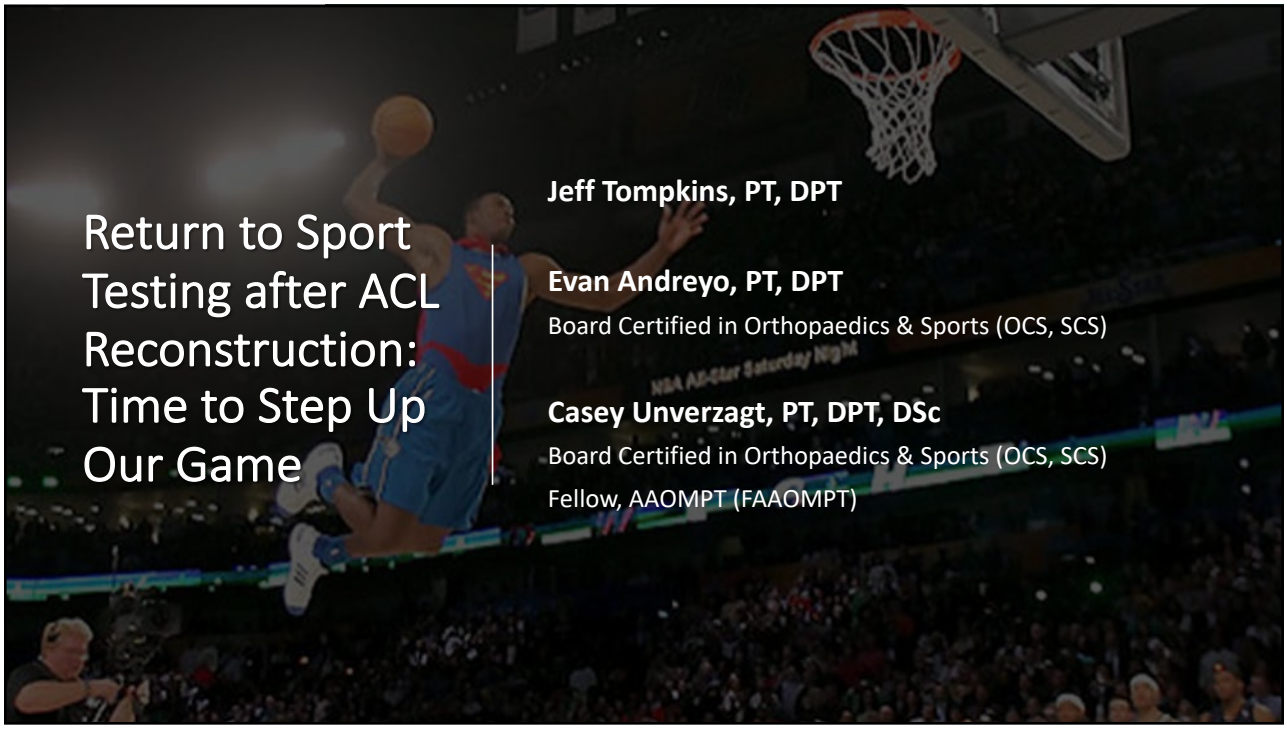


1

Game Plan

- ACL Reconstruction: Not as Good as we Like to Believe
- Astronomical Expectations and Gross Misunderstandings
- RTS Testing: Setting the Bar Too Low
- What Should we Look For?
- Comprehensive RTS Testing: Leave No Stone Unturned
- An Uphill Battle

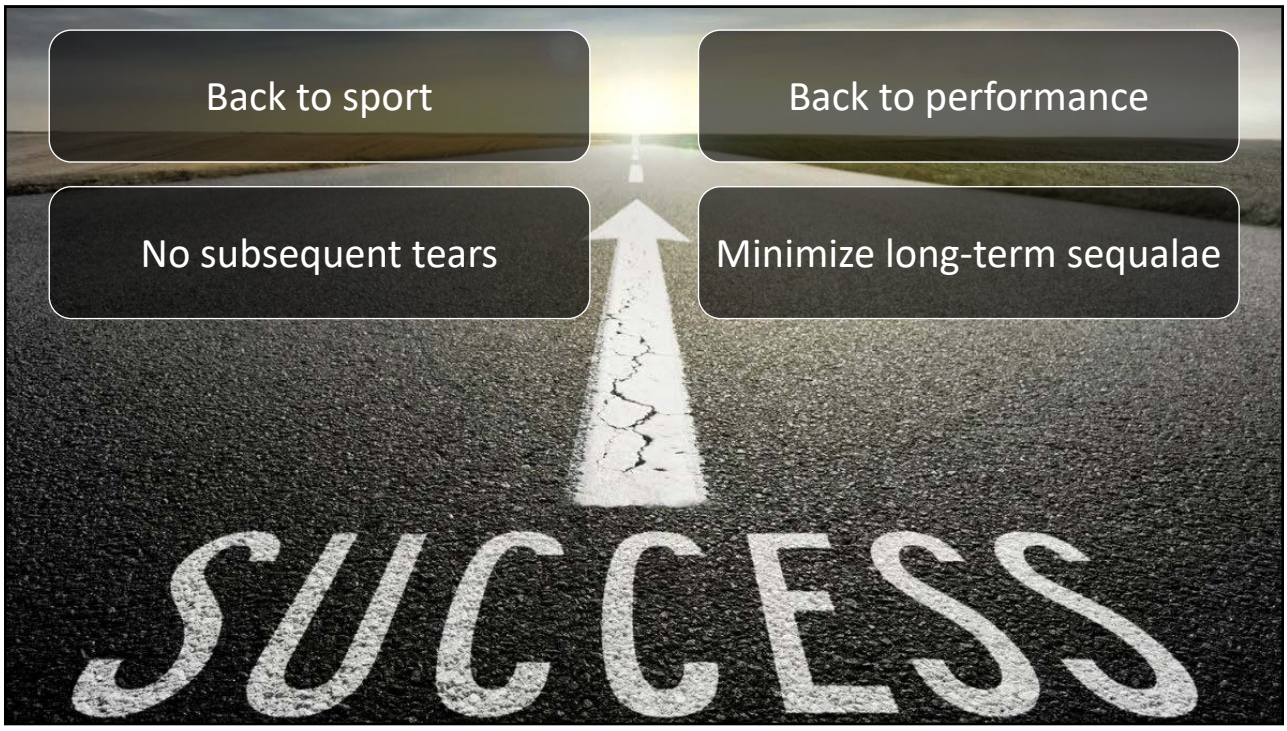
3

ACL Reconstructions: Not as Good as We Like to Believe

4

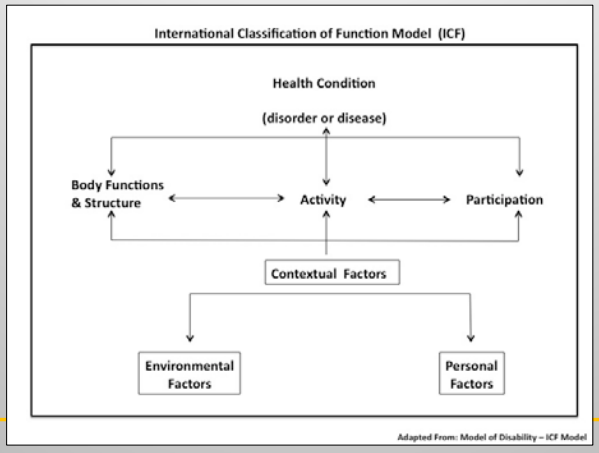

Success
What Does this Look Like?

5


Back to sport
Back to performance
No subsequent tears
Minimize long-term sequalae
SUCCESS

6

Consensus criteria for defining 'successful outcome' after ACL injury and reconstruction: a Delaware-Oslo ACL cohort investigation



Lynch et al., 2015

7

Consensus criteria for defining 'successful outcome' after ACL injury and reconstruction: a Delaware-Oslo ACL cohort investigation

Andrew D Lynch,[1,2] David S Logerstedt,[3] Hege Grindem,[4,5] Ingrid Eitzen,[4] Gregory E Hicks,[3] Michael J Axe,[6] Lars Engebretsen,[7] May Arna Risberg,[4] Lynn Snyder-Mackler[3]

Body, Function & Structure

Absence of knee effusion

Absence of knee giving way

Symmetrical quad & hamstring strength

Activity & Participation Restriction

PRO's with clearly defined thresholds for success

Participation

Return to sport

8

Likelihood of Return to Sport

81% return to any sport

65% return to preinjury level of sport

55% returned to competitive level after surgery

van Melick et al., 2016
Arden et al., 2016

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RTS Likelihood

Men 1.4x more likely to return to preinjury sport level than women

BPTB 1.2x more likely than HS

Almost all professional athletes RTS

Arden et al., 2016

10

Likelihood of Returning to Sport

Only 38% remained at the same level >2 years after ACL-R

Arden et al., 2016

11

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RTS Rates – Why so Abysmal?

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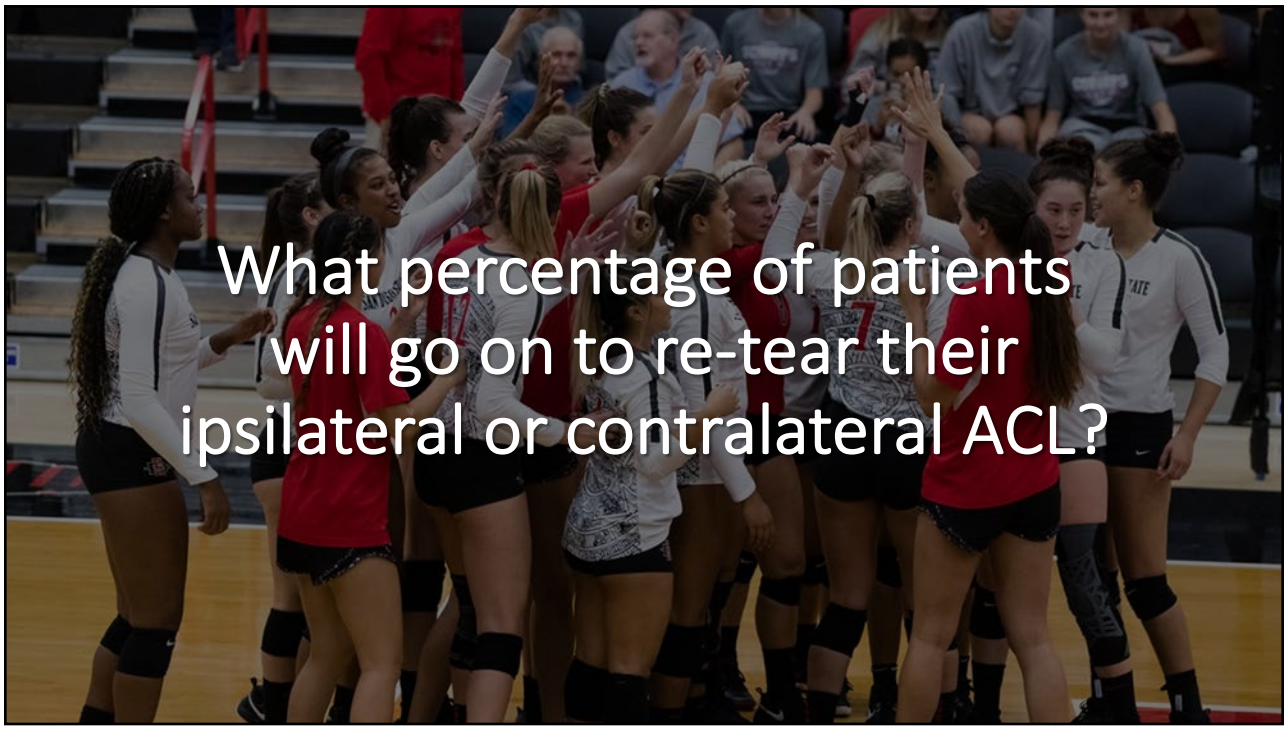
- Lack of PT specialization
- Patient expectations
- Fear/anxiety
- Finances
- Motivation
- Insurance
- End of season/career
- At peace not returning

