Four key facts to share for return to sport decision-making after ACL injury

Dr. Clare Ardern
Karolinska Institute, Sweden
@clare_ardern @JOSPT
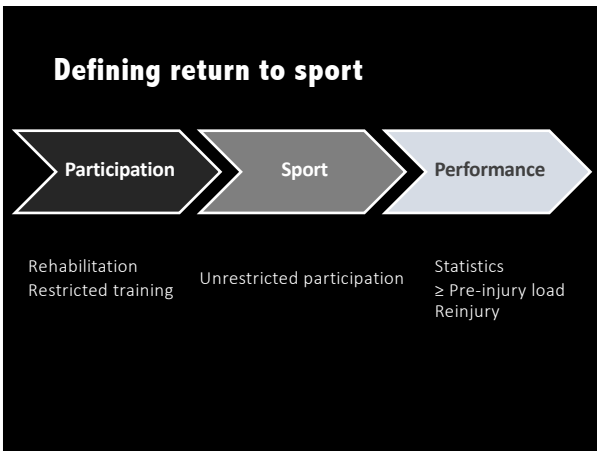

@SportfisioSwiss   @IntFSPT   @BJSM_BMJ

2016 Consensus statement on return to sport from the First World Congress in Sports Physical Therapy, Bern

Clare L Ardern,[1,2,3] Philip Glasgow,[4,5] Anthony Schneiders,[6] Erik Witvrouw,[1,7] Benjamin Clarsen,[8,9] Ann Cools,[7] Boris Gojanovic,[10,11] Steffan Griffin,[12] Karim M Khan,[13] Håvard Moksnes,[8,9] Stephen A Mutch,[14,15] Nicola Phillips,[16] Gustaaf Reurink,[17] Robin Sadler,[18] Karin Grävare Silbernagel,[19] Kristian Thorborg,[20,21] Arnlaug Wangensteen,[1,8] Kevin E Wilk,[22] Mario Bizzini[23]

FREE!

