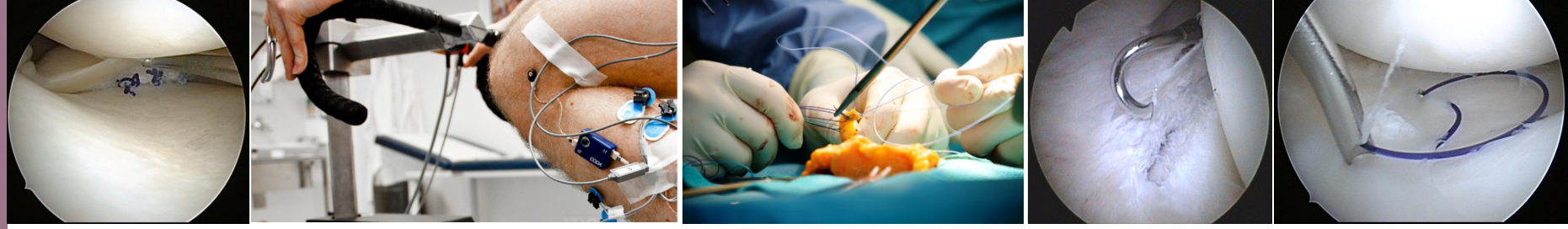

Val d'Isère, 01-2018

Midterm assessment after cartilage repair

Prof. Romain Seil, MD, PhD

Orthopaedic Surgery

Centre Hospitalier de Luxembourg

Sports Medicine Research Laboratory

Luxembourg Institute of Health

HEALTH TECHNOLOGY ASSESSMENT

VOLUME 21 ISSUE 6 FEBRUARY 2017
ISSN 1366-5278

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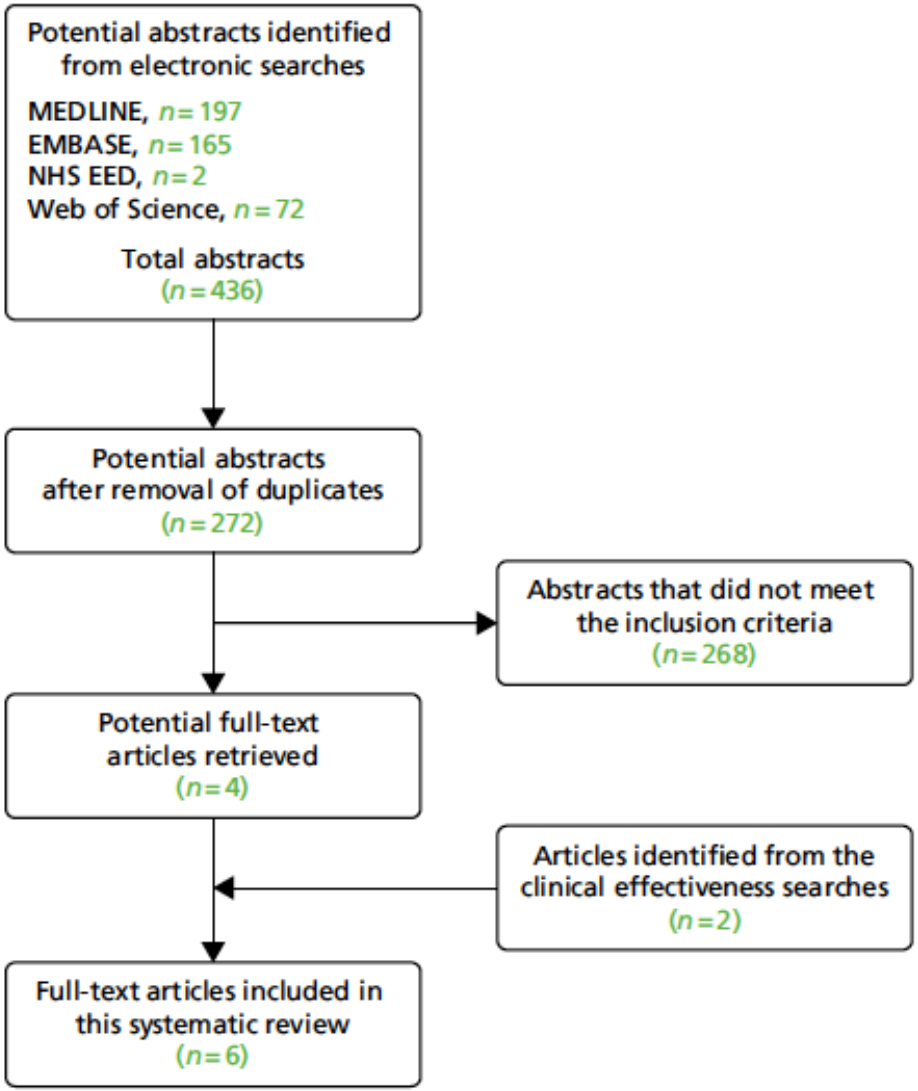
Autologous chondrocyte implantation in the knee: systematic review and economic evaluation