13



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Re-Tear Rates

~1/3 of all patients will go on to re-tear

Wiggins et al., 2016
Kaeding et al., 2015
Maletis et al., 2013
Borchers et al., 2009

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Incidence of Second ACL Injuries 2 Years After Primary ACL Reconstruction and Return to Sport

Mark V. Paterno,*†‡§‖ PT, PhD, SCS, ATC, Mitchell J. Rauh,¶ PT, PhD, MPH, FACSM, Laura C. Schmitt,†#‡ PT, PhD, Kevin R. Ford,** PhD, FACSM, and Timothy E. Hewett,††‖‡‡‡ PhD, FACSM
Investigation performed at the Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, USA

29.5% sustained 2nd ACL injury

70% contralateral tear;
30% ipsilateral

Females more likely to tear contralateral ACL than graft

Mean time to RTP: 215 days (7 months)

Repeat injuries occur within 20 games or practice sessions of RTP

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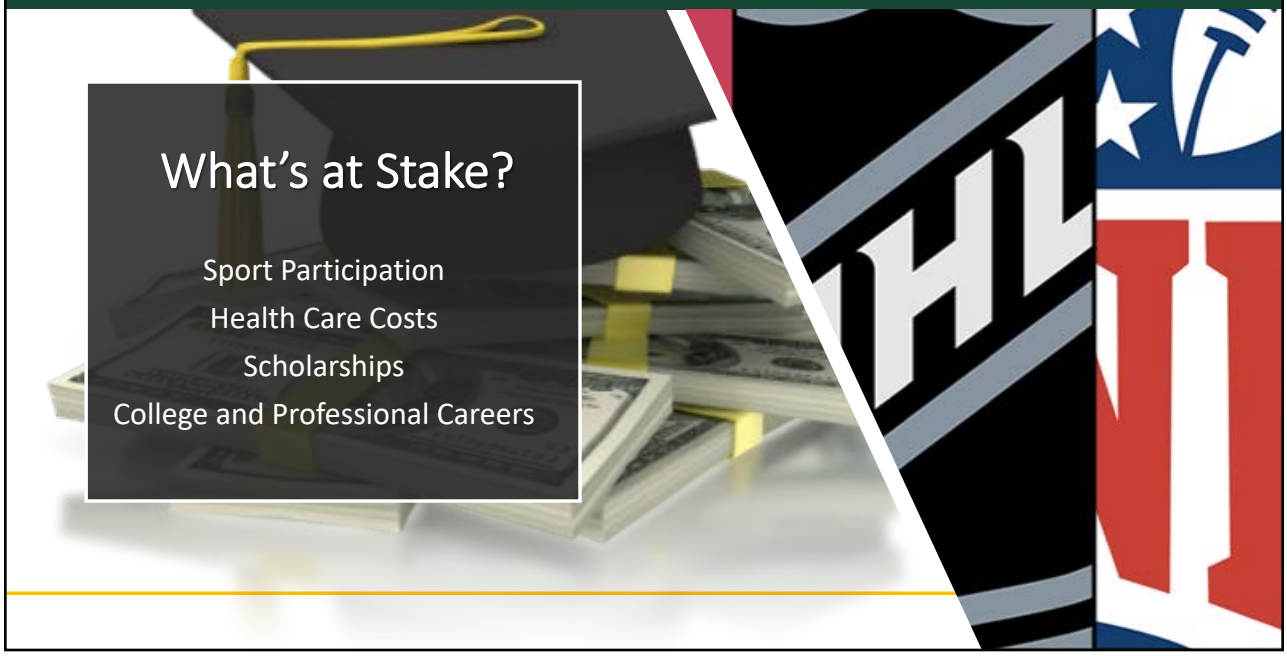
Astronomical Expectations and Gross Misunderstandings

17



What's at Stake?

Sport Participation
Health Care Costs
Scholarships
College and Professional Careers

18

Financial Ramifications

Annual health care costs exceeding $625 million

One ACL injury costs ~$38,000

including long-term costs

Petushek e al., 2018
Wiggens et al., 2016

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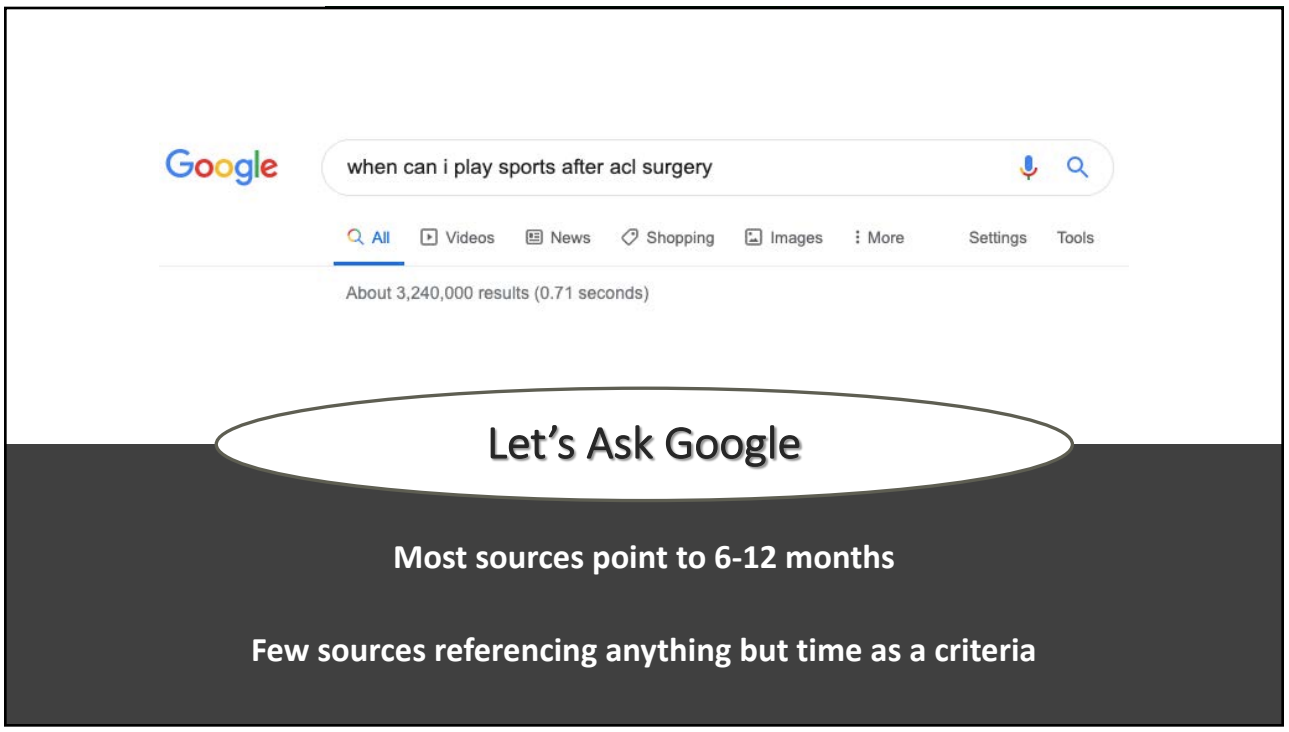
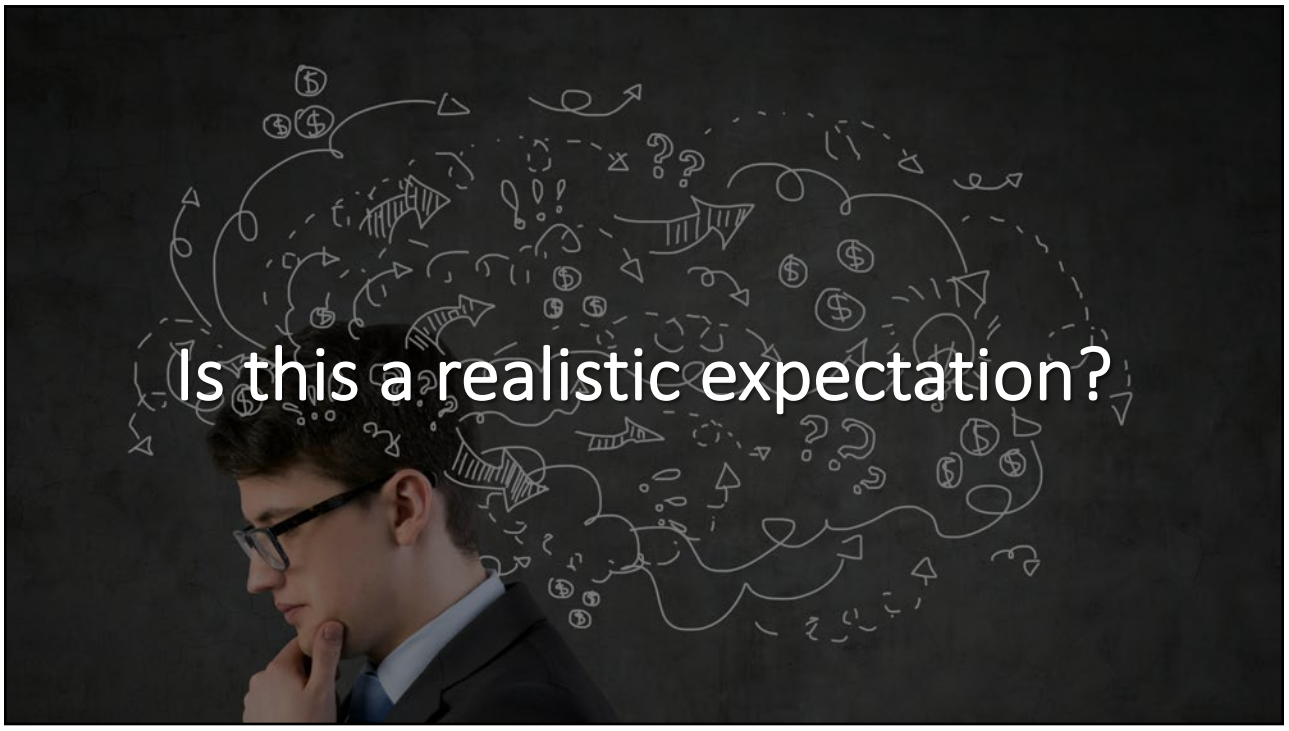