Outline

1. Return to sport **definition**

2. Four key facts about return to sport

Defining return to sport

Participation → Sport → Performance

Rehabilitation
Restricted training

Unrestricted participation

Statistics
≥ Pre-injury load
Reinjury

Return to sport 🤔 🤯

Return to any sport

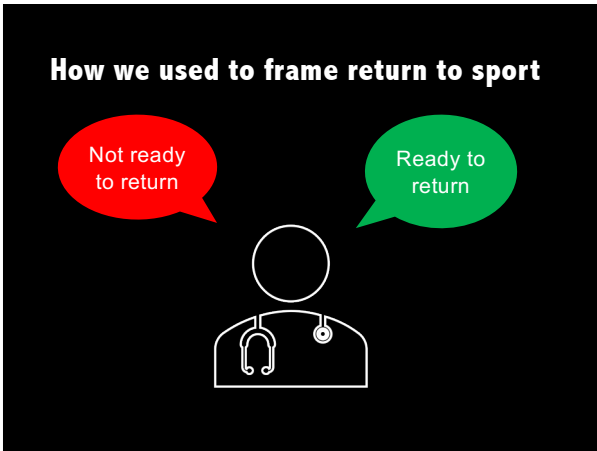**Return to competitive sport**

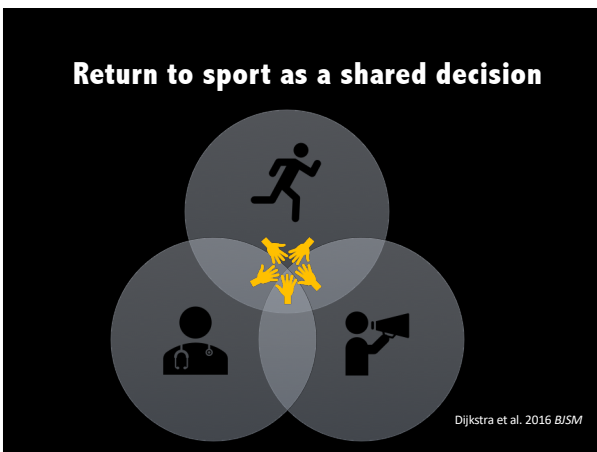**Return to preinjury (level) sport**
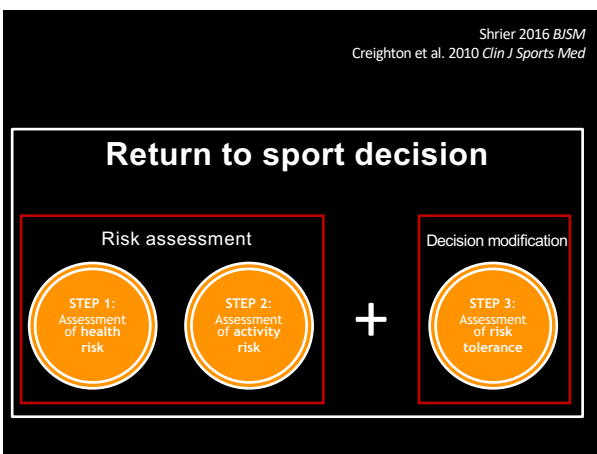
Return to preinjury competitive sport

Successful return to sport?

➢ Is it about the individual performance?

➢ Is it about the best result for the team?

➢ Is it about staying healthy?

How we used to frame return to sport

Return to sport as a shared decision

Dijkstra et al. 2016 *BJSM*

Shrier 2016 *BJSM*
Creighton et al. 2010 *Clin J Sports Med*

Return to sport decision

Risk assessment

STEP 1: Assessment of **health risk**

STEP 2: Assessment of **activity risk**

+

Decision modification

STEP 3: Assessment of risk tolerance

STEP 1: Assessment of **health risk**

Age

Quadriceps strength

Knee/hip control

Past history of injury

Wiggins et al. *AJSM* 2016
Kyritsis et al. *BJSM* 2016
Grindem et al. *BJSM* 2016
Paterno *J Athl Train* 2015

STEP 2: Assessment of **activity risk**

Pivoting sport

Return before 9 months

Hop test performance

Agility test performance

Grindem et al. *BJSM* 2016
Kyritsis et al. *BJSM* 2016

STEP 3: Assessment of **risk tolerance**

Promotion match

Champions League final

Pre-season friendly

Coach pressure

Four key facts about return to pivoting sports after ACL injury

1. ACL reconstruction ≠ return to sport

2. Not everyone returns to their preinjury sport

3. One in every four people will get a second ACL injury after returning to sport

4. Up to 80% of people may develop post-traumatic osteoarthritis within 15 years of injury

Fact #1:

ACL reconstruction ≠ return to sport
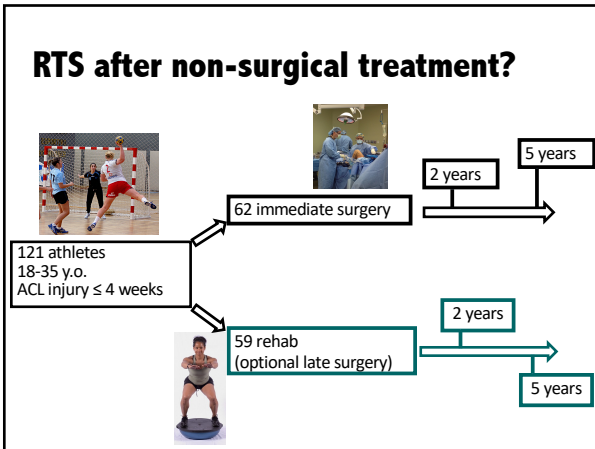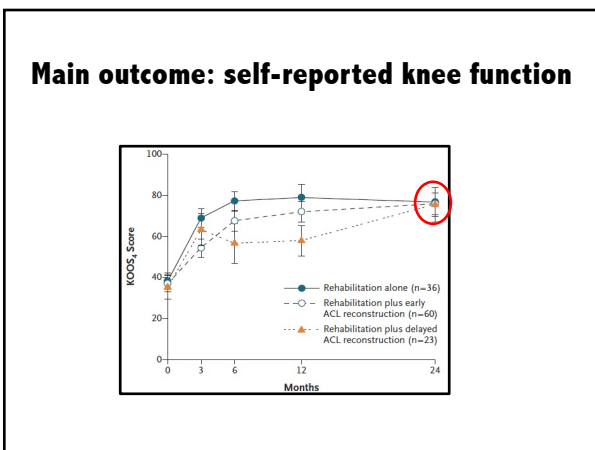
RTS after non-surgical treatment?