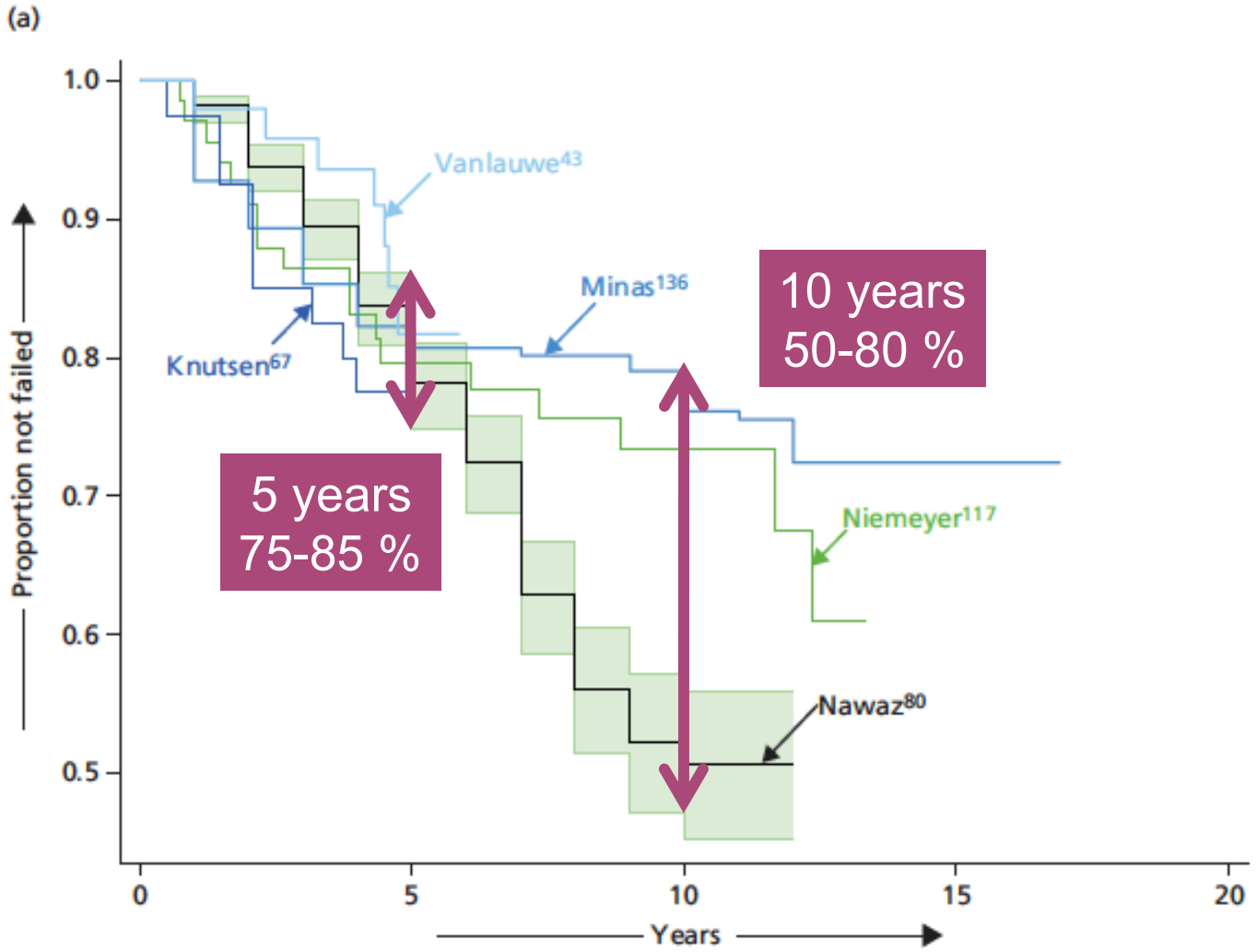
Hema Mistry, Martin Connock, Joshua Pink, Deepson Shyangdan, Christine Clar, Pamela Royle, Rachel Court, Leela C Biant, Andrew Metcalfe and Norman Waugh

