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Rehabilitation following patellar tendon repair


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Patella tendon rupture: 2 groups

- **Athletic population**
 - acute traumatic rupture
 - rupture following -Glucocorticoid injection
-anabolic steroids
(>risk for re- rupture)





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Patella tendon rupture: 2 groups

- **Patients with systemic diseases** (SLE, rheumatoid arthritis)
 - risk for re- rupture
 - (augmented repair!)





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Dilemma of rehabilitation

- Not loading – leads to scar tissues (less resistant to tensile forces predisposing to rerupture)

Hibino N et al (2007) JBJS Br 89, Nebelung W et al. (2003) Arch Orthop Trauma Surg 123


- Tendon lengthening – when repaired tendon is exposed to distraction forces during inflammatory phase



Aspenberg P (2007) Int Orthop 31

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Unloading the repaired tendon

- Wire cerclage, Non resorbable suture (eg. FibreWire,)
- Resorbable suture material (eg. PDS, Vicryl)
- Hamstring tendon (augmented repair)

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- Prolonged reinforcement inhibits the healing process

Aspenberg P (2007) Int Orthop 31, Hibino N et al (2007) JBJS Br 89
- Loading to early - risk of failure or permanently lengthen the tendon

Aspenberg P (2007) Int Orthop 31

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4th post op week – remodelling phase
 (mechanical loading of the callus leads to elastic deformation which influences the healing process)

Production of type I collagen takes over (type III collagen is resorbed and cross-linking increases)

Aspenberg P (2007) Int Orthop 31,
Kader D et al. (2002) Br J Sports Med 36

Vicryl loses 75% of tensile strength – advantage of resorbable cerclage??

Greenwald D et al (1994) J Surg Res 56

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Repair of fresh patellar tendon rupture: tension regulation at the suture line
Elsayed Ibraheem Elsayed Massoud
International Orthopaedics (SICOT) (2010) 34:1153–1158




Resorbable suture #2 Vicryl
Cast for 4 weeks in 15° flexion
(isometric quad exercises, full weightbearing)

2 weeks partial weightbearing, flexion exercises
Straight leg raises with weights


Full weightbearing at 6 weeks post op

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The American Journal of Sports Medicine (2011) 39

Patellar Tendon Ruptures in National Football League Players
Martin Boublik, et al.



24 Players
All braced 4-12 weeks (av 7.4)

<small>13</small>	<small>placed in full extension</small>
<small>4</small>	<small>0-30</small>
<small>1</small>	<small>0-45,</small>
<small>2</small>	<small>10-60</small>

Motion increased 10-15° per week

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Goal of surgery

- Sufficient fixation allowing for early motion
 - passive ROM to 60° of knee flexion
 - gradually increased to 90°

Partial weightbearing for 4-6 weeks
(Lobenhoffer P, Thermann LA (2000) Orthopäde 29)

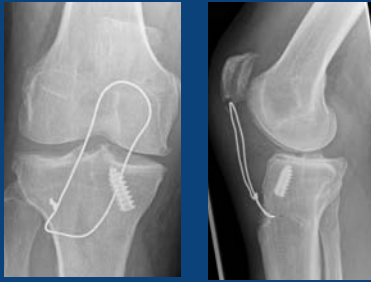
Full weightbearing in extension
(Kasten P et al (2001) Arch Orthop Trauma Surg 121)