121 athletes
18-35 y.o.
ACL injury ≤ 4 weeks

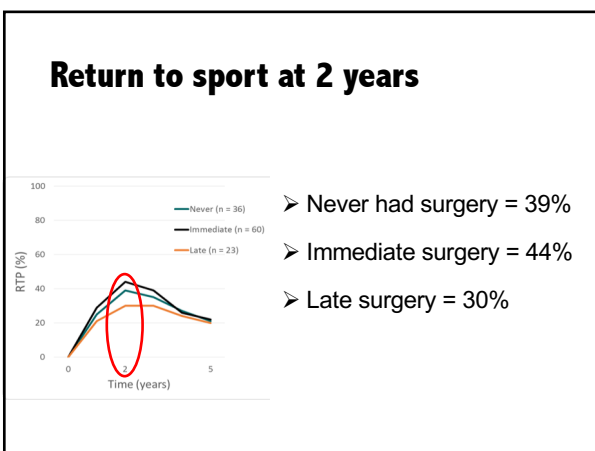**Average preinjury Tegner score = 9**

(contact, pivoting sports – competitive or recreational level)
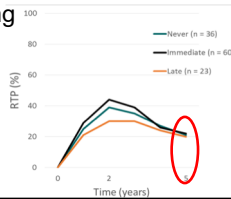
Frobell et al. 2010, 2013 *NEJM, BMJ*

RTS after non-surgical treatment?

121 athletes
18-35 y.o.
ACL injury ≤ 4 weeks

62 immediate surgery

2 years

5 years

59 rehab
(optional late surgery)

2 years

5 years

Main outcome: self-reported knee function

KOO5₄ Score

- Rehabilitation alone (n=36)
- Rehabilitation plus early ACL reconstruction (n=60)
- Rehabilitation plus delayed ACL reconstruction (n=23)

Months

Return to sport at 2 years

RTP (%)

Never (n = 36)
Immediate (n = 60)
Late (n = 23)

Time (years)

➢ Never had surgery = 39%

➢ Immediate surgery = 44%
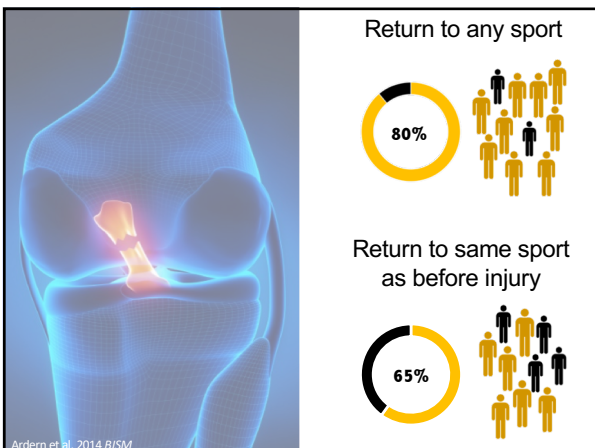
➢ Late surgery = 30%

And 3 years later...
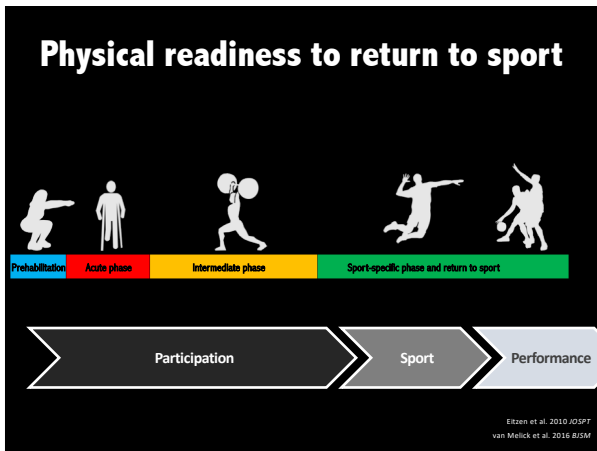
➢ Never had surgery = 21% still playing

