ORTHOVERSE · HIGH-YIELD CARD

Patellar Tracking in TKA

Interactive simulator
orthoverse.org/simulators/patellar-tracking/

HIGH-YIELD

- Q angle: ASIS to patellar center to tibial tubercle; abnormal >15 degrees men, >20 degrees women (Campbell).
- Femoral component IR shifts the trochlear groove medially; anatomic Q is unchanged but functional Q rises.
- Tibial tray IR forces the tibia to rotate externally, lateralizing the tubercle and raising both Q angles.
- Target femoral rotation: 3 degrees ER from PCA, parallel to TEA, perpendicular to Whiteside line.
- Tibial tray: center over the medial one-third of the tubercle; err toward slight ER if any deviation is made.
- Patellar button: place medially at the median ridge; central placement raises Q angle; lateral causes subluxation.
- Restore original composite patellar thickness; overstuffing causes instability and flexion restriction.
- Release the tourniquet before lateral retinacular release: 48% of maltracking resolves after deflation alone.
- Greatest risk of lateral release: patellar devascularization from division of the superior lateral geniculate artery.
- Treatment sequence: correct components, lateral release, proximal realignment, distal realignment (last resort only).

PITFALLS

- Performing lateral release before releasing the tourniquet: up to 48% of apparent maltracking normalizes after deflation.
- Valgus knee with hypoplastic lateral condyle: PCA alone internally rotates the femoral component; check TEA and Whiteside line.
- Centering the button on the resected surface instead of medially raises the functional Q angle and causes lateral subluxation.

NUMBERS TO KNOW

Abnormal Q angle, men	>15 degrees
Abnormal Q angle, women	>20 degrees
Mean Q angle, men (Tachdjian)	10 degrees
Mean Q angle, women (Tachdjian)	15 degrees
Femoral component target ER from PCA	3 degrees
Maltracking resolved by tourniquet release alone	48%
Minimum residual patellar bone to reduce fracture risk	10-15 mm
Tubercle-sulcus angle at 90 degrees flexion, clearly abnormal	>10 degrees

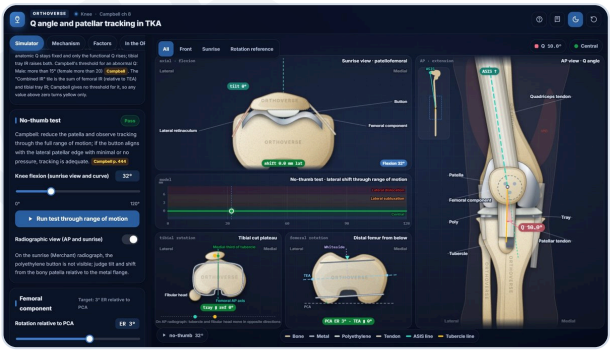


Figure. Flex the knee from 0° to 120° and watch the patella track in the groove.

FURTHER READING

Campbell's Operative Orthopaedics, 15th edition (2026): Arthroplasty of the Knee, ch 8 (Q angle, component rotation and patellar tracking).

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