Sport Medical Aspects Knee

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Der Name für UnfallReha

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suvacare
Sicher betreut

Snow sports injuries in CH

- **Skiing (downhill)**
  - Knee 36%
  - Shoulder, upper arm 15%
  - Lower leg, ancle, foot 15%
  - Head, neck 15%

- **Snowboarding**
  - Upper extremities (incl. wrist)
  - Head, neck 15%

www.netzathleten.de

Bfu; Verletztentransporte; 2016/2017

But…

… knee injuries are even more frequent in soccer than downhill skiing and snowboarding

CH: 55`000 vs. 43'000 vs. 24'000

www.sport.ch

- Because soccer is very popular in Switzerland
- Typically knees get injured in sports with **stop-and-go** and **knee rotation** patterns

Bfu; Grundlagendokument für die Schweiz; Bewegungsförderung und Unfallprävention

Daily routine in sports medicine (knee)

- **Meniscal tears** (medial>lateral)
  - Young/active (injury)
  - Older/active (injury/overuse)
  - Treatment: depends on location, age, pain/complaints

- **Lesions of the anterior crucial ligament** (ACL)
  - Typical history (movement)
  - Often combined injury (f.e. "unhappy triad")
  - Treatment: depends on age, activity, demands, instability (examination: pivot shift?)

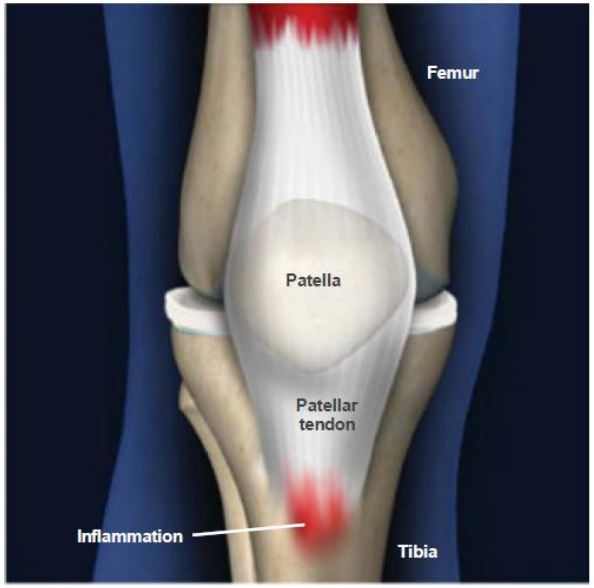
- **Medial/lateral collateral ligament sprain or rupture**
  - Often treated conservative
  - but: Pain can persist more than 12 weeks

- **Luxations and fractures of the patella**
  - First time luxations: often direct trauma with high energy
  - Habitual luxations: congenital anatomical abnormities
  - Fractures: direct trauma, often surgical treatment required (horizontal fractures)

- **"Runners knee"**
  - Not only runners
  - Patellofemoral pain
  - Origin: ilio-tibial
  - Predisposition: valgus knee formation, flat feet, high foot arch
  - «Runners faults" - exercise too hard and/or often

www.runnersblueprint.com

- **Osgood Schlatter Desease**
  - Typical for young, very active athletes
  - Origin unknown
  - Often self-limiting – stop of symptoms by the termination of growth
  - X-ray to exclude malignity



www.stmarysmaine.com

ACL rupture – our core business

- **Incidence**
  - Important sports injury
  - Most frequent ligament injury in the knee
  - 0,5-1 ACL rupture per 1000 inhabitants in middle Europe
  - 10x more frequent than PCL

- **Treatment Options**

surgery non-copers	⟷	non-operative copers

- **Indications for surgery**

absolute

- Repairable meniscal tear

  Krych et al. Am J Sports Med. 2010
- High level athlete
- Stop & go sport activities

  Eitzen et al. KSSTA 2010
- Young age

  Shelton et al. Am J Sports Med 1997

relative

- Meniscal tear

  Richmond et al. Arthroscopy 2011

  Bernstein J. JBJS Am. 2011
- Chondral lesion
- Demands of patient
- Time management

- **«Perfect candidate" for non-operative treatment**
  - First time rupture
  - Isolated rupture of the ACL

- **Schedule**
  - 6 Weeks brace (day and night)
  - Limited ROM, full weight bearing
  - Early physiotherapy

www.fitness-trainingsplan.de

Sportsrehablitation

Every patient/athlete is special …

… and has to be treated and trained individually to be able to reach his personal goals.