Let's Ask Google

Most sources point to 6-12 months

Few sources referencing anything but time as a criteria

21



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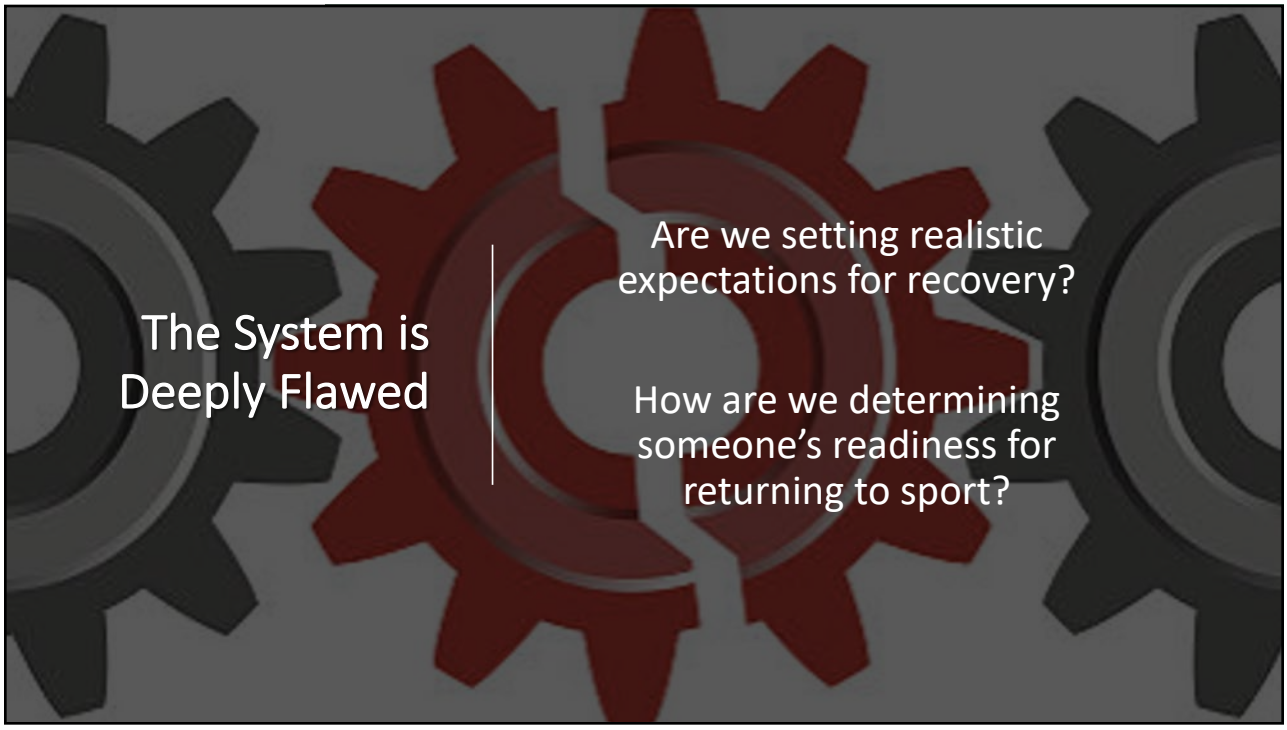

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Return to Sport Testing: Setting the Bar Too Low

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Rehab Protocols: Phase I

POST-OP DAYS 1 – 14

- Dressing:
  - POD 1: Debulk dressing, TED Hose in place
  - POD 2: Change dressing, keep wound covered, continue TED Hose
  - POD 7-10: Sutures out, D/C TED Hose when effusion resolved
- Brace x 4 weeks – Locked in extension for ambulation
  - Open to available range when pt has good quad control (no extensor lag)
- Crutches – weight bearing as tolerated (WBAT) in brace (D/C when gait is normal – generally at 2 weeks)
- Patellar mobilization (teach patient)
- Calf pumping
- AAROM 0-90 degrees (passive extension, active flexion, heel slides)
- Passive extension with heel on bolster or prone hangs
- Electrical stimulation in full extension with quad sets and SLR
- Quad sets, Co-contractions quads / Hamstring
- Straight leg raise (SLR) x 4 on mat (in brace if poor quad control)
- Mini squats – 0-45 degrees in parallel bars
- Weight shifts
- Total Gym (level 3-5) – Mini squats 0-45 degrees
  - Passive flexion to 90 degrees max (push up with opposite leg)
- Leg press 0-45 degrees with light resistance (up to ¼ body weight)
- Hamstring curls – Carpet drags or rolling stool (closed chain)
- Double leg heel raises
- Parallel bar ambulation – Forwards / backwards / lateral

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Rehab Protocols: Phase I

Weeks 2 - 4

- Brace x 4 weeks – Open to available range
- Crutches – WBAT, D/C when gait is WNL
- Continue appropriate previous exercises and following ex without brace
- Scar massage when incision healed
- AAROM, AROM through full range as tolerated
- Electrical stimulation – Continue as needed
- SLR x 4 on mat – Add light ankle weights if quad control is maintained
- Wall squats – No knee flexion past 45 degrees
- Total Gym – Progress levels of Mini-squats, 0-45 degrees
- Leg Press 0-45 degrees with resistance no more than ½ body weight
- Hamstring curls on weight machine with light resistance
- Forward, lateral and retro step downs in parallel bars
  - No knee flexion past 45 degrees (small step)
- Single leg heel raises
- Proprioceptive training – Single leg standing in parallel bars
  - Double leg BAPS for weight shift
- Stationary bike – Progressive resistance and time
- Treadmill – Forwards and backwards walking
- Stretches – Hamstring, Hip Flexors, ITB

GOALS

- ROM 0-110 degrees
- No effusion
- No extensor lag

26

Rehab Protocols: Phase II

WEEKS 6 - 9

- Continue appropriate previous exercises
- Wall squats 0-90 degrees
- Leg press 0-90 degrees with resistance as tolerated
- Hamstring curls with resistance as tolerated
- Forward, lateral and retro step downs 0-90 degrees (large step)
- Hip weight machine x 4 bilaterally
- Proprioceptive training – Grid exercises
- Stationary bike – 15-20 minutes at a time, at least 70 rpm
- Treadmill – Walking progression program

GOAL

- Walk 2 miles at 15 min/mile pace

27

Rehab Protocols: Phase III

MONTHS 3 - 4

- Isokinetic testing at 180 and 300 degrees/sec – Must have 80%
- of opposite leg to clear for straight line running
- Continue appropriate previous exercises
- Knee extension weight machine
- Short arc quads
- Agility drills / Plyometrics
- Treadmill – Running progression program if cleared
- Pool therapy – Swimming laps

GOAL

- Run 2 miles at easy pace

28

Rehab Protocols: Phase IV

MONTHS 4 - 6

- Repeat Isokinetic testing as needed
- Continue appropriate previous exercises
- Sit-up progression
- Running progression to track
- Transition to home / gym program

GOAL

- Return to all activities

NO CONTACT SPORTS UNTIL 6 MONTHS POST-OP

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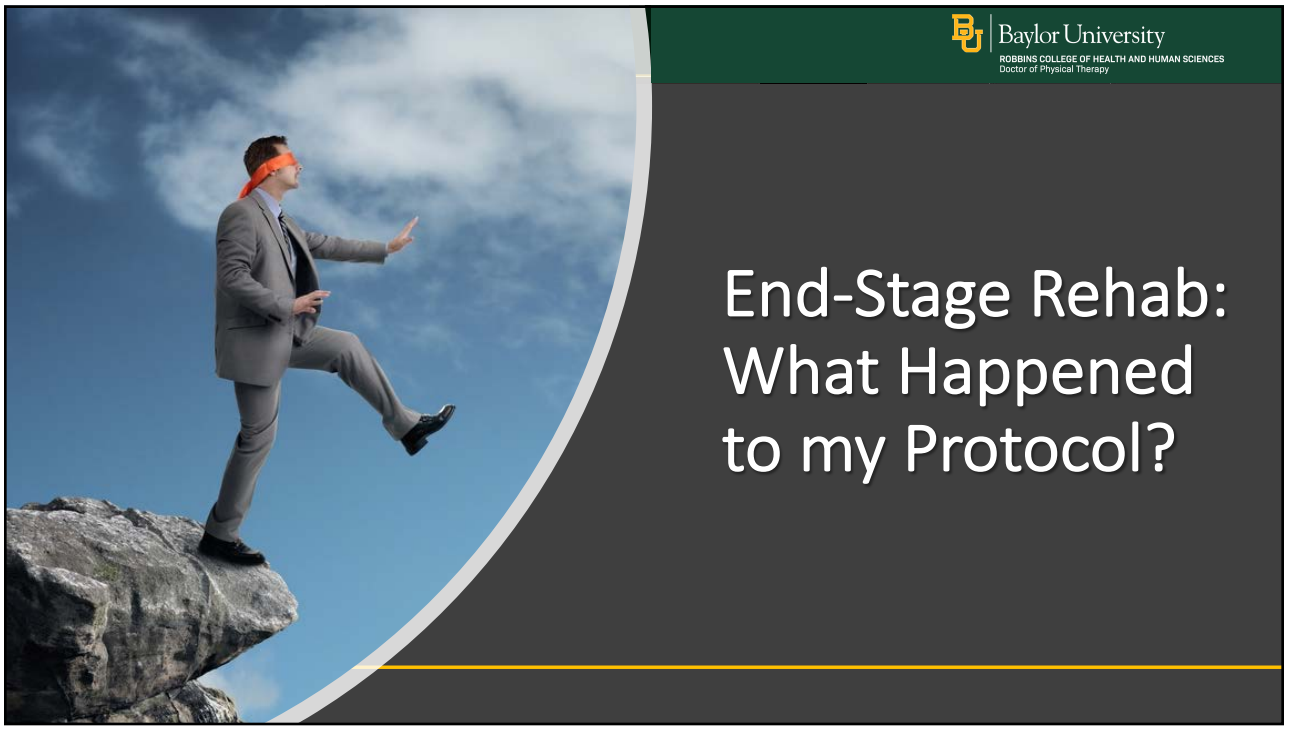

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Which criteria are used to clear patients to return to sport after primary ACL reconstruction? A scoping review

