

FROM THE FAMILY PRACTICE INQUIRIES NETWORK

Does a knee brace decrease recurrent ACL injuries?

Nancy Mallory, MD *Gary Kelsberg, MD*

Valley Family Care Family Medicine Residency, Renton, Wash;

Debra Ketchell, MLIS

Lane Medical Library, Stanford University Medical Center, Stanford, Calif

■ EVIDENCE-BASED ANSWER

After surgical anterior cruciate ligament (ACL) reconstruction, knee bracing does not significantly protect against injury during recovery or afterwards (strength of recommendation [SOR]: **C**, based on expert opinion).

In addition, the use of a knee brace following ACL reconstruction does not improve stability or hasten rehabilitation, either immediately or for up to 2 years (SOR: **A**, based on randomized controlled trials with heterogenous results).

Patients wearing a knee brace after ACL reconstruction may report subjective enhanced performance, but measured performance is better without the brace (SOR: **B**, based on an individual case-control study).

We found no information specifically about functional bracing following ACL injuries that have been managed conservatively.

■ EVIDENCE SUMMARY

Functional braces are designed to provide stability for the unstable knee, but few trials report re-injury rates as an outcome. Cadaver studies show that braces limit tibial rotation and anteroposterior translation. However, the mechanical effects of knee bracing in vivo are controversial.

A study involving 5 patients with chronic unstable ACL injuries showed some limitation of movement with functional bracing, but it was accompanied by slowed muscle performance and used only low-stress forces.¹ Objective findings during physiologic stress loads are inconclusive.²

Three recent randomized controlled trials compared functional bracing with no bracing in rehabilitation after ACL reconstruction. In a prospective study of 62 patients, researchers found no benefit from using a postoperative knee brace at any stage (2 and 6 weeks; 3, 6, and 24 months) after surgery. Moreover, the brace

did not contribute to a more stable knee during rehabilitation or 2-year follow-up.³

A similar study of 50 patients demonstrated no significant difference in function or laxity at 2 years.⁴ A 2-year study comparing 30 braced with 30 nonbraced patients showed improved functional stability ($P<.05$) but increased thigh muscle atrophy ($P<.0001$) at 3-month follow-up in the braced group. However, no significant differences were seen at other follow-up intervals up to 2 years.⁵

One study evaluated running, jumping, and turning performance with and without a functional brace in 31 patients who had had an ACL reconstruction 5 to 26 months previously. They measured significantly better performance without bracing; however, more than half the group perceived enhanced performance with the brace.⁶

■ RECOMMENDATIONS FROM OTHERS

The American Association of Orthopaedic Surgeons believes that rehabilitative and functional knee braces can be effective in many treatment programs. Rehabilitative braces are more effective in protecting against excessive flexion and extension than against anterior and posterior motion. Functional braces reduce abnormal movement under low load conditions but do not restore normal knee stability under high forces related to certain athletic activities. Physician and patient must guard against a false sense of security.⁷

The American Academy of Pediatrics says that functional braces may help prevent further injury to a previously injured knee. Their use is accepted clinically on the basis of subjective performance. If used, knee braces should complement rehabilitative therapy and required surgery.⁸

CLINICAL COMMENTARY

James L. Lord, MD

Sports Medicine Director, Mercy Family Medicine, St. John's Mercy Medical Center, St. Louis, Mo

Knee braces no substitute for rehabilitation, but patients say they help

A key question all clinicians must ask is who is being treated—the patient, yourself, or some third-party payer. While multiple studies on knee bracing after ACL reconstruction have not demonstrated improved knee stability or faster recovery times, many patients have reported subjective improvement in function.

As long as patients understand that a brace does not substitute for vigorous rehabilitation to improve strength, flexibility, and proprioception, I find no compelling reason to discourage its use after a patient is allowed to return to unrestricted activities.

Cost may then become the major deciding factor, but even off-the-shelf braces or neoprene sleeves may be sufficient to provide the subjective benefit.

REFERENCES

1. Wojtys EM, Kothari SU, Huston LJ. Anterior cruciate ligament functional brace use in sports. *Am J Sports Med* 1996;24:539–546.
2. Paluska SA, McKeag DB. Knee braces: current evidence and clinical recommendations for their use. *Am Fam Physician* 2000;61:411–18, 423–424.
3. Moller E, Forssblad M, Hansson L, Wange P, Weidenhielm L. Bracing versus nonbracing in rehabilitation after anterior cruciate ligament reconstruction: a randomized prospective study with 2-year follow-up. *Knee Surg Sports Traumatol Arthrosc* 2001;9:102–108.
4. Brandsson S, Faxen E, Kartus J, Eriksson BI, Karlsson J. Is a knee brace advantageous after anterior cruciate ligament surgery? A prospective, randomised study with a two year follow-up. *Scand J Med Sci Sports* 2001;11:110–114.
5. Risberg MA, Holm I, Steen H, Eriksson J, Ekeland A. The effect of knee bracing after anterior cruciate ligament reconstruction. A prospective, randomized study with two years' follow-up. *Am J Sports Med* 1999;27:76–83.
6. Wu GK, Ng GY, Mak AF. Effects of knee bracing on the functional performance of patients with anterior cruciate ligament reconstruction. *Arch Phys Med Rehabil* 2001;82:282–285.
7. American Academy of Orthopaedic Surgeons. Position Statement on the use of knee braces. Document number 1124, October 1997. Available at: www.aaos.org/wordhtml/papers/position/1124.htm. Accessed on September 5, 2003.
8. Martin TJ. Committee on Sports Medicine and Fitness. American Academy of Pediatrics. Technical Report: knee brace use in the young athlete. Policy Statement. *Pediatrics* 2001;108:503–507.