Paucity of valid data



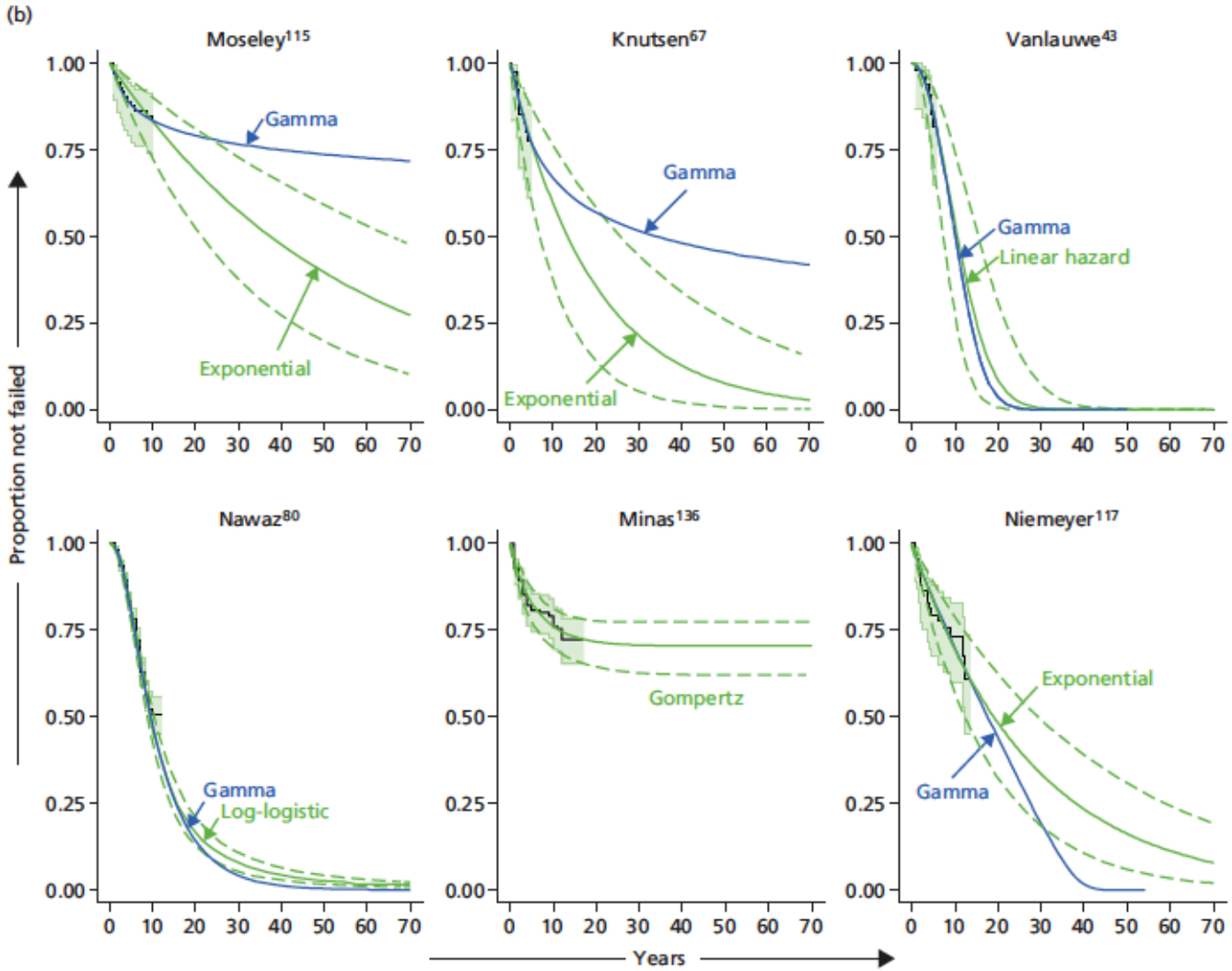
Mistry H, 2017

ACI survival curves



