ISAKOS CONGRESS 2025 | MUNICH GERMANY June 8–11

# Autologous Hamstring vs Quadriceps Graft in ACL Plasty - Comparative Study With Focus on Return to Sport

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# Faculty Disclosure Information

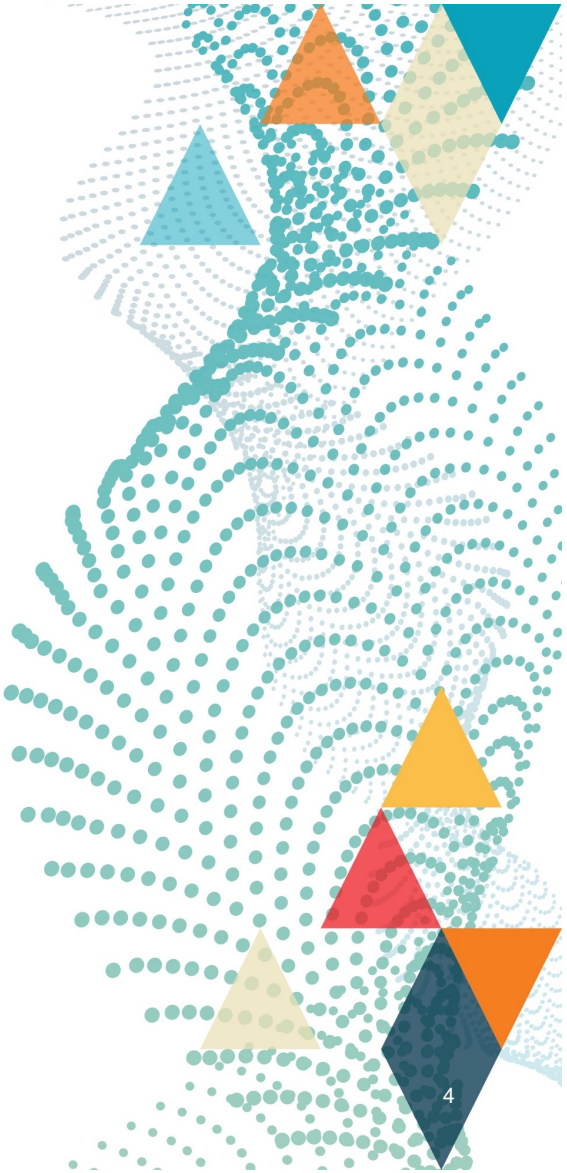
- Nothing to disclosure.

# Background & Rationale

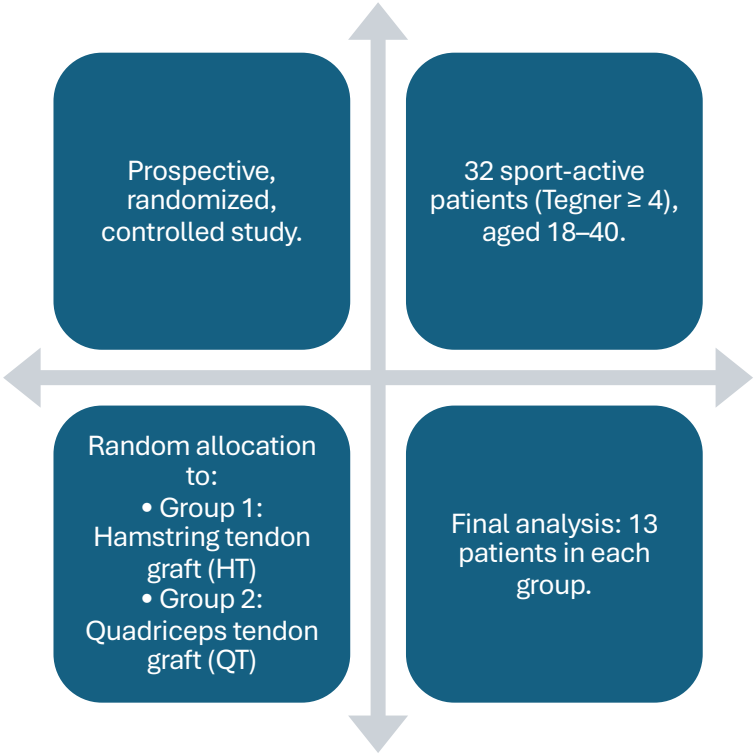
- ACL rupture 68-85 : 100,000; women 2:1.
- Meniscal lesions, chondral in 41% cases (17% lateral meniscus).
- Up to ⅓ of px with injuries with meniscal lesions and ACL rupture require secondary ACL reconstruction due to instability.
- QT autograft → Improved RTS, but + pain.
- Cinque, 2017 - 64.3% LB in NFL with qx ACL return to level.
- This study compares HT vs QT with a focus on RTS outcomes.