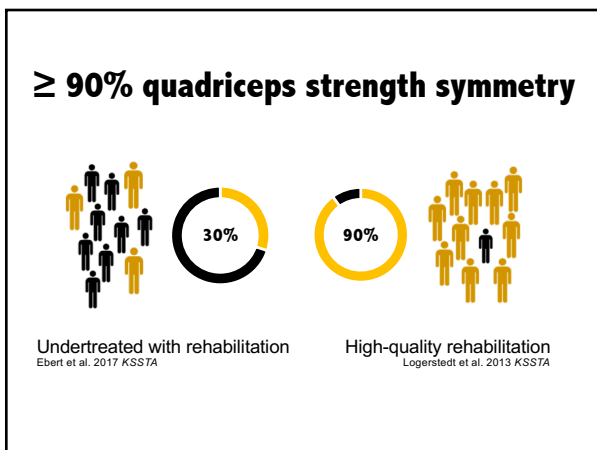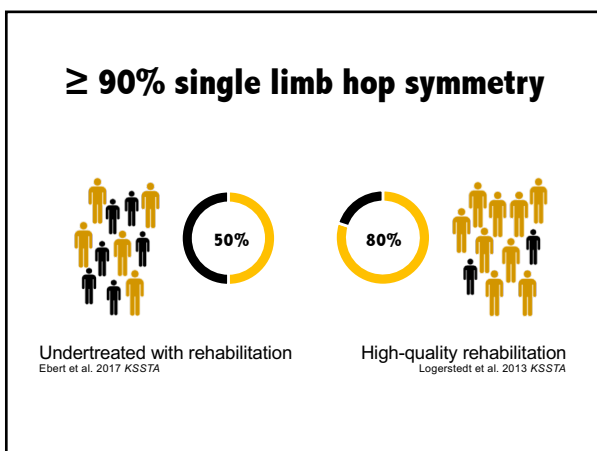➢ Immediate surgery = 22% still playing

➢ Late surgery = 20% still playing

Fact #2:

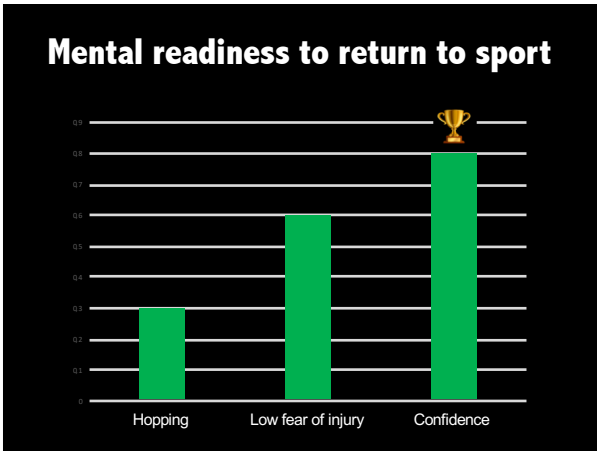Not everyone returns to their preinjury sport

---

Return to any sport

80%

Return to same sport as before injury

65%

Ardern et al. 2014 *BJSM*

Physical readiness to return to sport

Prehabilitation | Acute phase | Intermediate phase | Sport-specific phase and return to sport

Participation | Sport | Performance

Eitzen et al. 2010 *JOSPT*
van Melick et al. 2016 *BJSM*

≥ 90% quadriceps strength symmetry

30%

90%

Undertreated with rehabilitation
Ebert et al. 2017 *KSSTA*

High-quality rehabilitation
Logerstedt et al. 2013 *KSSTA*

≥ 90% single limb hop symmetry

50%

80%

Undertreated with rehabilitation
Ebert et al. 2017 *KSSTA*

High-quality rehabilitation
Logerstedt et al. 2013 *KSSTA*

2019-05-23

Mental readiness to return to sport

Time
- Minimum 9 months rehab
- Consider 12 months rehab for < 22 y.o.