Ciara R Burgi,[1] Scott Peters,[2] Clare L Ardern,[3,4] John R Magill,[1] Christina D Gomez,[5] Jonathan Sylvain,[6] Michael P Reiman[7]

DUKE SPORTS MEDICINE

BJSM

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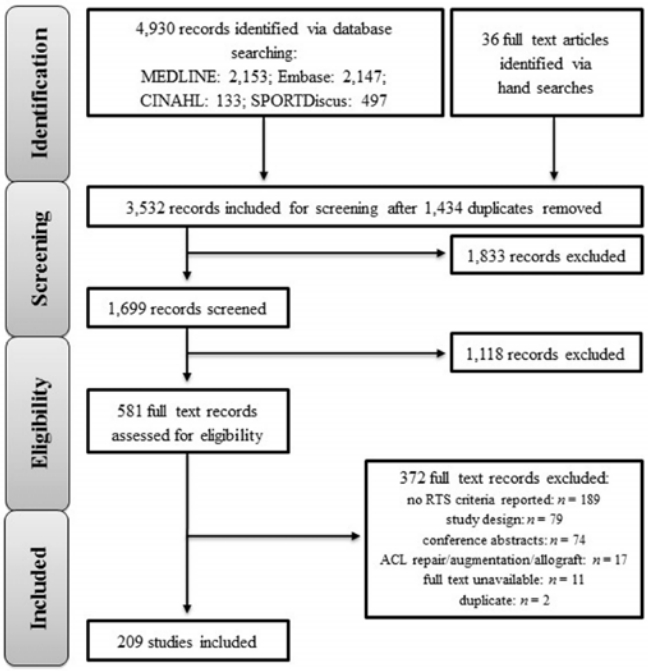
Selection Criteria



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Return to Sport Criteria & Associated ICF Classification

Return to sport criteria categorisation	Corresponding ICF[17] framework classification
Time	N/A
Strength	Impairments
Clinical examination	Impairments
Hop testing	Activity (limitations)
Performance-based criteria	Participation (restrictions)
Patient report	Contextual factors

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What Are We Looking At?

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- Thigh circumference: 1%
- Ligamentous stability: 6%
- Effusion: 10%
- Contextual factors: 12%
- Hop tests: 14%
- Range of motion: 14%
- Performance-based criteria: 20%
- Strength tests: 41%

35

What Are We Looking At?

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Time: 85%

Time as sole criterion: 42%

<6 months: 14%
6-9 months: 72%
9-12 months: 10%
>12 months: 3%

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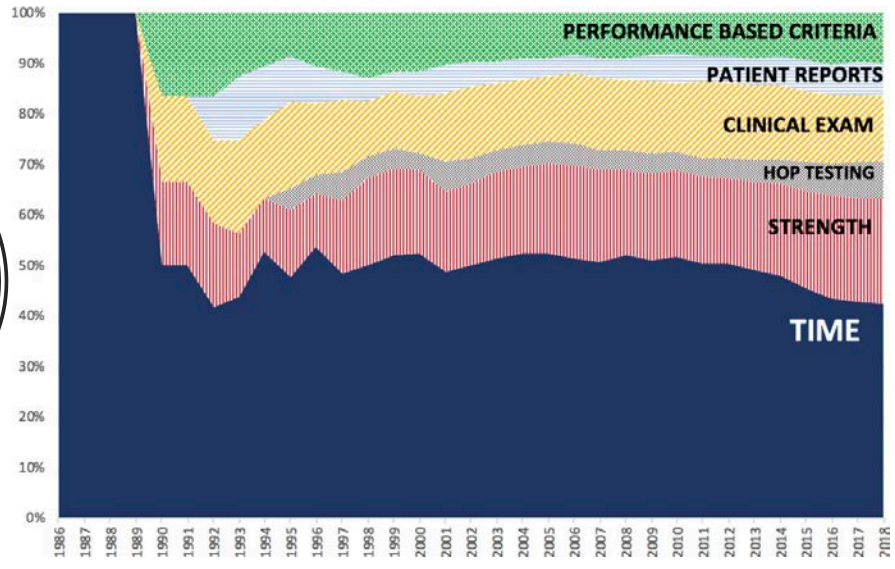
Soak This Up, Please

37

This is Astonishing & Absolutely Unacceptable



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Back to Normal Symmetry at 9 Months?

Back to Normal Symmetry?

Biomechanical Variables Remain More Asymmetrical Than Normal During Jump and Change-of-Direction Testing 9 Months After Anterior Cruciate Ligament Reconstruction

- 156 male patients 9 months after ACL surgery
- 62 healthy participants
- 3D motion capture
  - Double limb drop jump
  - Single limb drop jump Single-leg hop for distance
  - Planned and planned change of direction

King et al., 2019

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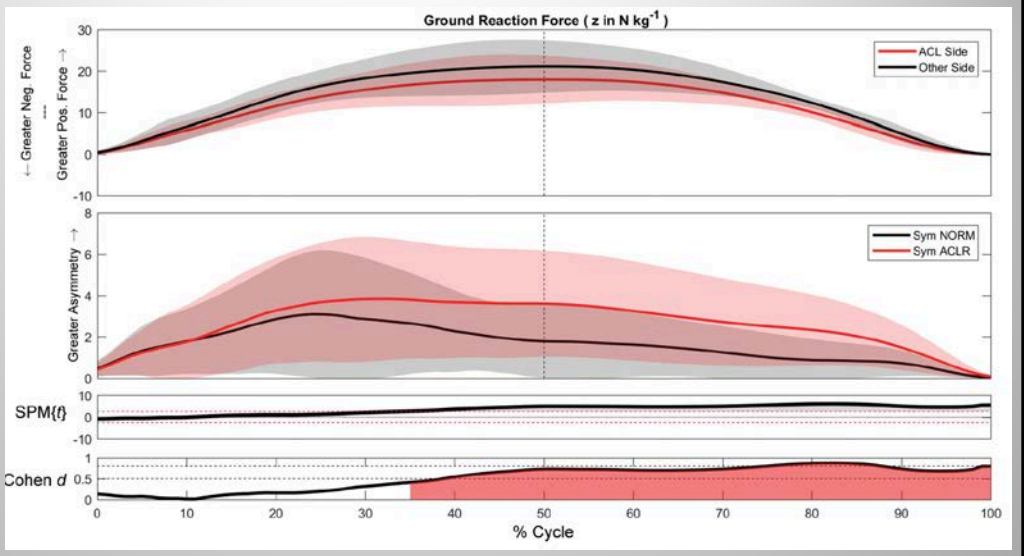
Double Legged Ground Reaction Force



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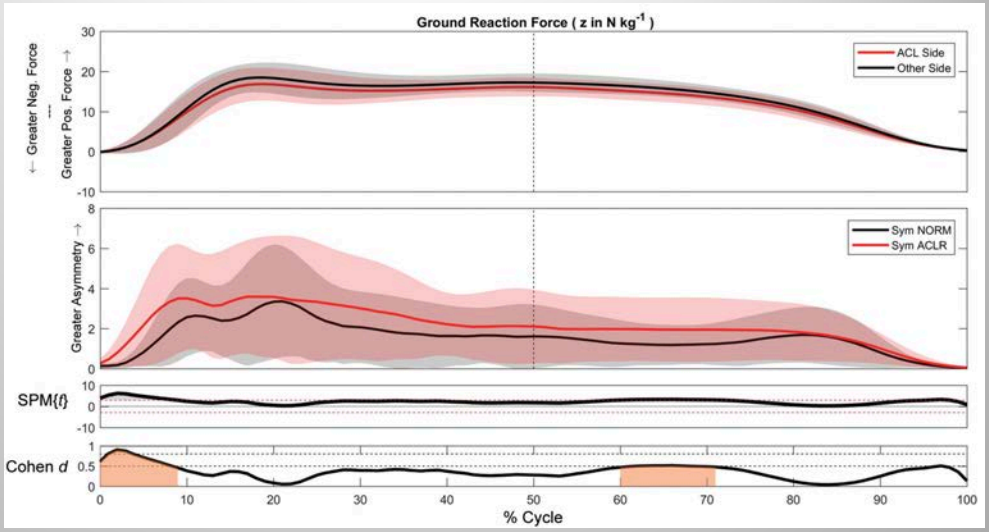
Vertical Ground Reaction Force During 90° Cutting



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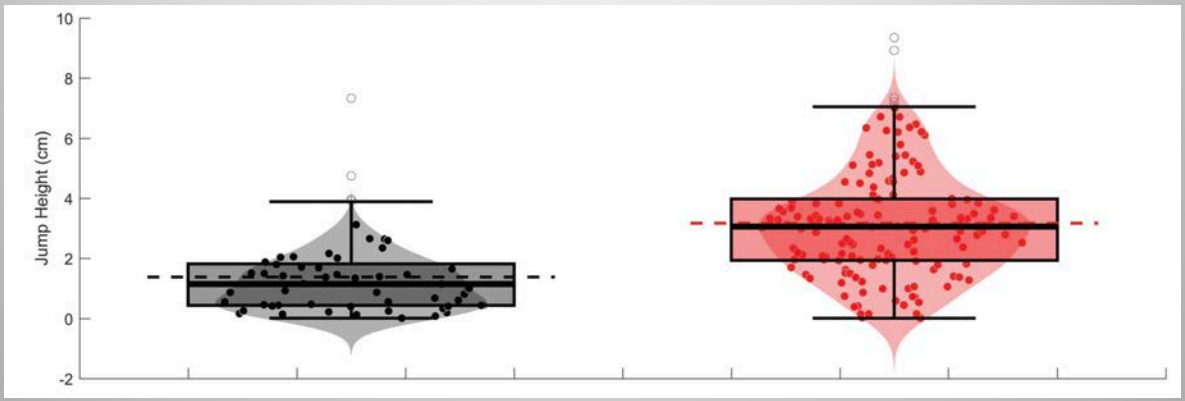
Single Limb Jump Height Between Norm (left) and ACL (right)



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"The days of rehabilitation and RTS progressions solely governed by time (eg, at 3 months the athlete starts running, at 5 months the athlete starts training and at 6 months the athlete starts unrestricted sport) should be long behind us.

However, tempering aggressive rehabilitation and RTS progression to account for biology—healing of the ACL graft and recovery of neuromuscular function—is important because of the link between time since surgery and knee reinjury risk."

