

Ligament Balance and Clinical Results

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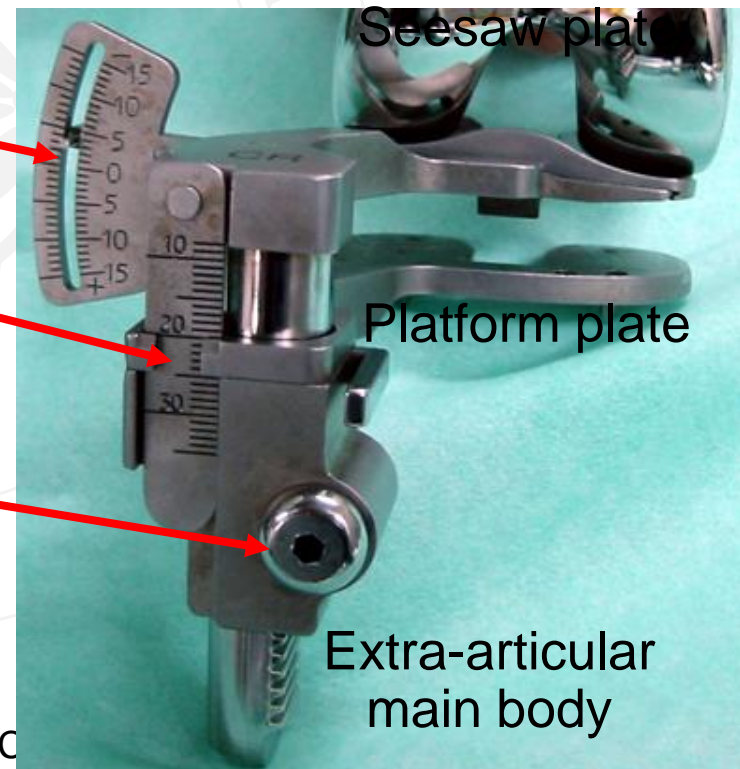
**Varus/valgus
Ligament balance (°)**

Center Gap (mm)

Torque driver



Adjustable joint separation force
(30lbs.-80lbs.)
Error < 3%



Seesaw plate

Platform plate

Extra-articular
main body

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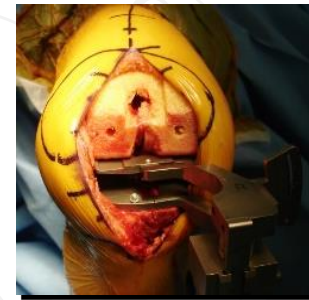
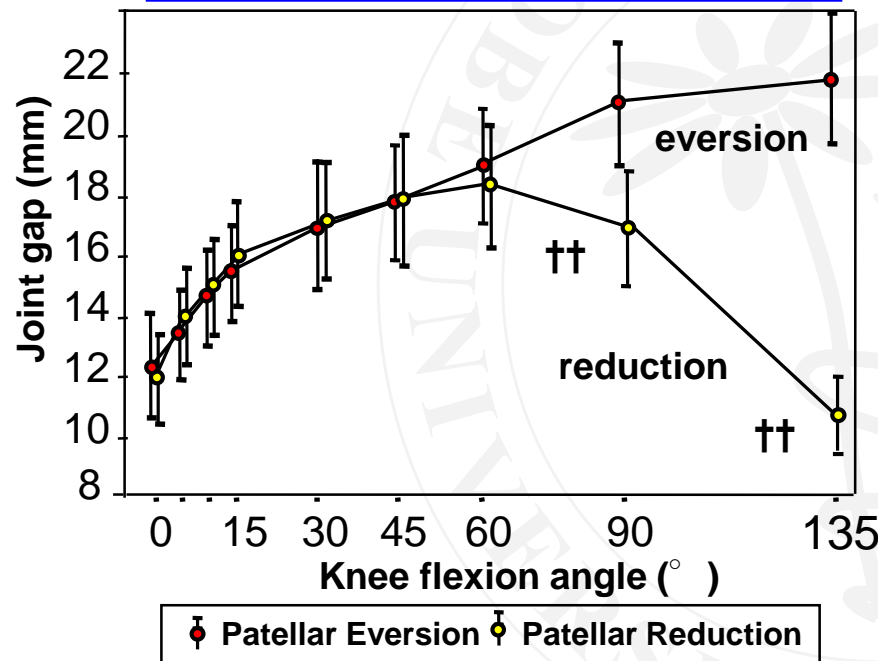
Joint Gap Kinematics in PS TKA

