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## Knee Stiffness

# Intra- and extrarticular causing factors

Christian Fink, Christian Hoser




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## Risk factors for posttraumatic arthrofibrosis of the knee\*

Common reasons are

- ligament reconstruction during the acute inflammatory period
- knee fractures
- reflex sympathetic dystrophy
- immobilisation
- infection



\*Mayr HO et al. Patellofemoral arthritis following arthrofibrosis - causes and therapy  
Arthroskopie 2005 Nov;18(4):308-12

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## Stiffness after fracture

- **Mechanical:**  
intra – or extraarticular
- **Scar formation:**  
conservative/operative fracture care,  
long immobilization period

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## Consequences of Knee Stiffness

- Massive reduction of QOL for the patient
- Development of hip and back pain (extension loss!!)
- Development of Knee OA

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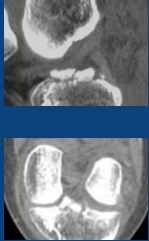
- **Mechanical:**  
intraarticular  
- bony avulsions of ligaments  
- intraarticular fractures

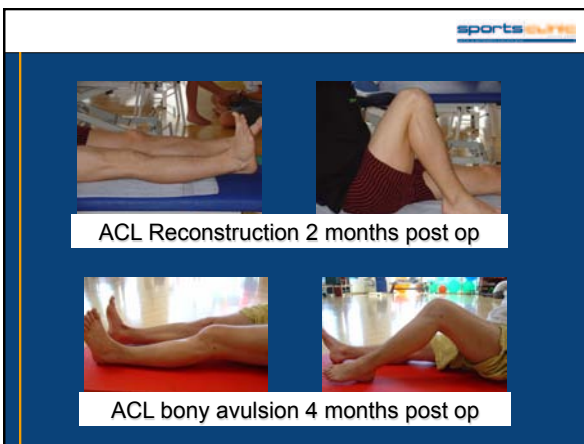
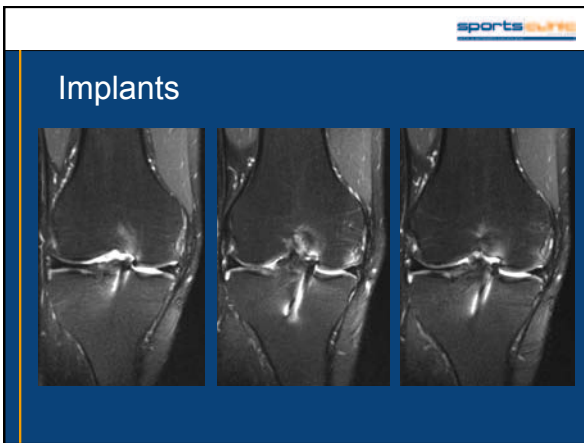
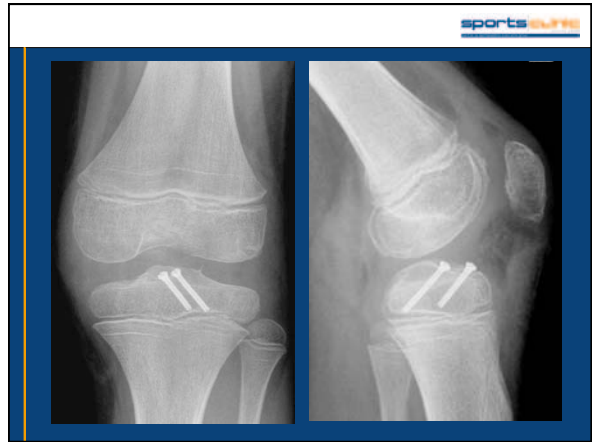
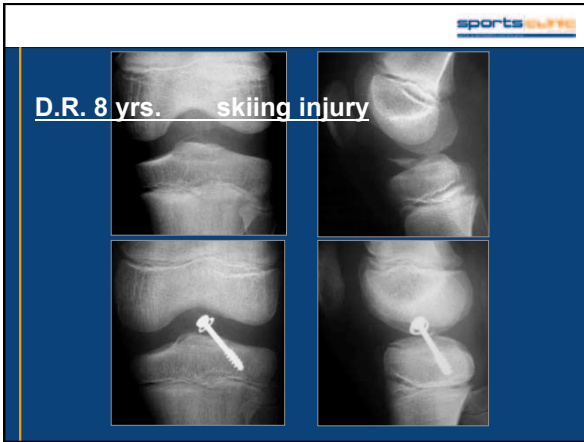
Implants !