# Aim of the Study

- To compare clinical outcomes and Return-To-Sport between autologous hamstring and quadriceps tendon grafts in ACL reconstruction.

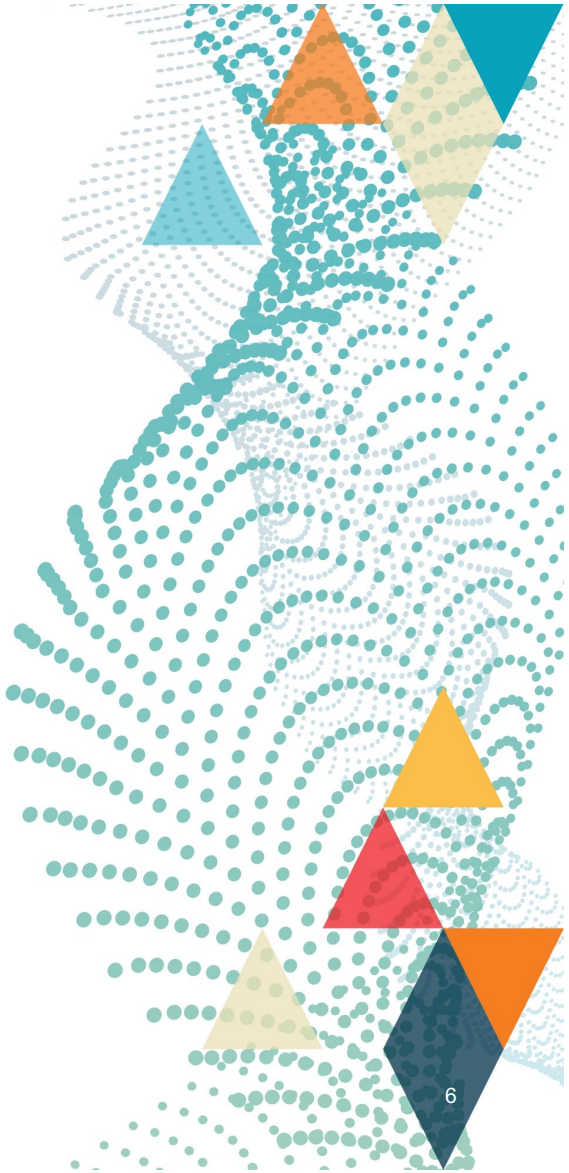


# Study Design and Participants



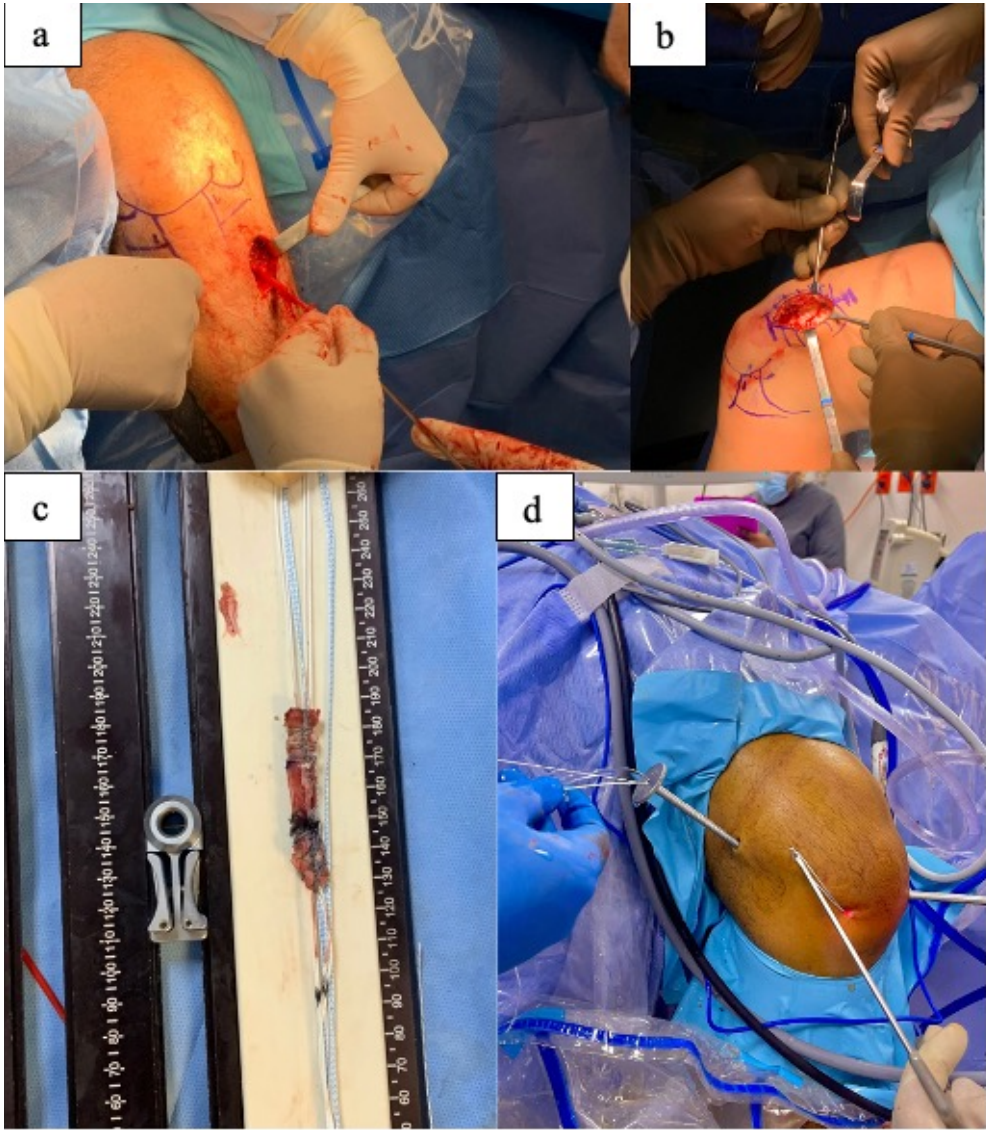
# Assessment Tools & Timeline

- Evaluations at baseline, 30, 180, 360 days post-op.
- Scales used:
  - VAS (pain)
  - Tegner (activity level)
  - Lysholm, mCKRS (knee function)
  - ACL-RSI (psychological readiness for RTS)
- RTS date and physiotherapy duration recorded.



# Surgical Technique

- Arthroscopic ACL reconstruction.
- Grafts harvested via standard techniques.
- All-Inside technique with fixation using suspensory buttons.
- Same rehabilitation protocol and physical therapy regimen for all patients.