Ciara Burgi, PT, DPT, SCS, FAAOMPT

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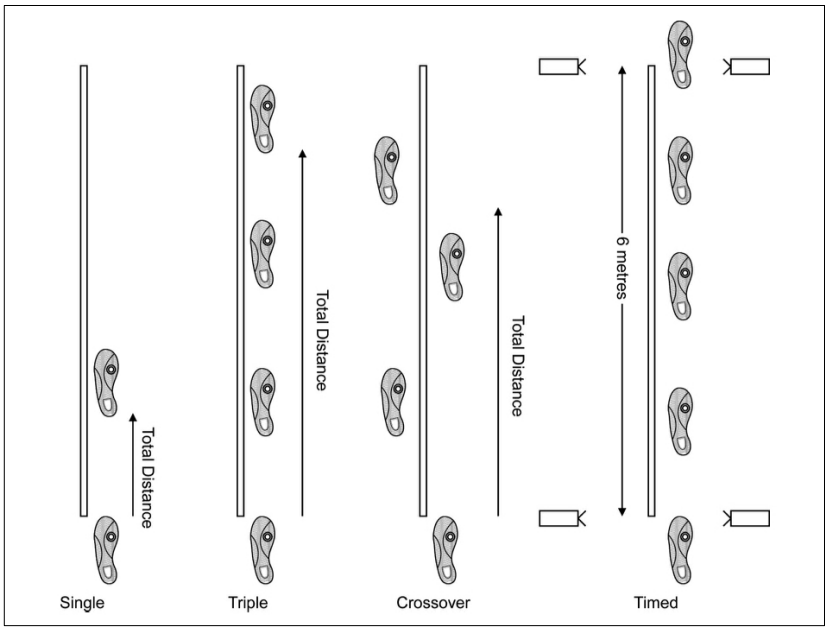
Hop Tests



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Is the Magic Number Really 90%?

Evidence-based guidelines advocate for a test battery to evaluate quality and quantity of movement with a limb symmetry index (LSI) of at least 90%.

Burgi et al., 2019
Dingenen et al., 2017
Van Melick et al., 2016
Grindem et al., 2018

45

Symmetry Not the Same as Quality

25% reduction in knee motion during takeoff
40% reduction in peak knee moment during takeoff
38% reduction in peak knee power during takeoff
18% reduction in knee motion during landing
43% reduction in peak power absorption

Everyone had a LSI of >93%.

Orishimo et al., 2010

46

Hop Distance Symmetry Does Not Indicate Normal Landing Biomechanics in Adolescent Athletes With Recent Anterior Cruciate Ligament Reconstruction

TISHYA A.L. WREN, PhD[1,2] • NICOLE M. MUESKE, MS[1] • CHRISTOPHER H. BROPHY, MD[2] • J. LEE PACE, MD[3]
MIA J. KATZEL, DPT[1] • BIANCA R. EDISON, MD[1,2] • CURTIS D. VANDENBERG, MD[1,2] • TRACY L. ZASLOW, MD[1,2]

JOSPT

Wren et al., 2018

47

Hop Distance Symmetry Does Not Indicate Normal Landing Biomechanics in Adolescent Athletes With Recent Anterior Cruciate Ligament Reconstruction

Both symmetric and asymmetric patients offloaded the operative knee.

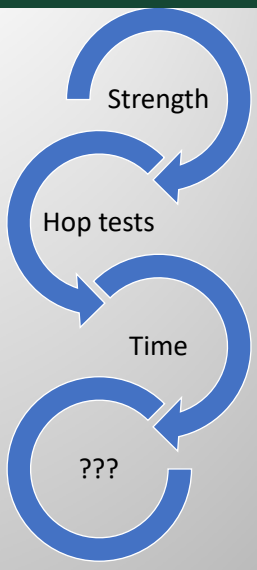
Symmetric patients achieved symmetry, in part, by hopping a shorter distance on the contralateral side.

Wren et al., 2018

48

What about Testing Battery?

Van Melick et al., 2015
Grindem et al., 2016
Kyritsis et al., 2016
Gokeler et al., 2017
Ebert et al., 2018



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RTS Testing: What Should we Look For?

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Why settle when the stakes and failure rates are so high?

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Return to Play Criteria: A Systematic Review of 90 Studies

An extensive test battery should be used to determine the return-to-play moment, but there are no tests or test batteries that have been tested for construct or predictive validity for return to play.

It is not clear which cut-off point of the LSI should be used for strength and hop tests.

Perform an extensive test battery for quantity and quality of movement.

An LSI of >90% could be used as a cut-off point. For pivoting/contact sports, an LSI of 100% is recommended.

Van Melicke et al., 2016

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A Scoping Review on Return to Sport

"The multifactorial nature of RTS suggests that a group of tests measuring athlete-centred constructs, rather than a single test in isolation, can provide an important basis for practitioners and athletes when planning RTS. Clearly, one test will not provide enough information and, for this reason, should not be the sole deciding factor in an RTS risk assessment."

Burgi et al., 2019

53

A Scoping Review on Return to Sport

Five Recommendations

1. Use a group of tests
2. Choose open tasks over closed tasks
3. Include tests with reactive decision-making elements
4. Assess psychological readiness to return to sport
5. Monitor internal and external workload

Burgi et al., 2019

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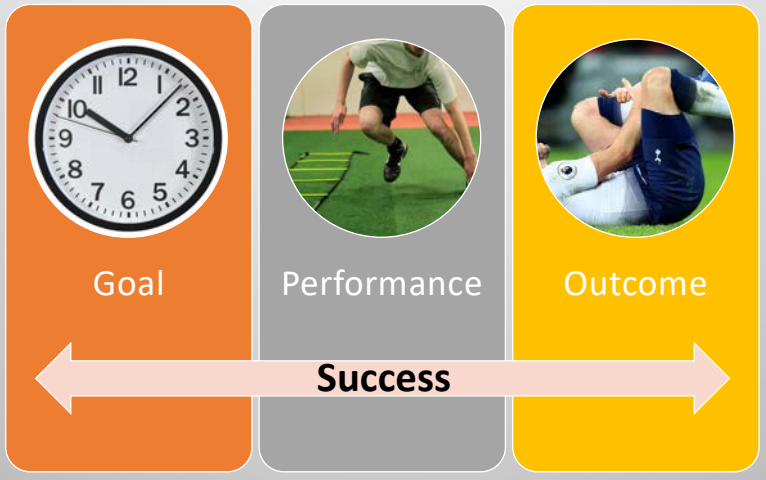
A Progressive Return to Sport

Returning to sport is not the flip of a switch

55

Return to Sport Consensus



Ardern et al., 2016

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Return to Sport Consensus

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Return to Participation

Return to Sport

Return to Performance

Ardern et al., 2016

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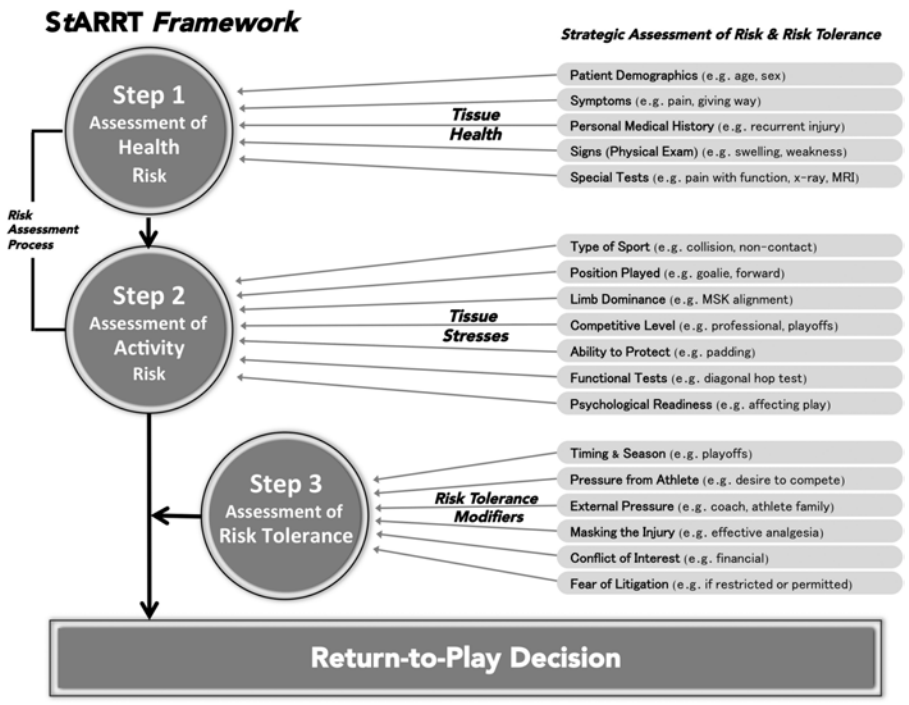
STARRT Framework



Shrier 2015

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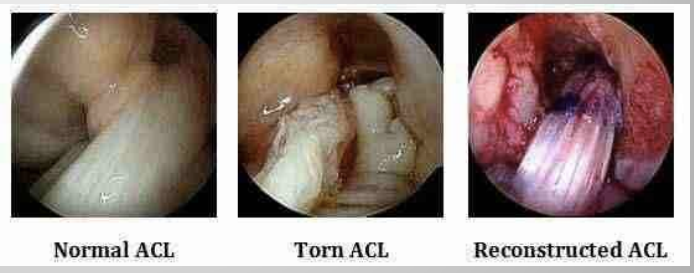
How Long does it Take?

Ligamentization

Repopulation of proliferation cells

Re-vascularization

Re-innervation



Does this healing occur within common RTS timelines?

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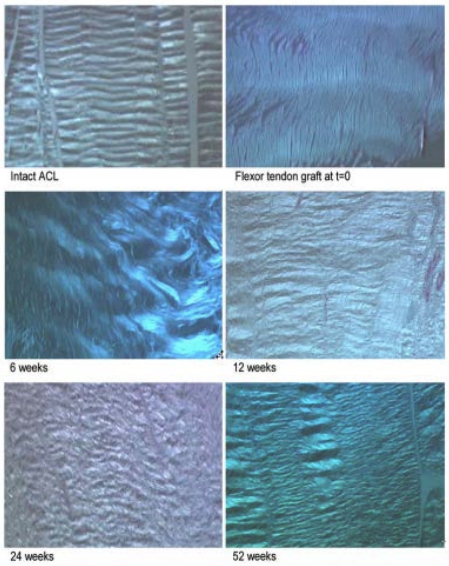
Graft Maturation

Same in humans as in animals

Occurs in humans over longer duration than observed in animals (longer remodeling phase)

Remodeling occurs around 12-24 months

Hewett et al., 2018
Scheffler et al., 2008



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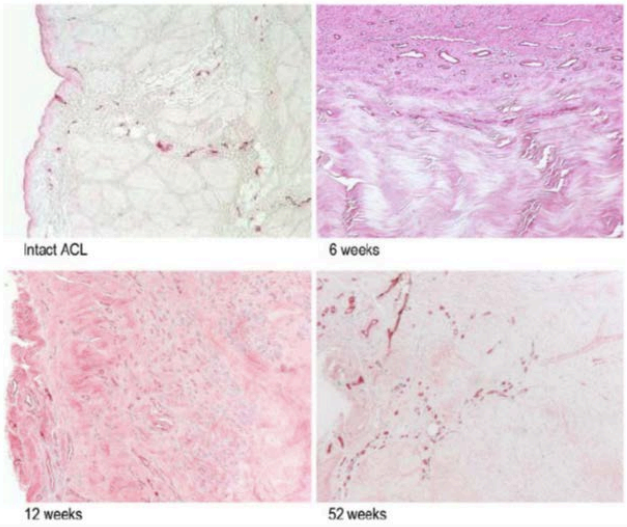
Graft Maturation