Sports Rehabilitation

- **Important points**
  - ✓ Take your time to do the personal assessment and explain the situation and therapeutical options in detail
  - ✓ Also talk to the coach, team, physiotherapist, person of trust
  - ✓ Set (realistic) goals and mentione the "obstacles" on the rehab-jurney
  - ✓ Review the plan every week

Elements of sports rehabilitation

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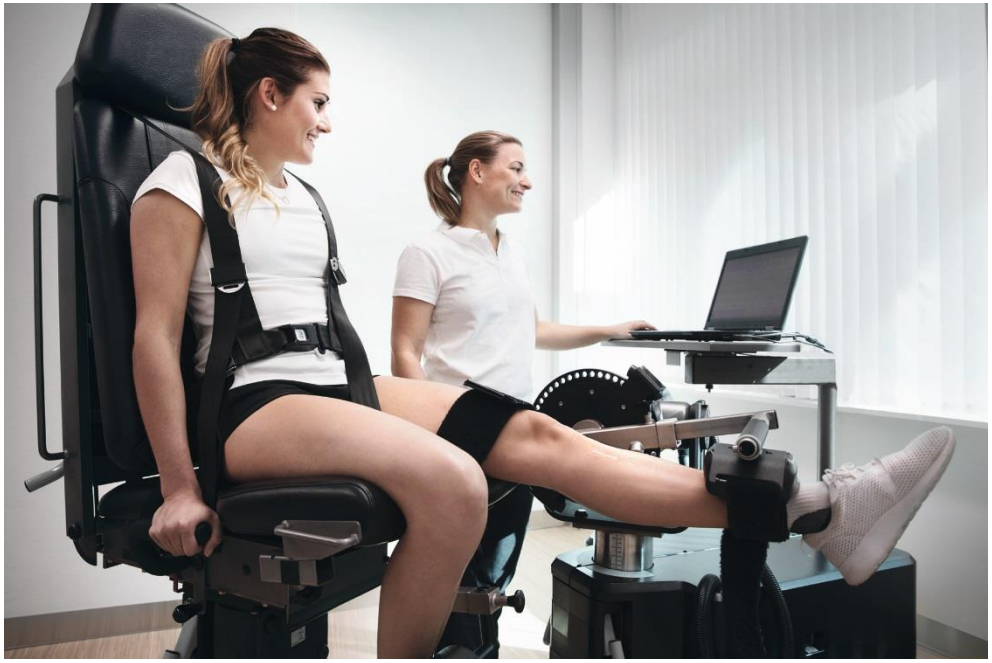
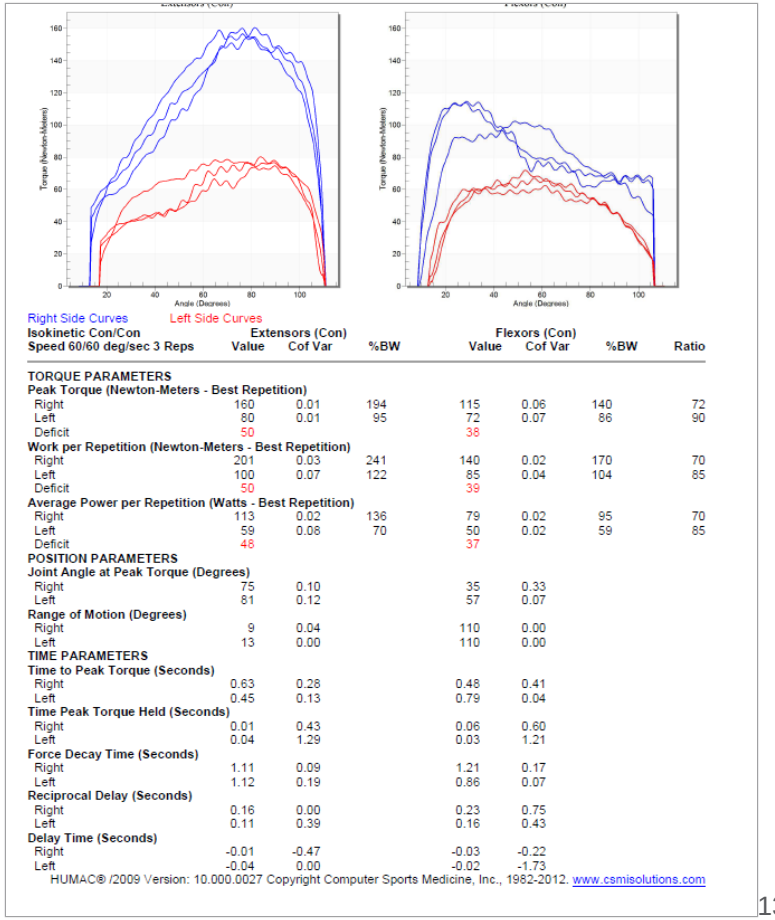
1. Assessment & Training: **Humac Norm**