# Patient Demographics

- No significant differences between groups

**Table 1. Demographic data of the patients in the study.**

| Characteristic | Total N = 26 n (%) | Group 1. HT N = 13 n (%) | Group 2. QT N = 13 n (%) | p |
|---|---|---|---|---|
| Age (years)* | 27.34 ± 6.70 | 28.46 ± 7.19 | 26.23 ± 6.2 | 0.41 |
| Sex | | | | 0.33 |
| Femenine | 13 (50.00) | 6 (46.15) | 7 (53.85) | |
| Masculine | 13 (50.00) | 7 (53.85) | 6 (46.15) | |
| Body Mass Index (kg/m²)* | 23.99 ± 1.92 | 24.00 ± 2.11 | 23.99 ± 1.80 | 0.98 |
| Smoker | | | | 0.29 |
| Yes | 5 (19.23) | 2 (15.38) | 2 (15.38) | |
| No | 21 (80.77) | 11 (84.62) | 11 (84.62) | |
| Chondral lesion | | | | 0.31 |
| Yes | 11 (42.31) | 8 (61.54) | 2 (15.38) | |
| No | 15 (57.69) | 5 (38.46) | 11 (84.62) | |
| Lat Meniscopathy | | | | 0.50 |
| Sí | 12 (46.15) | 6 (46.15) | 6 (46.15) | |
| No | 14 (53.85) | 7 (53.85) | 7 (53.85) | |
| Med Meniscopathy | | | | 0.50 |
| Sí | 13 (50.00) | 6 (46.15) | 7 (53.85) | |
| No | 13 (50.00) | 7 (53.85) | 6 (46.15) | |
| Positive Ant drawer/*pivot shift* | | | | 1.00 |
| Yes | 26 (100.00) | 13 (100.00) | 13 (100.00) | |
| No | 0 (0.00) | 0 (0.00) | 0 (0.00) | |
| Presurgical Tegner scale* | 4.96 ± 0.52 | 4.92 ± 0.49 | 5.00 ± 0.57 | 0.65 |
| Presurgical Lysholm scale* | 31.61 ± 13.32 | 31.76 ± 12.54 | 31.46 ± 14.57 | 0.96 |
| Presurgical mCKRS scale* | 31.15 ± 12.30 | 30.61 ± 12.58 | 31.69 ± 12.51 | 0.86 |
| Presurgical ACL-RSI scale* | 38.65 ± 10.11 | 38.30 ± 10.39 | 39.00 ± 10.23 | 0.88 |

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# Results

**Table 2: Clinical outcomes of the two study groups.**

| Post-surgical variable | Total Mean ± ED | Group 1. HT Mean ± ED | Group 2. QT Mean ± ED | p of Δ* |
|---|---|---|---|---|
| VAS pain (days) | | | | |
| 30 | 4.38 ± 2.24 | 3.15 ± 1.06 | 5.61 ± 2.46 | 0.003** |
| 180 | 1.46 ± 1.30 | 0.69 ± 0.75 | 2.23 ± 1.30 | 0.001** |
| 360 | 0.30 ± 0.47 | 0.15 ± 0.37 | 0.46 ± 0.51 | 0.09 |
| Tegner score (days) | | | | |
| Initial | 4.96 ± 0.52 | 4.92 ± 0.49 | 5.00 ± 0.57 | – |
| 360 | 4.84 ± 0.46 | 4.76 ± 0.43 | 4.92 ± 0.49 | 0.40 |
| Lysholm score (days) | | | | |
| 30 | 58.11 ± 18.60 | 55.84 ± 15.62 | 60.38 ± 21.58 | 0.49 |
| 180 | 72.76 ± 14.48 | 72.84 ± 12.86 | 72.69 ± 16.47 | 0.98 |
| 360 | 89.30 ± 9.24 | 90.00 ± 8.94 | 88.61 ± 9.84 | 0.84 |
| mCKRS Scale (days) | | | | |
| 30 | 62.88 ± 14.19 | 63.69 ± 14.95 | 61.07 ± 13.75 | 0.50 |
| 180 | 77.15 ± 10.91 | 78.84 ± 11.05 | 75.46 ± 10.93 | 0.51 |
| 360 | 88.23 ± 7.98 | 87.38 ± 8.46 | 89.07 ± 7.72 | 0.91 |
| ACL-RSI Scale (days) | | | | |
| 30 | 59.65 ± 19.38 | 54.99 ± 19.33 | 65.30 ± 18.41 | 0.045** |
| 180 | 71.15 ± 15.98 | 65.23 ± 17.34 | 77.07 ± 12.46 | 0.029** |
| 360 | 87.15 ± 10.97 | 85.38 ± 12.33 | 88.92 ± 9.57 | 0.64 |
| *Return-To-Sport* (days) | 252.34 ± 48.20 | 265.76 ± 40.53 | 238.92 ± 52.98 | 0.15 |
| Total days of physical therapy | 94.15 ± 49.09 | 86.53 ± 46.27 | 101.76 ± 52.48 | 0.44 |
| Return to previous physical activity, n (%) | | | | 0.55 |
| Yes | 23 (88.46) | 11 (84.62) | 12 (92.31) | |
| No | 3 (11.54) | 2 (15.38) | 1 (7.69) | |