Matsumoto T, et al. *J Biomech Eng* 2006

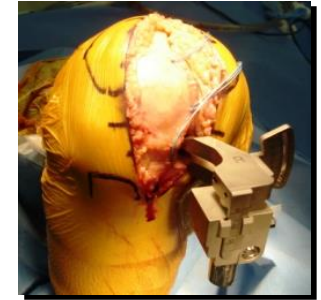
Femoral component placement change soft tissue balance

Muratsu H, et al. *Clin Biomech* 2010

Joint component gap

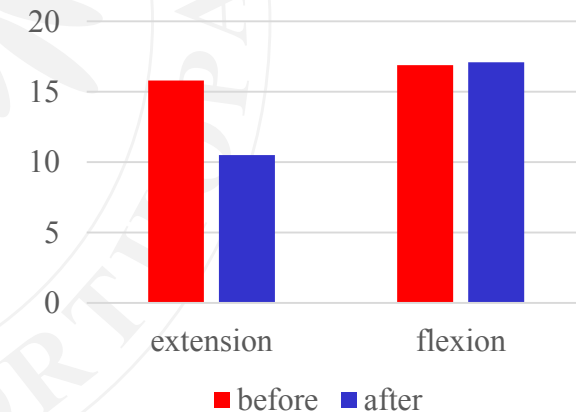


Osteotomy gap



Component gap

vs.



- ✓ Joint component gap changes throughout the range of motion.
- ✓ PF joint reduction reduces joint component gap in flexion.
- ✓ Femoral component placement reduces extension gap due to tension of the posterior capsule.

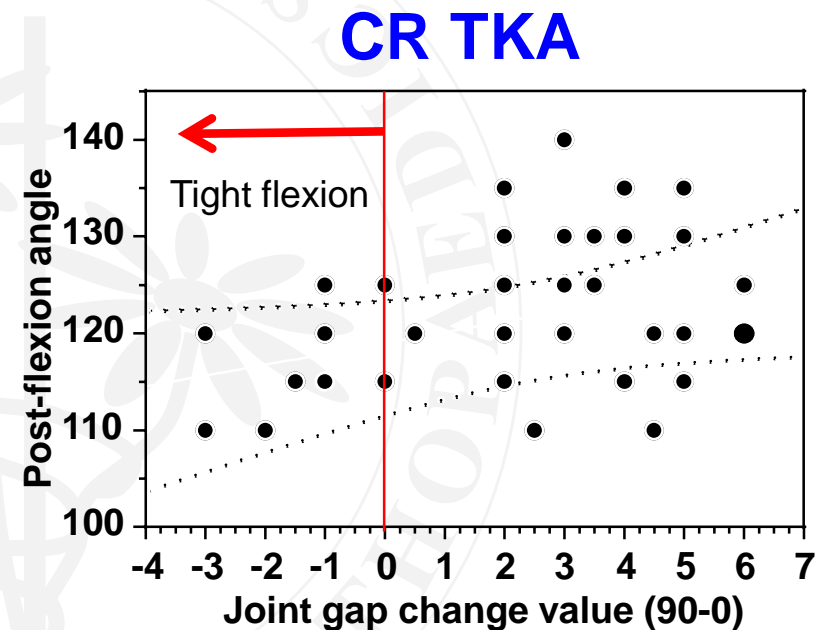
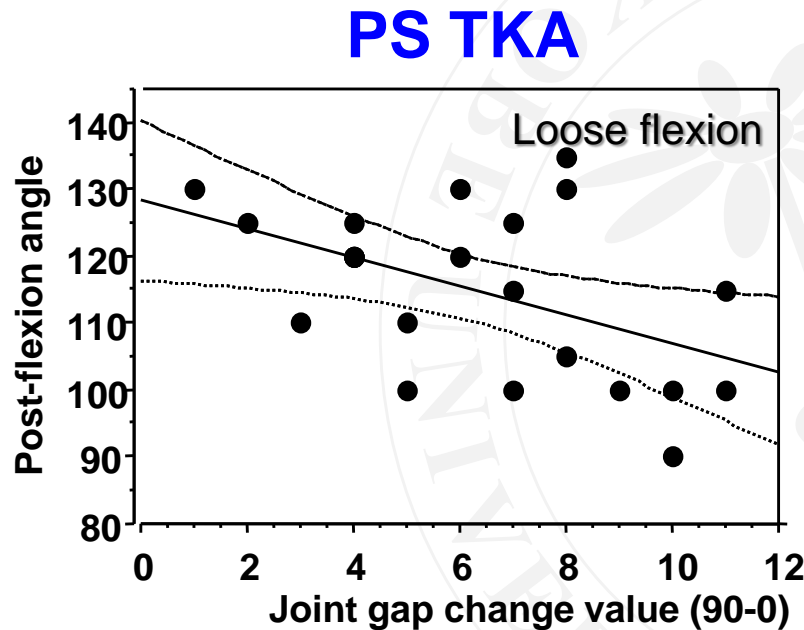
The Influence of soft tissue balance on postoperative flexion angle