Hop symmetry

Quadriceps strength & symmetry

Mental readiness/confidence

On-field tests
- Agility/direction change
- Position-specific rehab

What does the research say?

Grindem et al. 2016 *BJSM*
Kyritsis et al. 2016 *BJSM*
Ardern et al. 2013 *AJSM*

Ready to return to sport?

5 recommendations

☞ Groups of tests that mimic the sport

☞ Open tasks (closed = secondary choice)

☞ Reactive decision making when fatigued

☞ Monitor workload

☞ Assess psychological factors

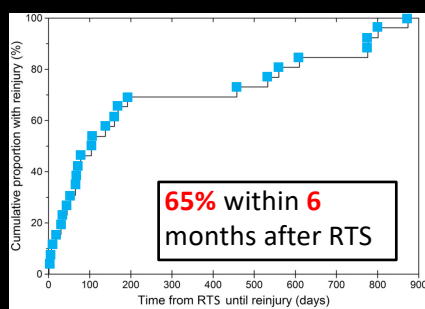Ardern et al. 2016 *BJSM*

9

Fact #3:
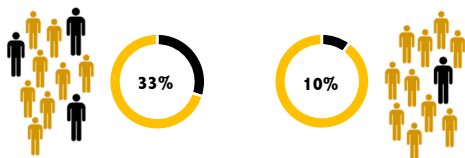
One in 4 will get a second ACL injury

Wiggins et al. 2016 *AJSM*

Staying healthy after return to sport

65% within **6** months after RTS

Kyritsis et al. 2016 *BJSM*

New ACL injuries after return to sport

33%

10%

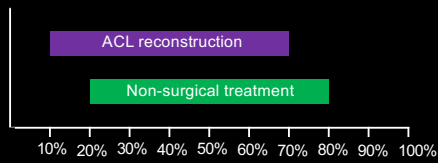Undertreated with rehabilitation
Kyritsis et al. 2016 *BJSM*

High-quality rehabilitation
Grindem et al. 2016 *BJSM*

Fact #4:

Up to 1 in 8 will develop osteoarthritis

Wiggins et al. 2016 *AJSM*

Prevalence of osteoarthritis

ACL reconstruction

Non-surgical treatment

10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

---

3 key points for ACL injury

➢ Not all players will return to sport

➢ Tailor return to play tests based on sport demands

➢ 1 in 4 athletes sustain a new injury

3 non-negotiable clinical criteria

1. Minimum 9 months before return to sport
2. Quadriceps strength and symmetry
3. Hop & agility performance

Grindem et al. 2016 *BJSM*

Free resources

British Journal of
Sports Medicine

Evidence-based clinical practice update: practice guidelines for anterior cruciate ligament rehabilitation based on a systematic review and multidisciplinary consensus

Nicky van Melick,[1,2] Robert E H van Cingel,[3,4] Frans Brooijmans,[5] Camille Neeter,[6] Tony van Tienen,[7] Wim Hullegie,[8] Maria W G Nijhuis-van der Sanden[1]

Free resources

British Journal of
Sports Medicine

2018 International Olympic Committee consensus statement on prevention, diagnosis and management of paediatric anterior cruciate ligament (ACL) injuries

Clare L Ardern,[1,2] Guri Ranum Ekås,[3,4,5] Hege Grindem,[6] Håvard Moksnes,[4] Allen F Anderson,[7] Franck Chotel,[8] Moises Cohen,[9] Magnus Forssblad,[10] Theodore J Ganley,[11] Julian A Feller,[12,13] Jón Karlsson,[14] Minider S Kocher,[15,16] Robert F LaPrade,[17,18] Michael McNamee,[19] Bert Mandelbaum,[20] Lyle Micheli,[15,16,21] Nicholas Mohtadi,[22] Bruce Reider,[23] Justin Roe,[24] Romain Seil,[25,26] Rainer Siebold,[27,28] Holly J Silvers-Granelli,[29] Torbjørn Soligard,[30,31] Erik Witvrouw,[32] Lars Engebretsen[3,4,5,30]