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## Fracture of the Intercondylar Eminence of the Tibia

BY MARVIN H. MEYERS, M.D.,\* AND FRANCIS M. MCKEEVER, M.D.,\*  
LOS ANGELES, CALIFORNIA  
*From the Los Angeles County—University of Southern California Medical Center and Children's Hospital of Los Angeles, Los Angeles*





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**Arthrofibrosis of the Knee After Tibial Spine Fracture in Children: A Report of Two Complicated Cases**  
 Purushottam A et al. HSSJ (2008) 4: 14–19


CASE 2: 11y female



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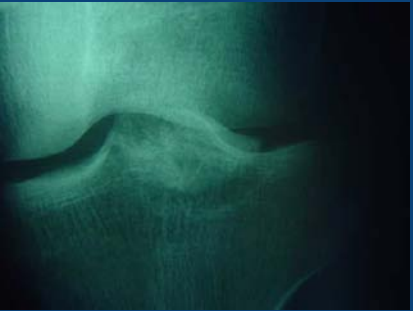
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**W.U. 44 y male, Motorcycle accident**



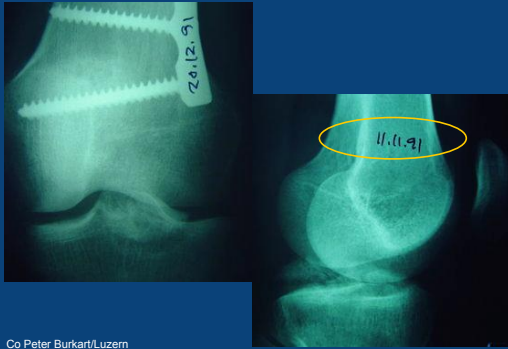
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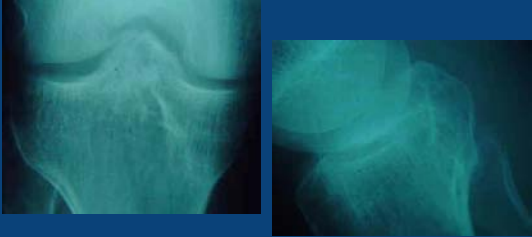
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- Around 2000 increasing pain with flexion,
- 2003 Arthroscopy with suspected meniscal lesion, no improvement,
- Active flexion 90°

