*Internal*Brace™ Ligament Augmentation Technique (Lateral ankle Instability)

Scientific Update

Many publications highlight that the *Internal*Brace ligament augmentation improves postoperative outcomes, enabling patients to return to preinjury levels of activity significantly faster. *Internal*Brace ligament repair has been used successfully for years and has been integrated into the treatment of elite athletes and everyday active patients. Published results continue to demonstrate safety, rapid recovery, and earlier return to sport and activities of daily living.



LIMITATIONS OF PRIMARY BROSTRÖM REPAIR ALONE

Isolated anterior talofibular ligament Broström repair for chronic lateral ankle instability: 9-year follow-up

Maffulli N, Del Buono A, Maffulli GD, Oliva F, Testa V, Capasso G, Denaro V

- Only 58% of patients returned to preinjury levels of activity, 16% returned to a lower level of activity, and 26% abandoned athletic activity.
- Among patients who had no evidence of degenerative changes preoperatively, 30% had radiographic signs of degenerative changes of the ankle at 9 years.

Key Takeaway: Isolated Broström repairs are inadequate and inconsistent in getting patients back to preinjury levels.

Am J Sports Med. 2013;41(4):858-64. doi:10.1177/0363546512474967

Mechanotransduction and its impact on regenerative medicine in orthopedic rehabilitation

Wang B, Zeng X, Liu H, Li L, Lei T, Li Y, Fang Q, Cao Y, Dong B

- Mechanotransduction pathways describe how mechanical loading promotes tissue regeneration and remodeling to support natural healing.
- Ligament healing is not purely biological but also mechanically driven. Controlled mechanical loading is critical to optimize ligament healing to promote collagen organization and tissue maturation.

Key Takeaway: Mechanical stress and loading through activities such as weight-bearing and range of motion are critical in how the soft tissue remodels and strengthens during the healing phase.

Int J Mol Med. 2026;57(5):127. doi:10.3892/ijmm.2026.5798

ATFL elongation after Brostrom procedure: a biomechanical investigation

Kirk KL, Campbell JT, Guyton GP, Parks BG, Schon LC

- Early stress and range of motion accelerate ligament healing, supporting earlier rehabilitation and weight-bearing among patients after a Broström repair.
- However, elongation of the ATFL in unprotected repairs is significantly higher than motion in the protected repaired state. Final elongation is significantly higher than initial elongation during cycling of the unprotected repaired specimens.

Key Takeaway: Unprotected range of motion after ligamentous repair results in elongation of the ligament.

Foot Ankle Int. 2008;29(11):1126-30. doi:10.3113/FAI.2008.1126

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BIOMECHANICAL AND BIOLOGICAL PERFORMANCE

Anterior talofibular ligament ruptures, part 1: biomechanical comparison of augmented Broström repair techniques with the intact anterior talofibular ligament

Viens NA, Wijdicks CA, Campbell KJ, Laprade RF, Clanton TO

- Broström and *Interna*lBrace™ ligament augmentation = ~250 N.
- ATFL repaired using Broström with anchors and *Interna*lBrace ligament augmentation is stronger than ATFL repaired using only Broström with anchors.
- "Adding strength to Broström may be valuable in patients with generalized ligamentous laxity, in large patients or elite athletes, or when graft reconstruction is not feasible."

Key Takeaway: The addition of the *Interna*lBrace ligament augmentation increases strength to ATFL ligament repair.

Am J Sports Med. 2014;42(2):405-11. doi: 10.1177/0363546513510141. [LOE V]

Anatomic suture anchor versus the Broström technique for anterior talofibular ligament repair: a biomechanical comparison

Waldrop NE 3rd, Wijdicks CA, Jansson KS, LaPrade RF, Clanton TO

- Ultimate load to failure of the surgically repaired ATFL is only about 50% of the intact native ligament: ~74 N of repaired ATFL versus ~150 N native ATFL.
- This is the unmet need the *Interna*lBrace technique was designed to address.

Key Takeaway: ATFL repairs with and without suture anchors are weaker than the native ATFL.

Am J Sports Med. 2012;40(11):2590-2596. doi: 10.1177/0363546512458420

EARLIER REHABILITATION AND IMPROVED POSTOPERATIVE OUTCOMES

Traditional modified Broström vs. suture tape ligament augmentation

Kulwin R, Watson TS, Rigby R, Coetzee JC, Vora A

- Return to preinjury activity level was 4.2 weeks faster in the group with *Interna*lBrace ligament augmentation compared to the standard Broström repair group.
- *Interna*lBrace augmentation of the modified Broström repair for chronic ankle instability results in significantly greater earlier return to preinjury activity level.

Key Takeaway: The addition of the *Interna*lBrace procedure to an ATFL repair allows faster return to activities and enables an accelerated rehabilitation protocol.

Foot Ankle Int. 2021;42(5):554-561. doi: 10.1177/1071100720976071

Suture tape augmented Broström procedure and early accelerated rehabilitation

Martin KD, Andres NN, Robinson WH

- Broström procedure augmented with FiberTape® suture enabled early, safe, and functional rehabilitation without subsequent failure.
- High level of patient satisfaction without reoccurrence within a high-demand military population in group. The early accelerated rehabilitation allowed soldiers to return to agility drills 4 weeks sooner than previous protocol.

Key Takeaway: Broström procedures augmented with the *Interna*lBrace™ technique are shown to be safe for an accelerated functional rehabilitation.

