020-00302-1>

Journal of
Experimental Orthopaedics

ORIGINAL PAPER

Open Access

Adding a modified Lemaire procedure to ACLR in knees with severe rotational knee instability does not compromise isokinetic muscle recovery at the time of return-to-play

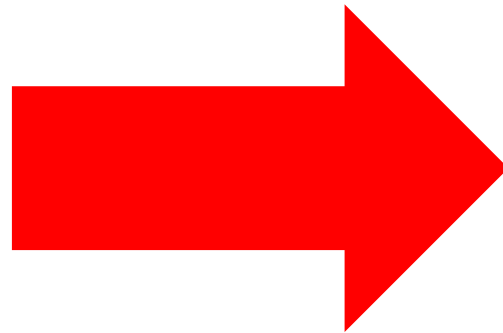


Leopold Joseph¹, Guillaume Demey¹, Thomas Chamu², Axel Schmidt³, Alexandre Germain², Floris van Rooij^{4*}, Mo Saffarini⁴ and David Dejour¹



Weightbearing ?

Anterior tibial translation on monopodal weightbearing x-rays >5mm



No weightbearing in the postop period



Weightbearing ?


Anterior tibial translation on monopodal weightbearing x-rays >5mm




Romandini *et al.*
Journal of Experimental Orthopaedics (2023) 10:142
<https://doi.org/10.1186/s40634-023-00694-w>

Journal of
Experimental Orthopaedics

ORIGINAL PAPER **Open Access**



A non-weight bearing protocol after ACL reconstruction improves static anterior tibial translation in patients with elevated slope and increased weight bearing tibial anterior translation

Iacopo Romandini^{1,2*} , Nicolas Cance¹, Michael J. Dan^{1,3}, Tomas Pineda^{1,4}, Benoit Pairoit de Fontenay¹, Guillaume Demey¹ and David H. Dejour¹

mean decrease of 1.4 mm from pre-operative to 9 month FU



Postop rehabilitation

- Healing process : slow healers need to be protected longer
- Decelerated rehabilitation program (Hardin)

Hardin JA, Voight ML, Blackburn TA, Canner GC, Soffer SR. The effects of "decelerated" rehabilitation following anterior cruciate ligament reconstruction on a hyperelastic female adolescent: a case study. J Orthop Sports Phys Ther. 1997;26(1):29-34.

- Delayed RTP
- Contralateral knee prevention (34% overall ACL injury rate)

Larson CM, et al. Generalized Hypermobility, Knee Hyperextension, and Outcomes After Anterior Cruciate Ligament Reconstruction: Prospective, Case-Control Study With Mean 6 Years Follow-up. Arthroscopy. 2017 Oct;33(10):1852-1858



Decelerated protocol and patient education

**Leg Pillow 45 days
(@ night and for rest)**



+

**Hinged ROM Knee Brace
with 10° flexum**





Decelerated protocol and patient education



*Conférence d'Enseignement du Matin
Tout sur la pente tibiale et le Ligament Croisé Antérieur*

“ Tout sur la Pente Tibiale & le Ligament Croisé Antérieur ”

Guillaume DEMEY
Julien CHAPPUIS
Julien CHOUTEAU

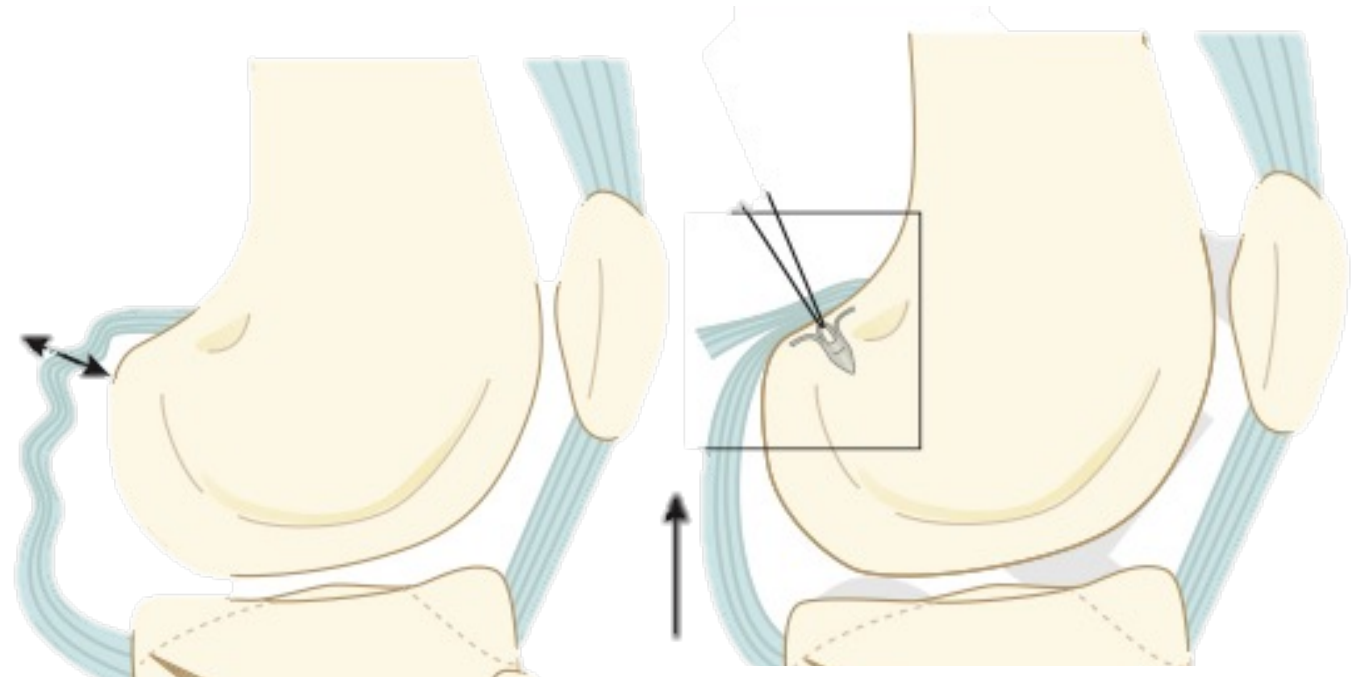
Trucs & Astuces

- **En cas de recurvatum**
 - A rechercher en préopératoire
 - Le recurvatum n'est pas une contre indication
 - Coussin sous le genou en postopératoire dans le creux poplité pour maintenir un léger flexum
 - Attelle de genou en légère flexion





Posterior capsular retightening



Thierry Judet Procedure
<https://www.canal-u.tv/chaines/canal-u-medecine/traitement-chirurgical-du-genu-recurvatum-technique-de-la-boite-a-sardines>



Knee hyperlaxity/extension = Caution !

- 👉 Lateral extra-articular tenodesis
- 👉 Adapted postoperative protocol