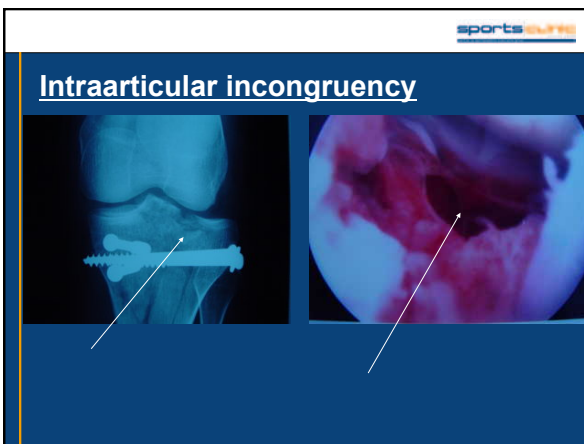
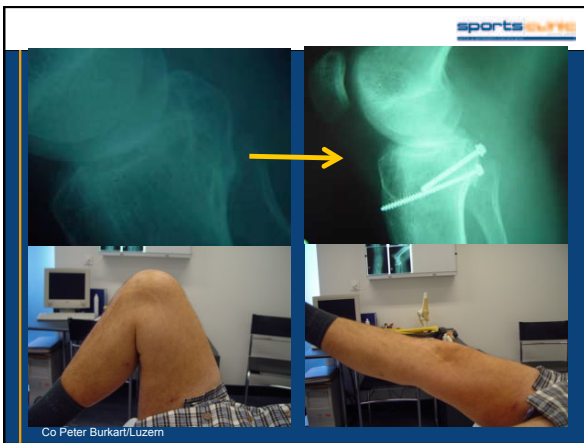
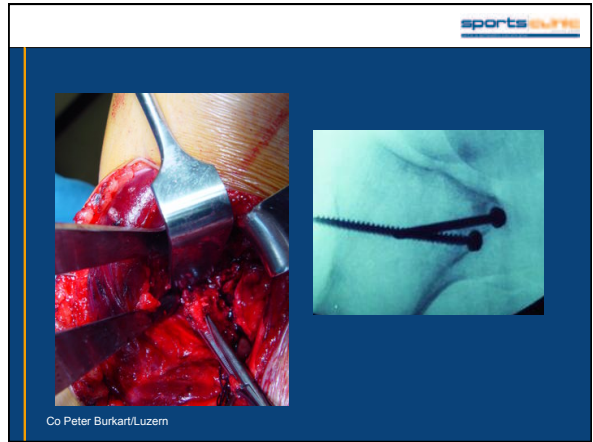
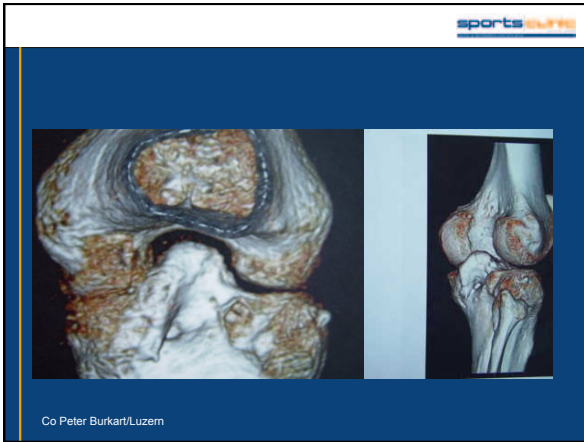


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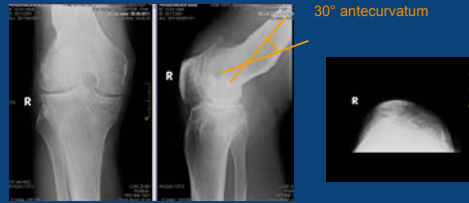
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**• Mechanical:**  
 extraarticular  
 Femur – ante and recurvation  
 Tibia – changes of the tibial slope

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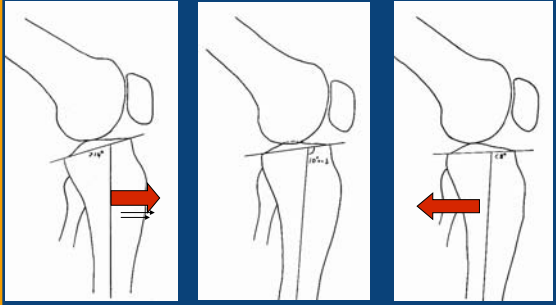


30° antecurvature

67-year-old patient  
 25 years after extension-osteotomy because of flexion contracture after ACL-reconstruction  
 Preop. motion 0/5/95

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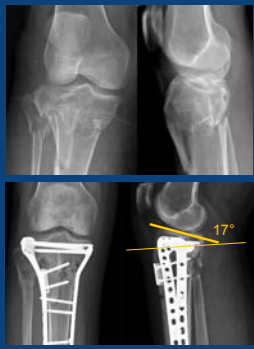
**Tibial slope**



> 14°      10°      < 8°

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17°

23

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**Posttraumatic Tibia Valga in Children**  
 A LONG-TERM FOLLOW-UP NOTE\*  
 Tuten HR et al  
*The Journal of Bone and Joint Surgery, Incorporated* VOL. 81-A, NO. 6, JUNE 1999



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**B.C., 37 years**



III° open prox lower leg fracture  
 Illisarov and soft tissue reconstruction  
 Subjective posterior instability, ROM 10/0/80

