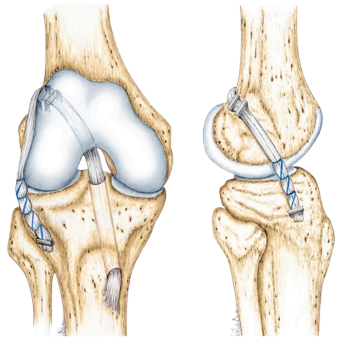
OVER-THE-TOP SINCE 1993

Over-The-Top ACL + LET

Developed by Professors Maurilio Marcacci and Stefano Zaffagnini




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Bologna, Italy



OTT ACL reconstruction routes the graft extra-articularly over the posterior femoral condyle instead of a drilled tunnel — preserving blood supply and removing tunnel malposition, paired with LET for full AP + rotational stability.

Tip: every video and paper pill throughout this page is clickable — tap to open the source directly.

1 TECHNIQUE GUIDES AND VIDEOS

TECHNIQUE		VIDEO		PAPER
Standard OTT	Original Technique (unchanged since 1993)	YouTube		KSSTA 1998
Standard OTT	Ten Tips for Success (2026)	—		JEO 2026 ★
Standard OTT	Sawbone and Point of View (POV) Demo	Sawbone	POV	—
Paeds OTT	Supraphyseal AOSSM 2026 Winner	YouTube	AAOS OVT 2014	Arthrosc. Tech. 2025 ★
Paeds OTT	Extraphyseal	YouTube		Arthrosc. Tech. 2025 ★
Paeds OTT	Supraphyseal + ALL	YouTube		Arthrosc. Tech. 2025 ★
OTT Plus	Closing-Wedge HTO	YouTube		KSSTA 2023
OTT Plus	Slope-Reducing HTO	YouTube		Arthrosc. Tech. 2022
OTT Plus	Double Bundle MCL Recon (sMCL + POL)	YouTube		Arthrosc. Tech. 2024 ★
Revision OTT	Allograft	YouTube		Arthrosc. Tech. 2022
Revision OTT	Augmented	YouTube		Arthrosc. Tech. 2025 ★

Full video playlist — YouTube Playlist

2 VASCULAR, LIVE GRAFT — NO NECROSIS PHASE

Pes Anserinus — Clinical Anatomy
Arterial arch (inferior + lateral genicular, anterior tibial recurrent) supplies the pes insertion — no avascular zones; Ruffini/Pacinian/free nerve endings confirm rich innervation.
Clin. Anat. 2003

Rabbit Model Studies
Insertion-preserving grafts bypassed the avascular-necrosis phase seen in free grafts, with earlier tendon-bone healing and higher biomechanical failure load at 12–24wk.
AJSM 2018 · KSSTA 2007

Human MRI Studies
Graft signal (SNQ) stayed lower & stable in preserved-insertion grafts vs. a rise-then-decline pattern in detached grafts.
AJSM 2026 ★ · JEO 2025 ★ · AJSM 2020 · KSSTA 2020 · AJSM 2018 · EJOST 2016

3 NO FEMUR TUNNEL — AVOID #1 TECHNICAL CAUSE OF FAILURE

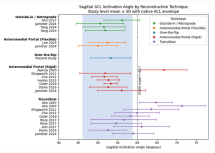
1. **Femur Tunnel Malposition = No. 1 Technical Cause of Failure**
   CORR 1996 · Knee 2005 · Arthrosc. 2006 · AJSM 2010 · AOTS 2017 · KSSTA 2021 · KSSTA 2022 · Knee 2022 · Arthrosc. 2024 ★ · Med 2025 ★
2. **High Variability in ACL Femur Footprint**
   Sp. Med 2006 · Arthrosc. 2011 · Arthrosc. 2012 · Sp. Med 2014 · Knee 2021
3. **Surgeons Cannot Identify Femur Footprint**
   AJSM 2017 · ASMR 2020 · BMC 2021
4. **AM Drilling ≠ Anatomical**
   Arthrosc. 1999 · Arthrosc. 2013 · AOTS 2017 · JEO 2026 ★
5. **Rethinking "Anatomical"**
   ISAKOS 2023 · SpHealth 2025 ★

Marcacci–Zaffagnini Over-The-Top ACL + LET
"When the leading technical cause of ACL failure is femur tunnel malposition, the most reliable solution may be simple: Don't drill one. The OTT technique offers reproducible stability with 20+ year follow-up."
Arthrosc. 2024 ★ · AOSSM 2026 Interview

