

Return to Sport ACL/Meniscus/Field Sport Considerations  
Summarized from presentation by Dr. Trent Nessler PT, MPT, DPT

Newer research using DorsaVI: 30,000+ Assessments with 1500 data points per assessment.

Factors that are crucial to consider:

- **Speed**
- **Pelvis control and loss of balance**
- **Kinesiophobia impact on movement**
- **Concussion impact on movement**

Latest numbers: **807,222** Lower Kinetic Chain injuries in US high school athletics a year.  
**200,000 +** ACL injuries in US every year

Direct annual cost about 5 billion

79% will have OA in 12 years

28% revision in 2 years

**1 in 4 youths who suffer an ACL will suffer another in their athletic career**

**Division 1 athletes:** ACL injury prior to D1 career had 8x-increased risk of injury during D1 career and expenses towards surgery/rehab.

50% more time on the dominant leg

Increased scholarship financial spending and less contribution to team. Need to consider impact on individual and team performance.

Improvement in biomechanics = Reduced risk and improved performance

Return to Play studies recommend:

- Psychological measures (TSK -11)
- Battery of test for determining **Quantity and Quality** of movement
- Measurement of SL performance
- LSI > 90%

TSK-11 Tampa Scale for Kinesiophobia:

- 19 on TSK-11 =
- 4x more likely to self report decreased activity  
-7x more likely to have decreased LSI in hop  
-6x more likely to have quad deficit  
**-13x more likely to re-injure**

**Symmetry was not indicative of biomechanics:** Deficits can still be present on both sides. Symmetrical bad movement.

- Example study: RTS criteria: Surgeon/PT Cleared, completion of sports specific on field training, LSI >90% quad and hop tests. **97% LSI in distance hopped <80% symmetry in knee biomechanics.**

**Concussion: 1.6 to 2.9x greater risk for lower kinetic chain injury up to 2 years post.**

Athletes with concussion are **2 greater risk** of musculoskeletal injury than non-concussed athlete.

**1.6x greater** risk for ACL up to 3 years post concussion

Those with poor dynamic balance **3x greater risk** of concussion during sport.

Larger center of mass displacement during single leg testing:

- Corkscrewing at hip and loss of balance
- Loss of balance
- Increase corrective strategies (hop to stability)
- Increased magnitude of speed of valgus
- All add to increase risk of non contact injuries

#### **KEY POINTS TO ASSESS:**

- Age of athlete
- Gender of athlete
- Sport
- BMI
- Previous Orthopedic history
- Concussion

Comparing psychological readiness and strength and power measurements in 452 ACLR athlete at 9 months post op:

-Complete ACL return to sport index, isokinetic testing, force plate jumping.

**Weak correlation with strength and power measures compared to ACL return to sport index. Similar poor correlation of ACL-RSI with LSI.**

TSK-11: High level of kinesiophobia related to significant unloading of involved leg.

Baseline measurements: Isometric core and hip strength, dynamic postural control, **core endurance**, neuromuscular control.

Side Plank and Plank test: Scored less on these tests correlated with more injuries

**\*\*\*Increased core strength = Decreased risk and Increased performance\*\*\***

- Efficiency of squat = Increased vertical jump and sprint
- >10 degree lateral shift = risk.
- Excessive lumbar flexion = center of mass anteriorly, increased risk of patella femoral pain symptoms, increased knees over toes increased strain to ACL.
- >10 degree valgus in single leg squat = ACL risk
- **Stability in single limb best indicator of risk and indicator of performance in sport**
  - Fatigue affects joint angle at landing causing harder landing and peak angle at landing.
  - **TRAIN TO RESIST FATIGUE!!!**