Revascularization

Assessed with MRI and transmission electron microscopy (TEM)

Closely resembled native ACL at 2 year follow up

Hewett et al., 2018
Scheffler et al., 2008



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Mechanoreceptors and Sensory Afferents

Hewett et al., 2018

- Native sensory function lost with ACL tear
  - *Not fully restored with ACLR*
- Compensation with extra-articular sensation
  - *Improvements up to 24 months*
- Limited evidence that proprioceptive function can be fully restored to baseline levels
- Limited evidence if current testing suggestive of adversely affected function

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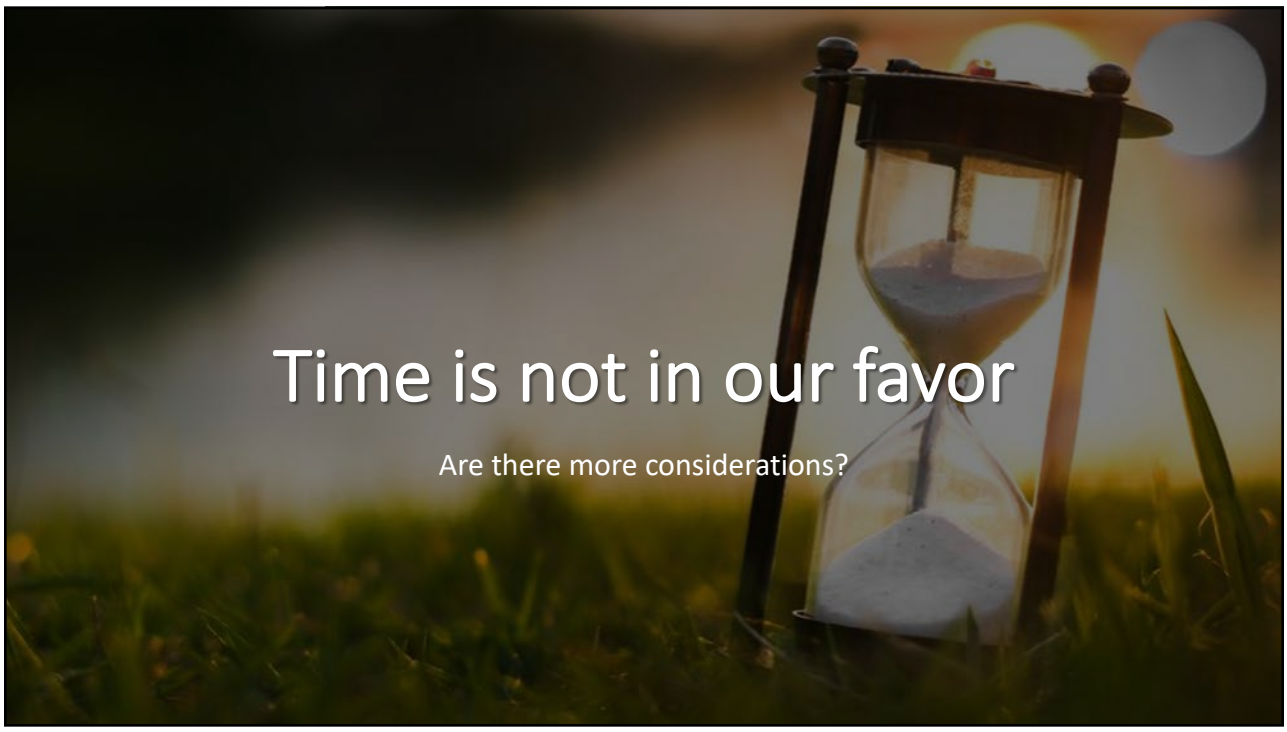
Time is not in our favor
Are there more considerations?

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Criterion & Time-Based Rehab:
They Go Hand-in-Hand

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What Do Athletes Need to Successfully Return to Sport?

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What Do Athletes Need to Successfully Return to Sport?

- Foundational Movement
- Jumping Mechanics
- Strength
- Power
- Agility & Cutting
- Psychological Readiness

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What Do Athletes Need to Successfully Return to Sport?

Foundational Movement: "Ticket to Entry"	How will I ensure the athlete is safe to test?
Jumping Mechanics	Are there standardized assessments?
Strength	How good is my MMT anyway?
Power	Symmetrical?
Agility & Cutting	This is key, but how do I measure?
Psychological Readiness	The body is ready, but is the brain?

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How Will We Measure This?

"Ticket to Entry"	Knee & ankle ROM, FMS, YBT, SLS
Jumping Mechanics	TJA, LESS
Strength	Isokinetic testing
Power	Hop testing
Agility & Cutting	Trazer LAS, Flanker, Reactive Agility Test
Psychological Readiness	ACL RSI, IKDC

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Ticket to Entry

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ROM

Open & Closed Chain

- Hip
- Knee
- Ankle

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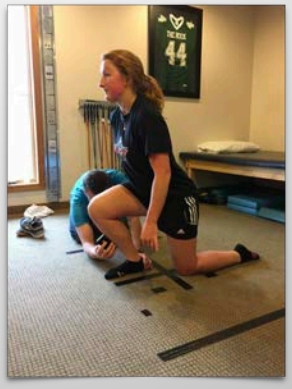
Closed Chain Dorsiflexion

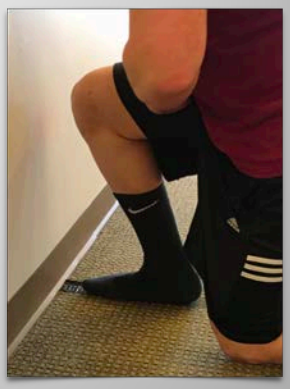
Restricted dorsiflexion range of motion (ROM) is associated with greater knee valgus displacement during landing and squatting tasks.

Abnormal

<35 degree TSA

<9-10cm toes to wall





Fong et al., 2011

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Functional Movement: YBT

Cut Scores

4/6/6 cm

or

M2P

72

Functional Movement Screen

Underlying assumptions
Concept
Target population

73

Functional Movement: FMS

Cut Scores

≥ 14 overall

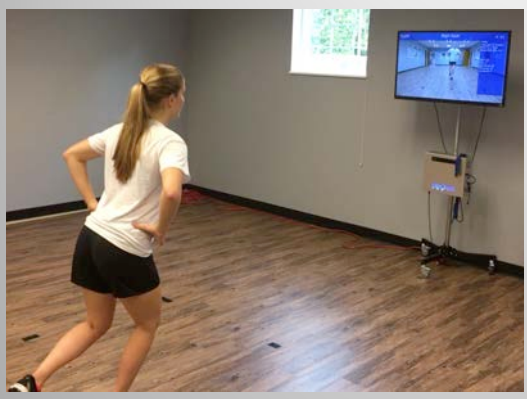
No side to side discrepancies

No 1's or 0's

Kiesel et al., 2007
Chorba et al., 2010

74

Functional Movement: Single Leg Squat



Cut Scores

Valgus ≤5 degrees

TRAZER®

75

Functional Movement: Single Leg Squat

Single-Leg Squat Grading Criteria[a]

1. Ipsilateral trunk lean
2. Pelvic tilt
3. Hip adduction or internal rotation
4. Dynamic knee valgus
5. Loss of balance

[a]A good rating requires the absence of all 5 criteria in 2 of 3 trials. Otherwise, it was considered a poor result.

Hall et al., 2015

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~~Ticket to Entry~~	~~Knee and ankle ROM, FMS, YBT~~
Jumping Mechanics	~~TJA, LESS~~
~~Strength~~	~~Isokinetic testing~~
~~Power~~	~~Hop testing~~
Agility & Cutting	Trazer LAS, Flanker, Reactive Agility
Psychological Readiness	ACL RSI, IKDC

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Functional Movement: Tuck Jump Assessment

10 seconds
10 errors (binary scoring)
Maximum effort
Reliability (inter/intra)

Dudley et al., 2013

78

Tuck Jump Assessment	Pre	Mid	Post	Comments
Knee and Thigh Motion				
(1) Lower extremity valgus at landing	❑	❑	❑	
(2) Thighs do not reach parallel (peak of jump)	❑	❑	❑	
(3) Thighs not equal side-to-side (during flight)	❑	❑	❑	
Foot Position During Landing				
(4) Foot placement not shoulder width apart	❑	❑	❑	
(5) Foot placement not parallel (front to back)	❑	❑	❑	
(6) Foot contact timing not equal	❑	❑	❑	
7. Excessive landing contact noise	❑	❑	❑	
Plyometric Technique				
8. Pause between jumps	❑	❑	❑	
9. Technique declines prior to 10 seconds	❑	❑	❑	
10. Does not land in same footprint (excessive in-flight motion)	❑	❑	❑	
	Total ____	Total ____	Total ____	

Myer et al., 2008

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Functional Movement: Tuck Jump Assessment

Cut Score

≤3 errors

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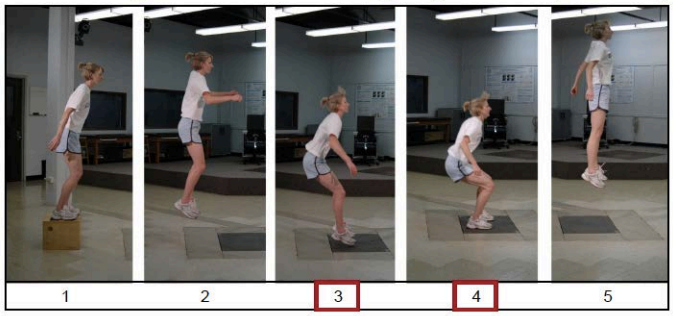
Functional Movement: Landing Error Scoring System