# Pain and Functional Scores

VAS pain significantly higher in QT at 30 & 180 days ($p < 0.05$).

No difference at 360 days.

Lysholm and mCKRS scores improved in both groups without significant differences at any time point.

# Psychological Readiness & RTS

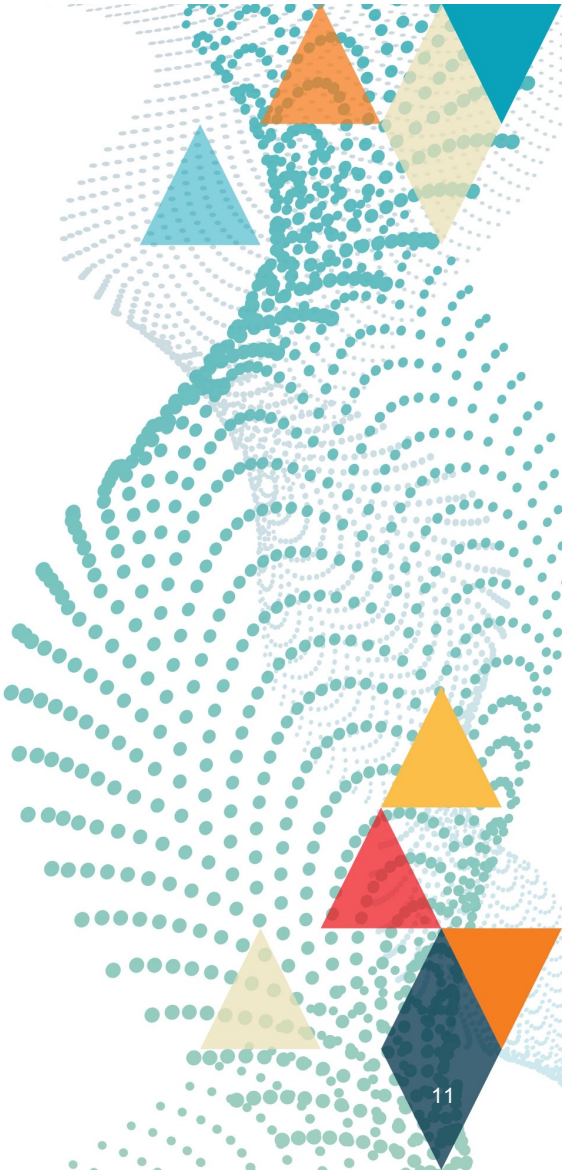
ACL-RSI scores were significantly higher in QT group at 30 & 180 days ($p < 0.05$).

No significant difference at 360 days.

Mean RTS time:
- HT: 265.8 ± 40.5 days
- QT: 238.9 ± 53.0 days

($p = 0.15$)

88.5% of all patients returned to previous activity level.



# Interpretation of Results & Conclusions

QT grafts associated with higher early postoperative pain.

QT group showed faster psychological recovery (ACL-RSI).

No long-term differences in functional outcomes or RTS.

Both grafts are viable; decision should be individualized.

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