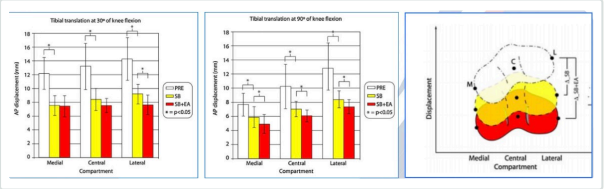
4 ANATOMICAL GRAFT ORIENTATION ON MRI

— **Native MRI benchmark (2047 knees)** — SIA 50.4°, CIA 67.5°: transtibial drilling is non-anatomic; AM-portal/outside-in techniques match native. JEO 2026 ★

— **OTT graft orientation (n=35)** — sagittal (53.2°) and coronal (71.3°) inclination angles fall within the native ACL envelope, meeting ESSKA anatomic thresholds — outperforming transtibial drilling. JEO 2026 ★



5 BIOMECHANICALLY STABLE

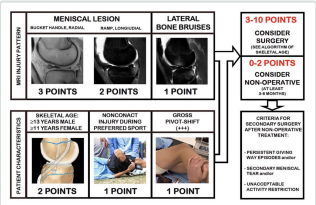


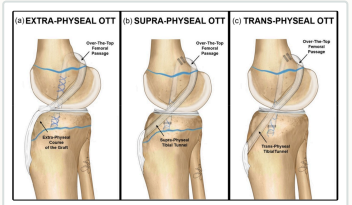
Bignozzi et al., KSSTA 2009 (28 knees) — sequential OTT+LET fixation: femur staple completes the SB graft, tibia staple completes the LET. The LET step adds further coupled-translation control beyond the graft alone — 1.6mm at 30°, 1mm at 90° (both P<0.05). KSSTA 2009

— **OTT+LET beats SB alone and NADB** — greatest AP/rotational laxity reduction of the three, 42-knee RCT. Clin. Biomech. 2019

— **vs anatomic double-bundle (35 knees)** — LET wins on lateral-compartment control. KSSTA 2012

6 PAEDIATRIC PHYSEAL SAFETY





OTT is physis-friendly, with three modifications matched to skeletal age: **extra-physeal** (no tunnel in the tibia) for the youngest, most skeletally immature patients; **supra-physeal** (tunnel within the epiphysis) as the physis matures; and **trans-physeal** (tunnel through the physis, as in the standard adult OTT technique) for the most skeletally mature.

— **How to Determine Skeletal Maturity from Knee MRI?** Diagnostics 2026 ★

— **Does the Adolescent Athlete Need Surgery?** — the Best ACL-Treatment Based on the Years of the Knee (BABY-Knee) algorithm. Grassi JEO 2025 ★ · JEO 2026 ★

— **Which OTT Modification to Use?** KSSTA 2025 ★

— **No Physeal Injury** — across all three age-adapted modifications. Papers Pending

— **No Long-Term Deformity Complications** — at follow-up across all three modifications. JEO 2026 ★ · JEO 2026 ★

7 FOLLOW-UP OUTCOMES — ORIGINAL COHORT

- **2y** — KSSTA 1998
- **5y** — KSSTA 2002
- **5y RCT** — OTT vs BPTB vs SB-HS — KSSTA 2006
- **10y** — AJSM 2009
- **20y** — AJSM 2017
- **20y RCT** — OJSM 2026 Award — OTT vs BPTB vs SB-HS — OJSM 2026 ★
- **25y** — JEO 2023

8 FOLLOW-UP IN OTHER POPULATIONS

POPULATION	FOLLOW-UP STUDIES (years follow-up · N patients)
General Population OTT	AJSM 2021 10y · N=267
Pro Soccer Players OTT	OJSM 2025 ★ 3y · N=58 · KSSTA 2022 12y · N=28
Paediatrics OTT	JEO 2026 ★ 2y · N=84 · OJSM 2025 ★ 8–17y · N=43 · Int. Orthop. 2020 8y · N=42 · KSSTA 2019 2y · N=35 · KSSTA 2018 4y · N=20
>55 OTT	JEO 2026 ★ 6y · N=28
OTT + HTO	KSSTA 2023 15y · N=32
Revision OTT	Joints 2017 3y · N=24 · AJSM 2013 3y · N=24

Over-The-Top since 1993
Literature Updated September 2026

- **Economical** — Cost efficiency without compromise in outcomes.
- **Fast** — Efficient construct. Reduced operative variability.
- **Safe** — No femoral tunnel. No blowout. No tunnel collision.