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## Flexion Osteotomy

D. Dejour 2000  
S. Friedmann 2008

a b

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Flexion 15 mm

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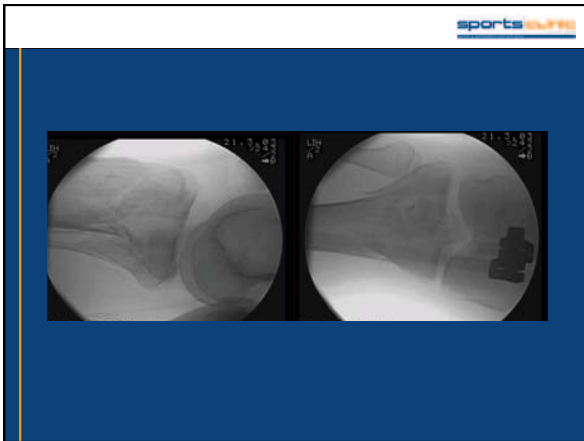
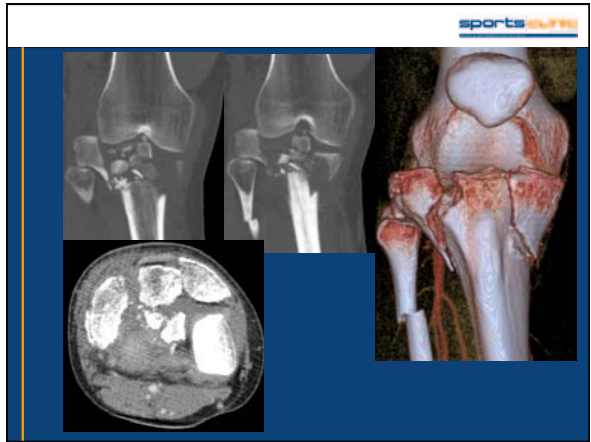
Flexion 15 mm

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- **Scar formation:**
  - Supracondylar femur fractures**
    - > scaring of the quadriceps muscle to the femur - **Flexion!!!**
  - Proximal tibia fractures**
    - > scaring of the posterior joint capsulae - **Extension!!!**

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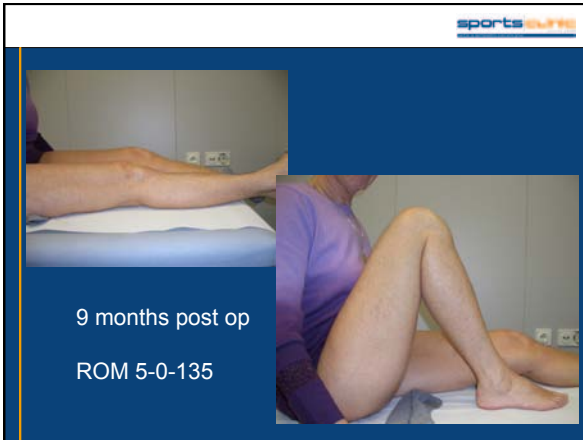


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### Rehabilitation

- lymphatic drainage
- mobilization of patella and capsule
- Focusing on extension
- CPM
- training of the VMO

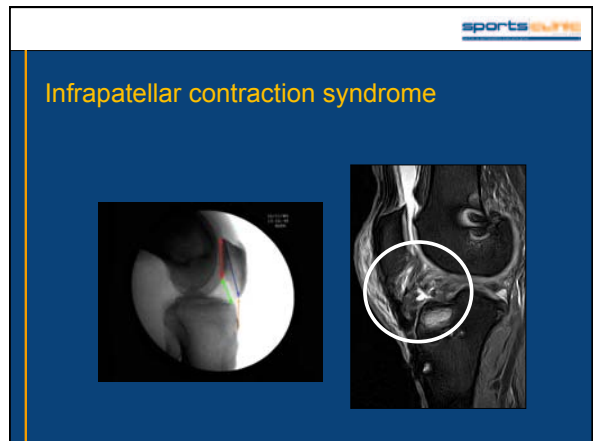
physiotherapy for 9 months



**• Scar formation:**

Patella fractures  
 > scaring of the infrapatella fat pad-

Patella baja - *Flexion!!!*



**Summary:**

• Watch for intrarticular and extraarticular reasons first  
 (and adress them before you perform a MUA or arthrolysis)

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THANK YOU!