Right Side Curves Left Side Curves

Isokinetic Con/Con Speed 60/60 deg/sec 3 Reps	Extensors (Con) Value	Cof Var	%BW	Flexors (Con) Value	Cof Var	%BW	Ratio
TORQUE PARAMETERS							
Peak Torque (Newton-Meters - Best Repetition)							
Right	160	0.01	194	115	0.06	140	72
Left	80	0.01	95	72	0.07	86	90
Deficit	50			38			
Work per Repetition (Newton-Meters - Best Repetition)							
Right	201	0.03	241	140	0.02	170	70
Left	100	0.07	122	85	0.04	104	85
Deficit	50			39			
Average Power per Repetition (Watts - Best Repetition)							
Right	113	0.02	136	79	0.02	95	70
Left	59	0.08	70	50	0.02	59	85
Deficit	48			37			
POSITION PARAMETERS							
Joint Angle at Peak Torque (Degrees)							
Right	75	0.10		35	0.33		
Left	81	0.12		57	0.07		
Range of Motion (Degrees)							
Right	9	0.04		110	0.00		
Left	13	0.00		110	0.00		
TIME PARAMETERS							
Time to Peak Torque (Seconds)							
Right	0.63	0.28		0.48	0.41		
Left	0.45	0.13		0.79	0.04		
Time Peak Torque Held (Seconds)							
Right	0.01	0.43		0.06	0.60		
Left	0.04	1.29		0.03	1.21		
Force Decay Time (Seconds)							
Right	1.11	0.09		1.21	0.17		
Left	1.12	0.19		0.86	0.07		
Reciprocal Delay (Seconds)							
Right	0.16	0.00		0.23	0.75		
Left	0.11	0.39		0.16	0.43		
Delay Time (Seconds)							
Right	-0.01	-0.47		-0.03	-0.22		
Left	-0.04	0.00		-0.02	-1.73		

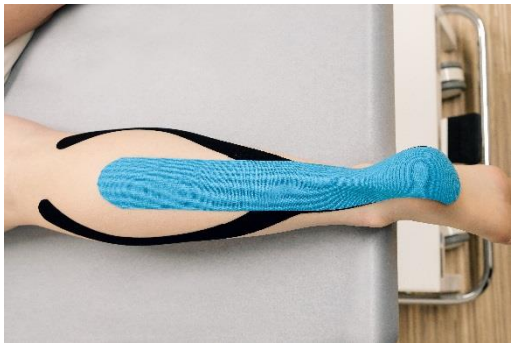
2. Assessment & balance training: Prokin

3. Personal training

4. Jump force & coordinatory assessment

5. Gait analysis: Optogate

6. Additional treatment



7. Nutrition, regeneration, mental training

Return to sports

- **Important points**
  - ✓ Make a realistik plan, set goals
  - ✓ Try to involve sports-specific skills as soon as possible
  - ✓ Start easy and increase "load" slowly
  - ✓ Remember: back in the field/on the slope, the athlete should be able to perform 100%

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Questions?

Thank you!

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wwww.michaelbruegger.ch