Drop height: 30cm

Horizontal distance: 50% body height

Jump for maximum vertical height after landing

Focus on initial landing and max knee flexion

Quantify the number of movement errors

Padua et al., 2010

81

Original 17 item LESS

1. **Knee Flexion @ Initial Contact: > 30 degrees**
   ____ Yes (0)
   ____ No (+1)
2. **Knee Valgus @ Initial Contact: Knees over midfoot**
   ____ Yes (0)
   ____ No (+1)
3. **Hip Flexion @ Initial Contact: Hips are flexed**
   ____ Yes (0)
   ____ No (+1)
4. **Trunk Flexion @ Initial Contact: Trunk is flexed**
   ____ Yes (0)
   ____ No (+1)
5. **Lateral Trunk Flexion @ Initial Contact: Trunk is vertical**
   ____ Sternum centered over hips (0)
   ____ Lateral deviation of sternum over hips (+1)
6. **Ankle Plantar Flexion @ Initial Contact: Toe to heel**
   ____ Yes (0)
   ____ No (+1)
7. **Foot Position @ Initial Contact: Toes > 30 of ER**
   ____ Yes (+1)
   ____ No (0)
8. **Foot Position @ Initial Contact: Toes > 30 of IR**
   ____ Yes (+1)
   ____ No (0)
9. **Stance Width @ Initial Contact:< Shoulder width**
   ____ Yes (+1)
   ____ No (0)
10. **Stance Width @ Initial Contact:> Shoulder width**
    ____ Yes (+1)
    ____ No (0)
11. **Initial Foot Contact: Symmetric**
    ____ Yes (+0)
    ____ No (+1)
12. **Knee Flexion Displacement: > 45 degrees**
    ____ Yes (0)
    ____ No (+1)
13. **Knee Valgus Displacement: ≥ great toe**
    ____ Yes (+1)
    ____ No (0)
14. **Hip Flexion Displacement: Hips flex more than at initial contact**
    ____ Yes (0)
    ____ No (1)
15. **Trunk Flexion Displacement: Trunk flexes more than at initial contact**
    ____ Yes (0)
    ____ No (1)
16. **Joint Displacement (Sagittal Plane)**
    ____ Soft (0)
    ____ Average (+1)
    ____ Stiff (+2)
17. **Overall Impression**
    ____ Excellent (0)
    ____ Average (+1)
    ____ Poor (+2)

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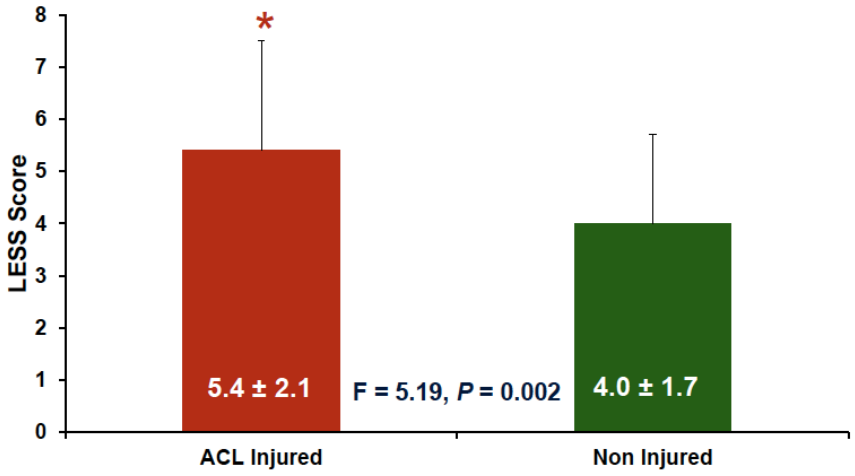
Pre-Season LESS Scores Predict ACL Tears



Padua et al., 2010

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Functional Movement: Landing Error Scoring System

Cut Score

≤5 overall

Sensitivity: 86%

Specificity: 64%

Padua et al., 2015

84

~~Ticket to Entry~~	~~Knee and ankle ROM, FMS, YBT~~
~~Jumping Mechanics~~	~~TJA, LESS~~
Strength	Isokinetic testing
Power	Hop testing
Agility & Cutting	Trazer LAS, Flanker, Reactive Agility
Psychological Readiness	ACL RSI, IKDC

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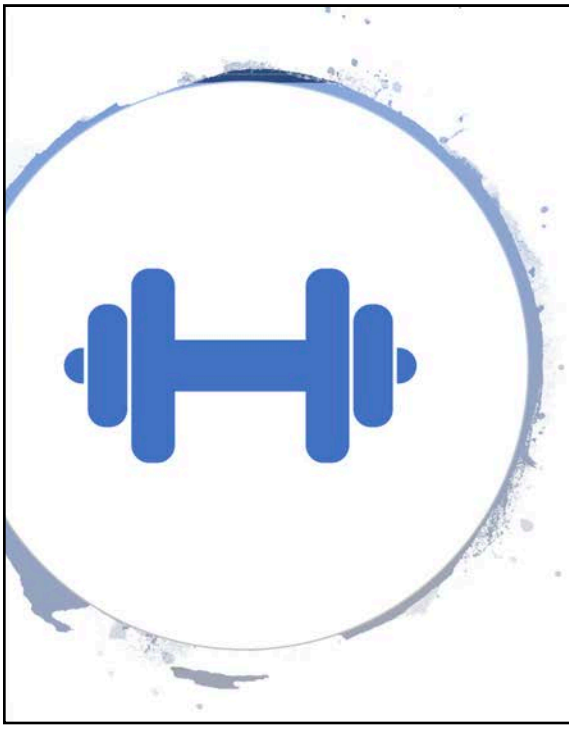

Quad Strength

Quad strength deficits with BPTB autograft exists up to 2 years

24 months shows nearly symmetrical knee extensor and flexor strength measurements

Marked improvement in extensor strength to symmetrical at 2 years post-operatively

Quad strength deficits resulted in worse functional outcomes at minimum of 1 year

Hewett et al., 2018
van Melick., 2016

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Strength: Isokinetic Testing

Peak Torque:
Flexion and Extension
90 deg/sec and 240 deg/sec

Time to Peak Torque:
Flexion & Extension
90 deg/sec and 240 deg/sec

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~~Ticket to Entry~~	~~Knee and ankle ROM, FMS, YBT~~
~~Jumping Mechanics~~	~~TJA, LESS~~
~~Strength~~	~~Isokinetic testing~~
Power	Hop testing
Agility & Cutting	Trazer LAS, Flanker, Reactive Agility
Psychological Readiness	ACL RSI, IKDC

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Power: Standard Hop Testing

Standard Procedures

2 practice, 1 measure

Measure from heel

Stick landing ≥2 sec

Cut Score

≥97% Limb Symmetry

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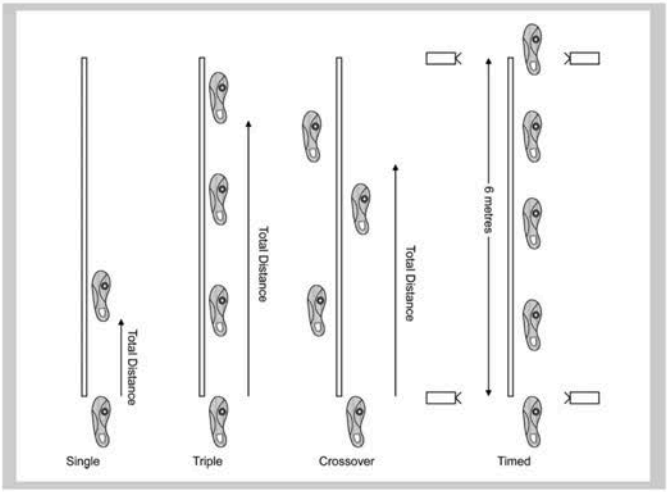

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Power: Hop and Stop Test

	Hop Left (m)	Hop Right (m)	Leap Onto Left (m)	Leap Onto Right (m)
Trial 1				
Trial 2				
Trial 3				

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~~Ticket to Entry~~	~~Knee and ankle ROM, FMS, YBT~~
~~Jumping Mechanics~~	~~TJA, LESS~~
~~Strength~~	~~Isokinetic testing~~
~~Power~~	~~Hop testing~~
Agility & Cutting	Trazer LAS, Flanker, Reactive Agility
Psychological Readiness	ACL RSI, IKDC

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Lateral Agility Screen

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Flanker Test

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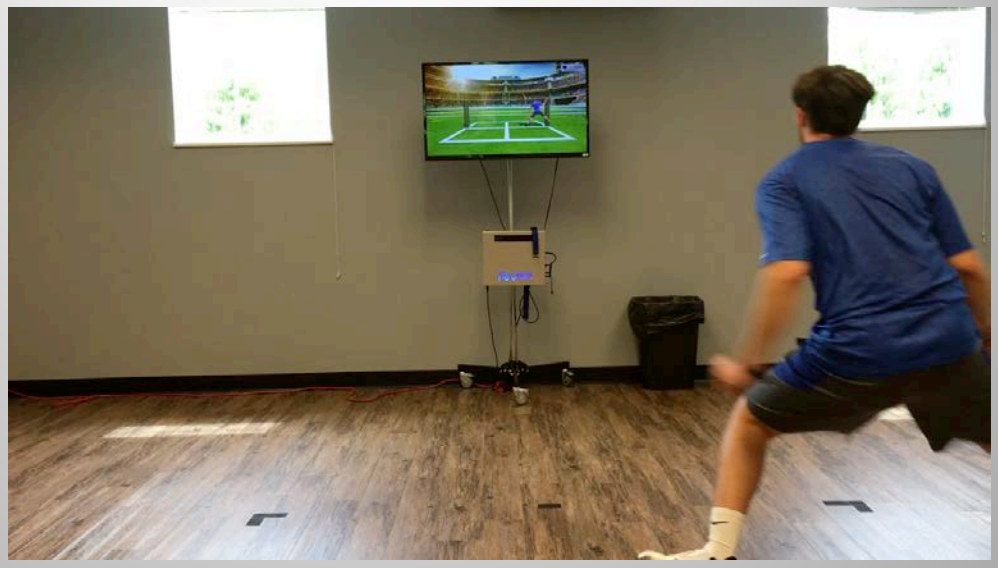

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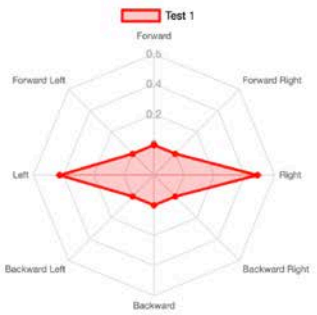
Trazer Interpretation

Acceleration
Deceleration
Speed
Reaction Time

Reaction Time (s)	Test 1
Forward	--
ForwardRight	--
Right	0.4372
BackwardRight	--
Backward	--
BackwardLeft	--
Left	0.3836
ForwardLeft	--
L/R Difference	13.97 % L



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Reactive Agility Test

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Reactive Agility Test

See rubric in handouts

Combination of speed and mechanics

	Criterion	Scoring	Score	
	Limb Symmetry Index	LSI 95-100%: 0 LSI 90-94%: 1 LSI 85-90%: 2 LSI <84%: 3	See Above	
Sagittal Plane	Knee Flexion	*Knee flexed less than 30 degrees at initial contact* *1 = present* *0 = absent*	Left	Right
Sagittal Plane	Hip Hinge	*The trunk is upright and lacks a posterior hip hinge at initial contact* *1 = present* *0 = absent*	Left	Right
Sagittal Plane	Foot Contact	*Initial contact of plant foot on flatfoot or rearfoot* *1 = present* *0 = absent*	Left	Right
Frontal Plane	Plant Limb Knee Abduction	*The plant knee is medial to the foot with >10 degrees knee abduction at initial contact* *1 = present* *0 = absent*	Left	Right
Frontal Plane	Plant Contact	*1 = soft* *0 = firm*	Left	Right
Frontal Plane	Plant Stance Width	*The plant foot is narrower than shoulder width at initial contact* *1 = present* *0 = absent*	Left	Right
Frontal Plane	Pelvic Rotation	*Lacks initiation of pelvic rotation towards target after initial contact* *1 = present* *0 = absent*	Left	Right
	Combined Total Score			