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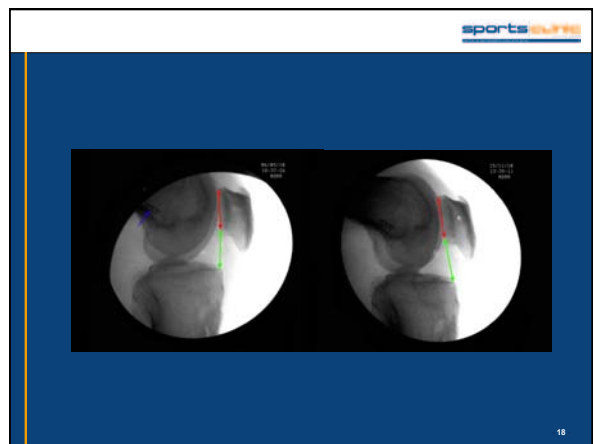
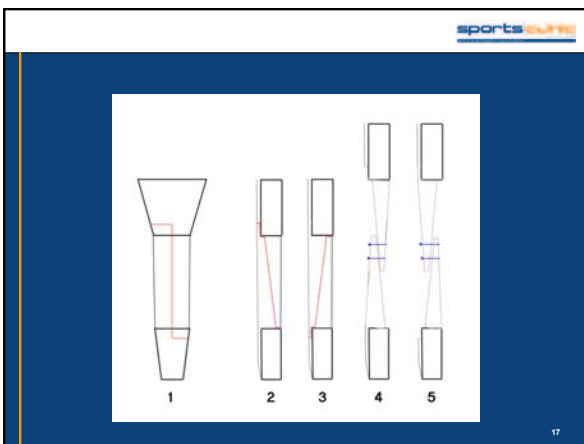
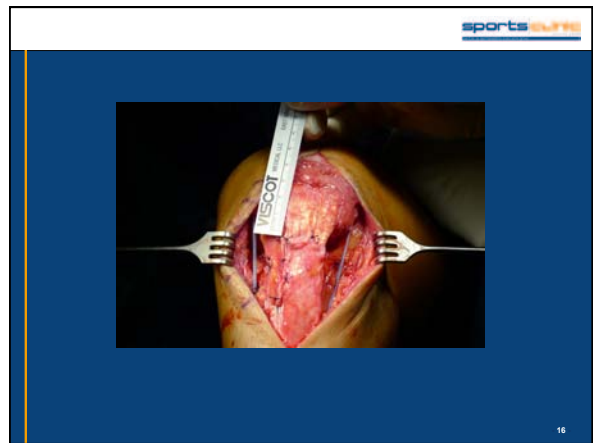
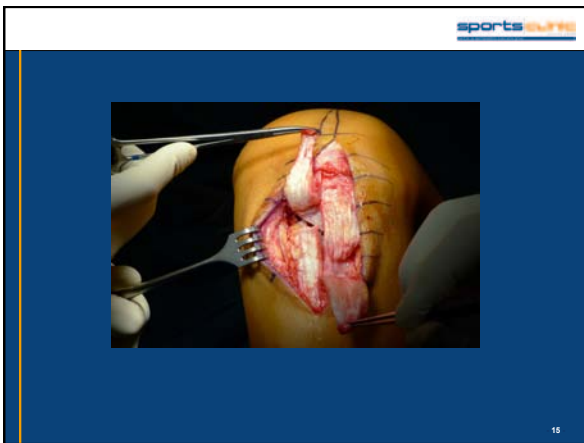
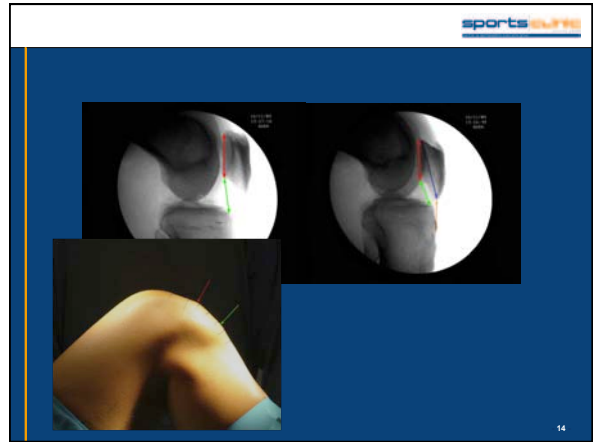
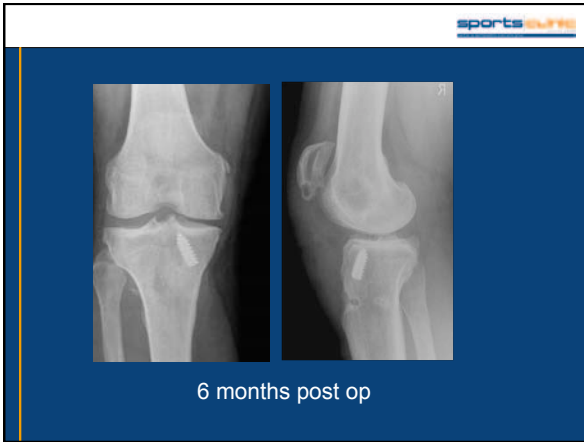


Post op

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6 weeks post op



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Rehabilitation phase I (1-3 weeks)

- ⇒ Soft tissue mobilization
- ⇒ Cold application and electrotherapy



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Rehabilitation phase I

- ⇒ Proprioceptive Training



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Rehabilitation phase II (4-6 weeks)

- ⇒ Aquatics



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Rehabilitation phase II

- ⇒ Squads (>70°)



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Rehabilitation phase III (7-12 weeks)


- ⇒ Single leg stabilization



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Rehabilitation phase III (7-12 weeks)

- ⇒ Walking/jogging on treadmill and soft surface



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Rehabilitation phase IV (13-16 weeks)

⇒ strenght training



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Rehabilitation phase IV

⇒ Open and closed chain



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Rehabilitation phase IV

⇒ Sportspecific training



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Summery

- Sufficient fixation allowing for early motion
 - passive ROM to 60° of knee flexion
 - gradually increased to 90°

Partial weightbearing for 4-6 weeks

Full weightbearing in extension

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THANK YOU!