Matsumoto T, et al. *Knee Surg Sports Traumatol Arthrosc* 2007

Takayama K, Matsumoto T, et al. *Knee Surg Sports Traumatol Arthrosc* 2011

Matsuzaki T, Matsumoto T, et al. *Knee Surg Sports Traumatol Arthrosc* 2014

Nakano N, Matsumoto T, et al. *J Arthroplasty* 2015



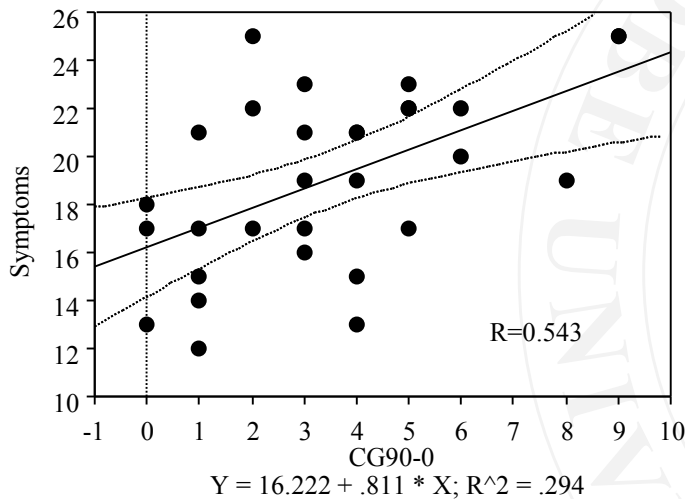
- ✓ Too loose flexion gap reduced postoperative flexion angle in PS TKA.
- ✓ Too tight flexion gap reduced postoperative flexion angle in CR TKA.
- ✓ Moderate lateral laxity in flexion induces appropriate tibial internal rotation, resulting in high postoperative flexion angle.

The Influence of soft tissue balance on clinical score

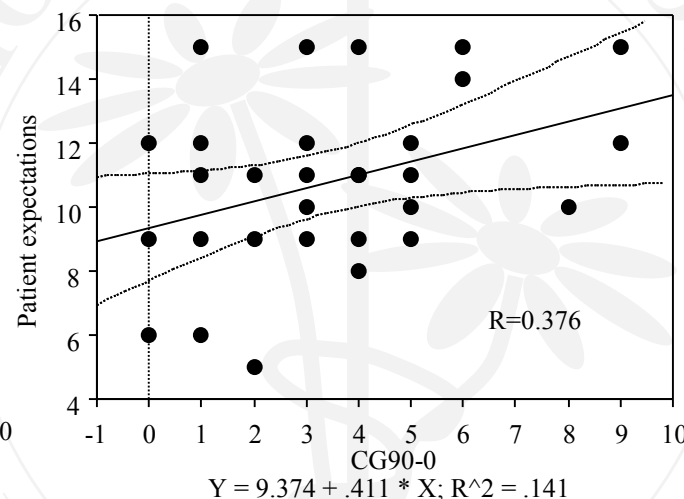
Matsumoto T, et al. *Int Orthop* 2014

Matsumoto T, et al. *J Knee Surg* 2017

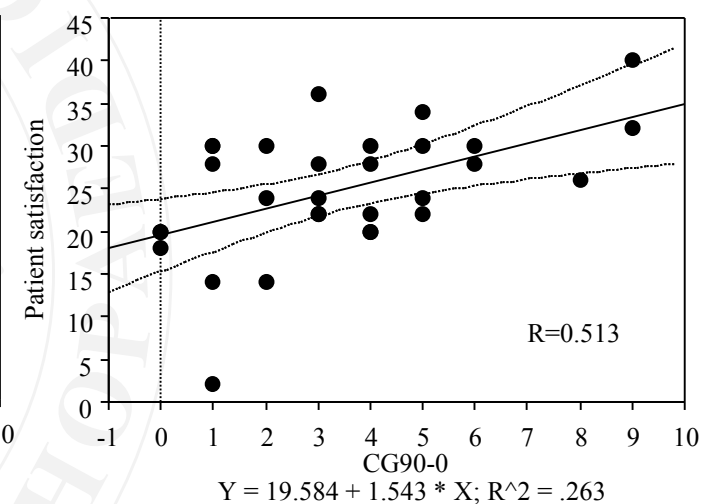
Symptoms



Patient expectation



Patient satisfaction



- ✓ Intraoperative soft tissue balance may influence on the patient-reported score, not physician-reported score.
- ✓ Joint component gap (90-0) is positively correlated with symptoms, patient expectation, and patient satisfaction.