Foot Ankle Int. 2021;42(2):145-150. doi:10.1177/1071100720959015

Is InternalBrace augmentation a gold standard treatment compared to isolated modified Broström gould repair for chronic lateral ligament ankle instability?

Jain NP, Ayyaswamy B, Griffiths A, Alderton E, Kostusiak M, Limaye RV

- Patients with *Internal*Brace™ augmentation + modified Broström-Gould (MBG) repair showed significantly better outcomes in early rehabilitation and return to preinjury activity level by ~8 weeks compared to isolated MBG repair group.
- Functional outcome and VAS scores were better in *Internal*Brace group compared to MBG group.

> **Key Takeaway:** Using the *Internal*Brace technique to augment Broström procedures showed significantly better outcomes when compared to isolated MBG procedures.

Foot (Edinb). 2022;50:101865. doi:10.1016/j.foot.2021.101865

Brace for impact: a retrospective analysis of the modified Broström-Gould procedure with and without internal brace augmentation

Flaherty DJ, McGuigan J, Cullen SE, Pillai A

- Patients in the *Internal*Brace group were able to fully weight bear sooner (~2 weeks) compared to MBG alone. MBG surgery + *Internal*Brace augmentation for chronic lateral ankle instability demonstrated better outcomes in terms of overall function and may have fewer complications compared to MBG alone.
- The *Internal*Brace group had a lower recurrence of pain, less time in a cast, and sooner return to walking.

> **Key Takeaway:** *Internal*Brace augmentation for ATFL repair showed superior outcomes with reduced complications

Cureus. 2023;15(9):e44563. doi:10.7759/cureus.44563

FUNCTIONAL OUTCOMES, STABILITY, AND PATIENT-REPORTED OUTCOMES

Clinical and functional results of Broström Gould procedure with suture tape augmentation

Ramírez-Gómez VJ, Gómez-Carlín LA, Ortega-Orozco R, Zazueta-Arnaud CA, Patiño-Fernández JP

- Retrospective clinical study evaluating Broström-Gould repair with suture tape augmentation with a focus on postoperative stability, function, and patient-reported outcomes.
- Patients with suture tape augmentation demonstrated significant improvement in functional and stability scores postoperatively and enhanced patient-reported outcomes.

> **Key Takeaway:** The *Internal*Brace procedure provides excellent clinical and function results that may protect against the reoccurrence of lateral ankle instability.

J Foot Ankle Surg. 2020;59(4):733-738. doi:10.1053/j.jfas.2020.01.005

Outcomes of the modified Broström procedure augmented with suture tape for ankle instability with patients with generalized ligamentous laxity

Cho BK, Park KJ, Park JK, SooHoo NF

- Suture tape augmentation provides reliable stability and strong clinical outcomes, even in high-risk patients with poor native tissue quality. High rates of stability and low recurrence even in a population with higher risk for failure. Significant improvement in functional outcome scores.

> **Key Takeaway:** The *Internal*Brace procedure provides reliable stability with low complication rates.

Foot Ankle Int. 2017;38(4):405-411. doi:10.1177/1071100716683348

Broström with augmentation markedly improves ankle stability measured by the cumberland ankle instability tool compared with Broström without augmentation

Hadley SM Jr, Bergman R, Westvold SJ, Kukreja T, Filler R, Kadakia AR

› *Internal*Brace™ procedure for ligament augmentation demonstrated superior outcomes compared to nonaugmented Broström repair and can be especially valuable in high-grade instability and/or multiligament involvement. This study supports using augmentation based on severity of instability, not tissue quality alone.

> **Key Takeaway:** Excellent functional outcomes with the *Internal*Brace procedure, including greater benefits the worse the instability.

J Am Acad Orthop Surg. 2026;34(14):e2012-e2021. doi:10.5435/JAAOS-D-25-00717

LONG-TERM OUTCOMES

Ankle lateral ligament augmentation versus the modified Broström-Gould procedure: a 5-year randomized controlled trial

Porter M, Shadbolt B, Ye X, Stuart R

› Randomized control trial (Level I) comparing Broström-Gould vs ligament augmentation (LARS) with outcomes measured at 1, 2, and 5 years.

> **Key Takeaway:** Ligament augmentation demonstrates superior long-term stability and activity levels compared to Broström alone, including the 5-year follow-up. Augmentation outcomes include higher activity levels at 5 years, significantly better functional outcomes at all time points up to 5 years, and lower failure rates with augmentation.

Am J Sports Med. 2019;47(3):659-666. doi:10.1177/0363546518820529

Broström repair with and without augmentation: comparison of outcomes at median follow-up of 5 years

Comfort SM, Marchetti DC, Duncan PP, Dornan GJ, Haytmanek CT, Clanton TO

› No significant difference in long-term patient-reported outcomes. At ~5 year follow-up, both the standard Broström repair and suture tape–augmented repair produced similar functional scores and patient satisfaction.

› Low recurrence/instability rates among the standard Broström repair and suture tape–augmented groups.

> **Key Takeaway:** The *Internal*Brace procedure is safe and effective 5 years post-op. Higher patient satisfaction was seen with use of the *Internal*Brace procedure because of the accelerated rehab.

Foot Ankle Int. 2023;44(8):691-701. doi:10.1177/10711007231176806

The *Internal*Brace surgical technique is intended only to augment the primary repair/reconstruction by expanding the area of tissue approximation during the healing period and is not intended as a replacement for the native ligament. The *Internal*Brace technique is for use during soft tissue-to-bone fixation procedures and is not cleared for bone-to-bone fixation.

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