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~~Ticket to Entry~~	~~Knee and ankle ROM, FMS, YBT~~
~~Jumping Mechanics~~	~~TJA, LESS~~
~~Strength~~	~~Isokinetic testing~~
~~Power~~	~~Hop testing~~
~~Agility & Cutting~~	~~Trazer LAS, Flanker, Reactive Agility~~
Psychological Readiness	ACL RSI, IKDC

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Psychologic Readiness

Fear of reinjury and decreased confidence related to athletic ability or performing sport-specific tasks

Younger patients with lower psychological readiness are at higher risk for a second ACL injury after return to sport

Meierbachtol et al., 2018
McPherson et al., 2019

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Psychologic Readiness

ACL Return to Sport after Injury (ACL-RSI)

Knee Self-Efficacy Scale (K-SES)

Injury Psychological Readiness to Return to Sport Scale

1. I'm afraid that I might injury myself if I exercise	1	2	3	4
2. If I were to try to overcome it, my pain would increase	1	2	3	4
3. My body is telling me I have something dangerously wrong	1	2	3	4
4. My pain would probably be relieved if I were to exercise	1	2	3	4
5. People aren't taking my medical condition seriously enough	1	2	3	4
6. My accident has put my body at risk for the rest of my life	1	2	3	4
7. Pain always means I have injured my body	1	2	3	4
8. Just because something aggravates my pain does not mean it is dangerous	1	2	3	4
9. I am afraid that I might injure myself accidentally	1	2	3	4
10. Simply being careful that I do not make any unnecessary movements is the safest thing I can do to prevent my pain from worsening	1	2	3	4
11. I wouldn't have this much pain if there weren't something potentially dangerous going on in my body	1	2	3	4
12. Although my condition is painful, I would be better off if I were physically active	1	2	3	4
13. Pain lets me know when to stop exercising so that I don't injure myself	1	2	3	4
14. It's really not safe for a person with a condition like mine to be physically active	1	2	3	4
15. I can't do all the things normal people do because it's too easy for me to get injured	1	2	3	4
16. Even though something is causing me a lot of pain, I don't think it's actually dangerous	1	2	3	4
17. No one should have to exercise when he/she is in pain	1	2	3	4

Tampa Scale of Kinesiophobia (TSK-11)

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Is There More to the Story?

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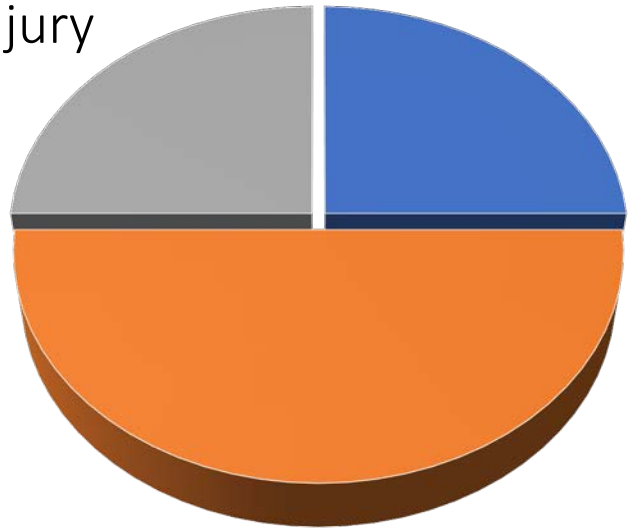
Biggest Predictors of Injury

- Previous ACL Tear
- Modifiable Risk Factors
- Non-modifiable risk factors



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Non-Modifiable Risk Factors

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An Uphill Battle

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Going Against the Grain

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What Can You Support?

"Ticket to Entry"	Knee & ankle ROM, FMS, YBT, SLS	✓
Jumping Mechanics	TJA, LESS	✓
Strength	Isokinetic testing	→ Consider partnerships with Universities and clinics
Power	Hop testing	✓
Agility & Cutting	Trazer LAS, Flanker, Reactive Agility	→ Stopwatch for RAT. T-Test, Illinois Agility & Pro Agility Test for Trazer.
Psychological Readiness	ACL RSI, IKDC	✓

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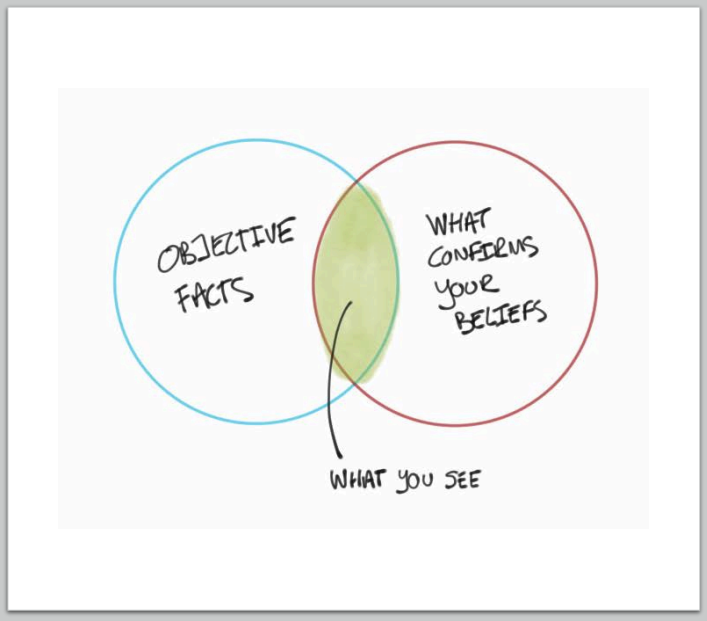
Specialized RTS Testing Facilities

Leniency Bias

Halo Effect

Objective test battery

Clinicians familiar with RTS testing



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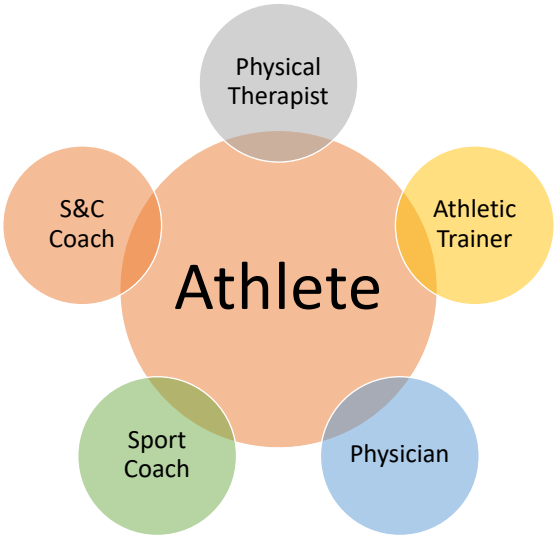
We Can't Do This Alone



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There is No Way Around It

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Please take this with you…

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- TAKE A HARD LOOK AT THE EVIDENCE, NOT TRADITION OR EMOTION
- WHAT WE ARE DOING ISN'T WORKING
- OUR GOAL ISN'T TO RETURN SOMEONE TO THEIR PRE-INJURY STATUS
- RETURN TO SPORT TESTING MUST BE ROBUST AND MULTIFACTORIAL
- MAKE IT HAPPEN OR SHIP EM' OUT
- IT TAKES A TEAM

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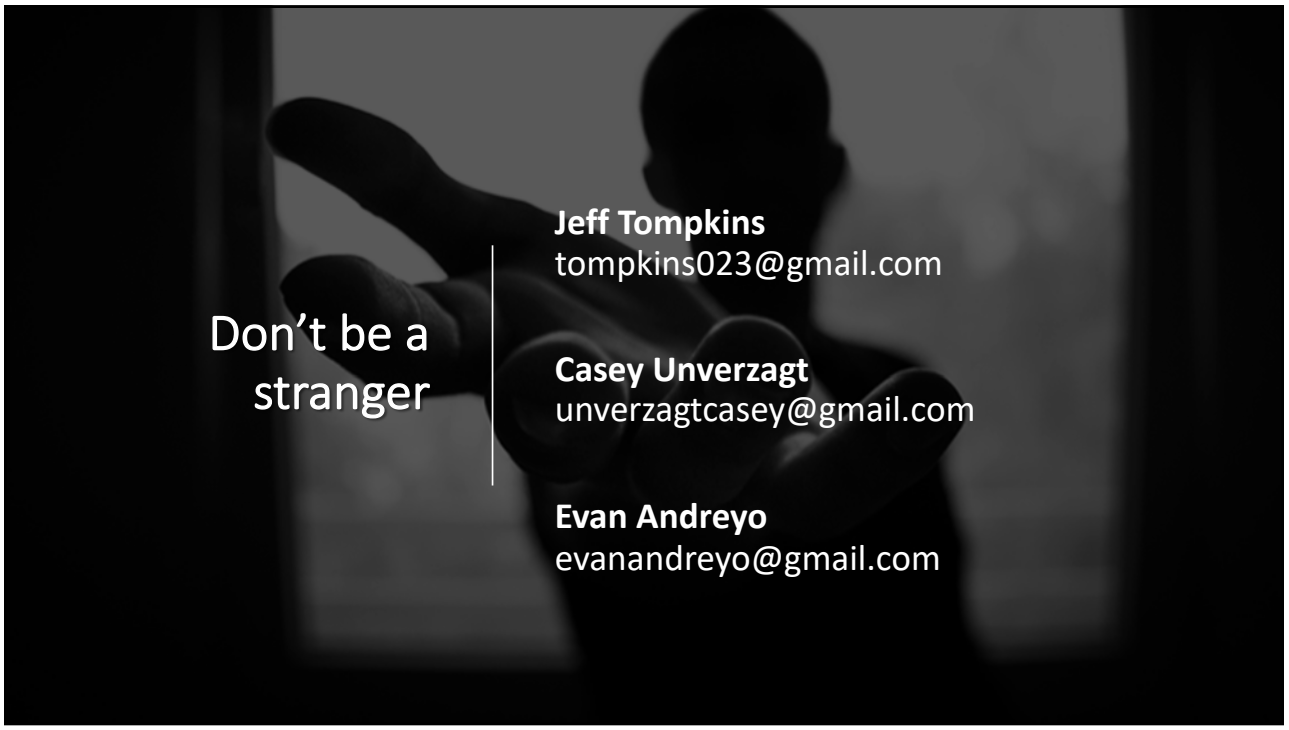

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