Return to Play: How to Evaluate

**What guides our decisions?**

**Elizabeth A. Arendt, M.D.**

Professor and Vice Chair
Dept of Orthopedics, U of Minnesota, USA
Medical Director of Intercollegiate Athletics

I have no conflict of interest to declare

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**Multiple Stake Holders**

- Athlete
- Team
- Institution
- Parents

Decisions are very individualized

By patient profile and by MD!!

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**Spectrums of Decision Making**

- Short term risks
- Can injury lead to permanent sequelae?
- Benefits to return to play

- Long term risk
- Can the injury get worse?
- Who benefits?

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**Injury Management Decision Making**

- Informed Consent
  - Does the MD know the risk of play vs. no play?
  - Is there enough Science to make informed decisions?
  - At what age does one assume informed consent?

Does this change with individual factors?

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**3 Elements to Consider in return to Activity**

- Biology of healing
- Functional Capacity
  - Strength / Agility / Co-ordination
  - Body movement patterns
- Mental readiness to return to sport

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**Healing – Six Months**

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**Decision-Based RTP Model**

- Step 1: Evaluation of Health Status
- Step 2: Evaluation of Participation Risk
- Step 3: Decision Modification


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Healing – Nine Months

Quality of Life  
(Mohtadi 1998)

Social and Emotional
The following questions are about your attitudes and feelings as they relate to your ACL-deficient knee.

27. How certain are you (i) that you can return to the same physical activity level as before the injury? (ii) that you would not suffer any new injuries to your knee? (iii) that your knee will not “break”? (iv) that your knee will not get worse than before surgery? (for those of you who underwent surgery)

28. How often are you apprehensive about your knee?

29. How much are you troubled with lack of confidence in your knee?

30. How fearful are you of reinjuring your knee?

31. How fearful are you of reinjuring your knee by playing your sport?

Emotional Response Of Athletes To Injury Questionnaire (EIQ)

• A questionnaire built to assess an athlete’s response to injury
• Frustration and anger were the most strongly experienced emotions.
• Families and teammates were the most important source of social support during recovery

Return To Pre-injury Level Competition Sport After ACL Reconstruction

• The cohort n=503 competitive athletes. Male 68%. Female 32%. Mean Age 27+/− 8 years.
• Clinical eval 93%: normal or nearly normal IKDC 84% had a hop test symmetry of >/=85%
• High Function on hop test more likely to return to sports than patients with normal postoperative knee function by IKDC clinical category. Males more likely to return to competitive sports than females

Self-Efficacy Scale (K-SES)

D. Your knee function in the future

(1) How certain are you that you can return to the same physical activity level as before the injury?

(2) How certain are you that you would not suffer any new injuries to your knee?

(3) How certain are you that your knee will not “break”?

(4) How certain are you that your knee will not get worse than before surgery? (for those of you who underwent surgery)


Return To Pre-injury Level Competition Sport After ACL Reconstruction

• Patients with a higher fear of re-injury less likely to have returned to their pre-injury level of sports participation

Feller et al., AJSM, 2011
Kvist et al., KSST 2005
Tripp et al., Rehab. Psych. 2007

Rehab Progression

• CORE
• Double leg mechanics
• Single leg mechanics
• Body movement patterns
• Dynamic activities
  –Sport specific activity

* Item 2 was from the Quality of Life Outcome Measure for Chronic ACL Deficiency (ACL-QOL) scale (Mohtadi, 1998).
Physical Therapy Progression

- CORE exercises
- Double stance exercises
- Single leg exercises
- Dynamic activities

2 Legged Squat:
Symmetrical WB (over scales)
Gluteal Activation (band resistance)

Examining Double Leg Mechanics

Excessive anterior knee excursion
Normal (note hamstring firing)

Examining Single Leg Mechanics

“Functional valgus”
Femoral IR
Hip substitution
Pelvic drop

Hips level
Knee over toes with flexion
Control into full extension
Pelvis level

Dynamic Activities

Physical Performance Testing
Existing Validated Measures of Functional Limb Performance

- Single Leg Hop for Distance
- 6M Timed Hop
- Triple Hop for Distance
- Triple Cross-over Hop for Distance

Bolgla LA. JOSPT 1997
Greenberger HB. JOSPT 1995

Single-Limb Single Hop Test for Distance

Description: distance a travels w/a single hop on 1 limb
Nature of variable: Continuous
Units of measurement: Centimeters

Measurement properties:
- Healthy individuals: ICC = 0.92, SEM = 4.61 cm,
- Mean distance: 208.08-208.24 cm

LSI reliability in patients with ACL reconstruction
- ICC = 0.92
- Range of mean LSI 16 wks post-ACLR = 81.0%-82.9%
- Mean LSI at 22 weeks post-ACL reconstruction = 88.2%

Single Leg Squat

Demonstrates leg strength and pelvic symmetry

Quantitative measurement of knee flexion
Qualitative assessment of body motion

Retro Step-up

Targets quad & hip extensor strength

Qualitative assessment of hip/knee alignment, pelvic symmetry
Quantitative measurement of step height.

Balance Single Leg Reach Test

Demonstrates balance & strength with sagittal plane motions

Quantitative Measure distance reached
Qualitative assessment of body motion

Balance: SEBT

- Star Excursion Balance Test
  - Anterior Reach
  - Posterolateral Reach
  - Posteromedial Reach

Star Excursion Balance Test

- Composite Score = \[\frac{((A+PM+PL))/3}{LL} \times 100\]
- A = max. anterior reach
- PM = max. posteromedial reach
- PL = max. posterolateral reach
- LL = limb length
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Case Example

Thank You

Orthopaedic Surgery
Sports Medicine
University of Minnesota