

# Inside-Out Meniscal Repair

A review of the design rationale, techniques, and outcomes



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Although all-inside meniscal repair has evolved significantly and increased in popularity, inside-out repairs are still convenient and reproducible repair options. Today's devices address most tear patterns and have the ability to deliver flat suture with small needles.

## Inside-Out Meniscal Repair

[Inside-out meniscus repair](#). *Arthrosc Tech*. 2013;2(4):e453-e460. doi:10.1016/j.eats.2013.07.006

- Inside-out repair offers a 60%-80% success rate for isolated meniscal repairs and an 85%-90% success rate when performed in conjunction with ACL reconstruction.
- Benefits include increased versatility for suture placement, less iatrogenic damage to the meniscus, the ability to place a greater number of sutures, and lower cost than other techniques.
- Risks include increased morbidity, neurovascular injury (9% compared to 2% for all-inside), and postoperative stiffness or flexion contracture. Additionally, the success of inside-out procedures is limited by the need for an experienced assistant, appropriate instrumentation, and increased procedure time.
- Despite similar clinical outcomes between all-inside repair devices and inside-out repair, the inside-out technique is still advantageous and more versatile for a subset of meniscus tear patterns.

### Takeaway

Although all-inside meniscal repair has become increasingly popular, inside-out repair still offers successful results and may be necessary in certain circumstances.

[Results of arthroscopic repair of partial- or full-thickness longitudinal medial meniscal tears by single or double vertical sutures using the inside-out technique](#). *Am J Sports Med*. 2013;41(3):596-602. doi:10.1177/0363546512472046

- A total of 112 longitudinal medial meniscus tears were treated with single or double vertical sutures—66 full-thickness tears that received double vertical sutures and 46 that received a single vertical suture.
- Healing rate was 80.3% for the full-thickness double-suture group and 100% in the partial-thickness single-suture group.

### Takeaway

For an inside-out technique, both single and double vertical sutures had a high healing rate in longitudinal medial meniscus tears.

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Basaran SH,  
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Pareek A,  
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[Inside-out repair for radial meniscus tears.](#) *Arthrosc Tech.* 2016;5(4):e793-e797. doi:10.1016/j.eats.2016.03.007

- Radial tears result in the disruption of circumferential fibers, causing instability of the native meniscus and reduced ability to resist normal hoop stresses. Radial tears have also been shown to increase focal stress on the articular cartilage equivalent to complete meniscectomy and have been linked to early-onset arthrosis.
- In this study, 8 high school and college athletes were treated using the inside-out technique.
- All patients returned to their respective sports pain free and with MRIs showing interval healing.
- The article also discusses meniscus function, inside-out surgical techniques, and postoperative protocols.

#### **Takeaway**

Appropriately repairing the meniscus is critical for restoring function and decreasing the probability of osteoarthritis.

Cinque ME,  
DePhillipo NN,  
Moatshe G,  
Chahla J,  
Kennedy MI,  
Dornan GJ,  
LaPrade RF

[Clinical outcomes of inside-out meniscal repair according to anatomic zone of the meniscal tear.](#) *Orthop J Sports Med.* 2019;7(7):2325967119860806. doi:10.1177/2325967119860806

- Examined outcomes of inside-out repair in all 3 meniscal vascularity zones.
- Patients who underwent inside-out meniscal repair demonstrated significant improvements on subjective outcome measures at 2-year follow-up, regardless of tear zone.
- Inside-out meniscal repair is suitable for potentially reparable meniscus tears in all 3 vascular zones.

#### **Takeaway**

Inside-out meniscal repair patients showed significant improvement at 2-year follow-up regardless of meniscal tear zone. The procedure has potential for repairs in all 3 vascular zones but the outcome can be improved when it is 1) performed acutely; 2) not in conjunction with full-thickness femoral condyle chondral injuries; and 3) located in the red-red or red-white zone.

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Mozella AP,  
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[Continuous vertical inside-out versus traditional vertical inside-out meniscal repair: a biomechanical comparison.](#) *Orthop J Sports Med.* 2023;11(11):23259671231209951. doi:10.1177/23259671231209951

- Biomechanical assessment of continuous vs traditional vertical repair evaluated displacement, stiffness, and load to failure in 28 porcine knees.
- Each specimen underwent load-to-failure testing at 5 mm/s.
- No significant difference was found between the 2 repair techniques.

#### **Takeaway**

Continuous vertical suture repair and traditional vertical suture repair are biomechanically similar and are both possible treatment options for meniscal tears.