Mistry H, 2017

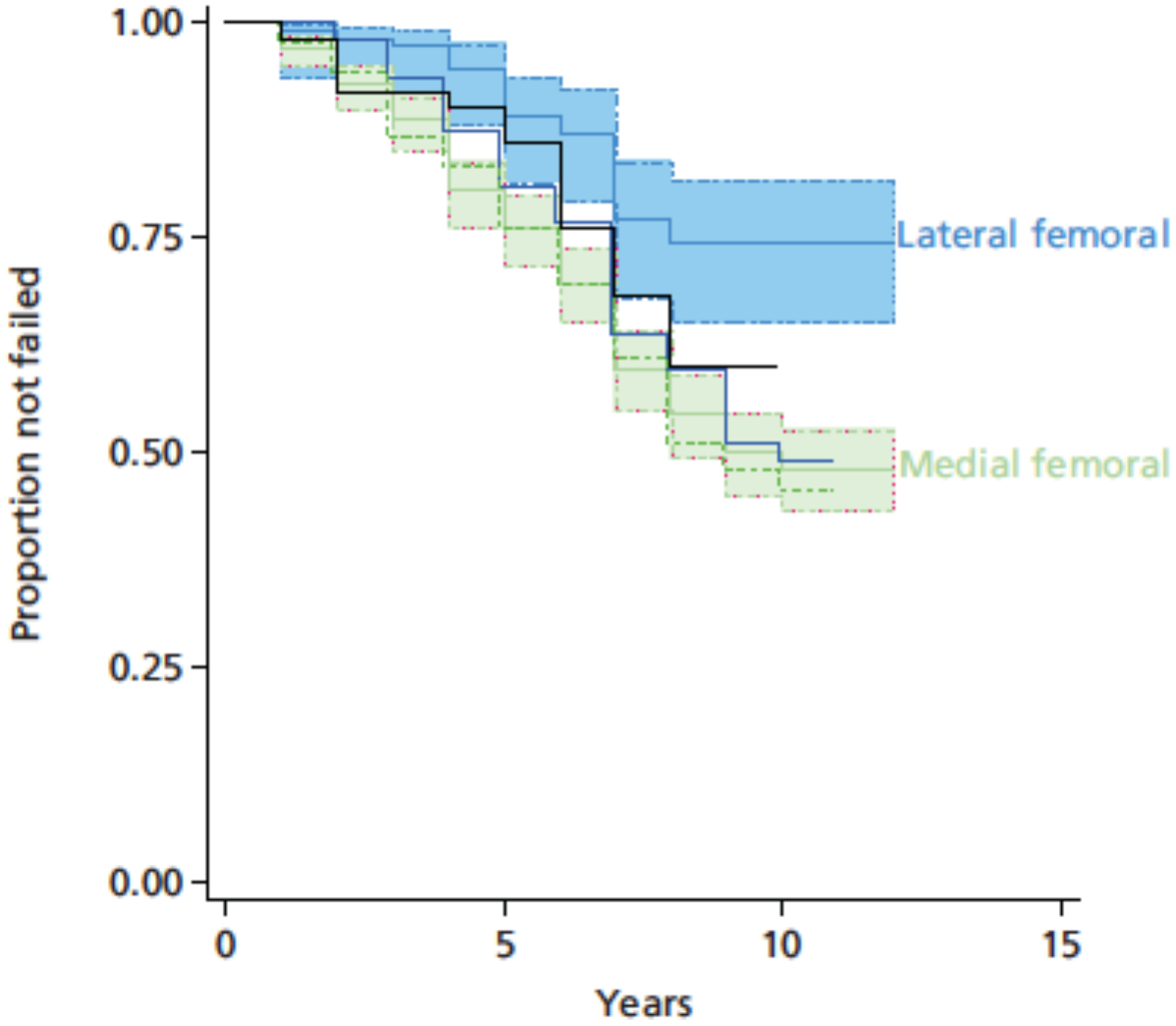
ACI survival curves



Heterogeneous predictions in long term

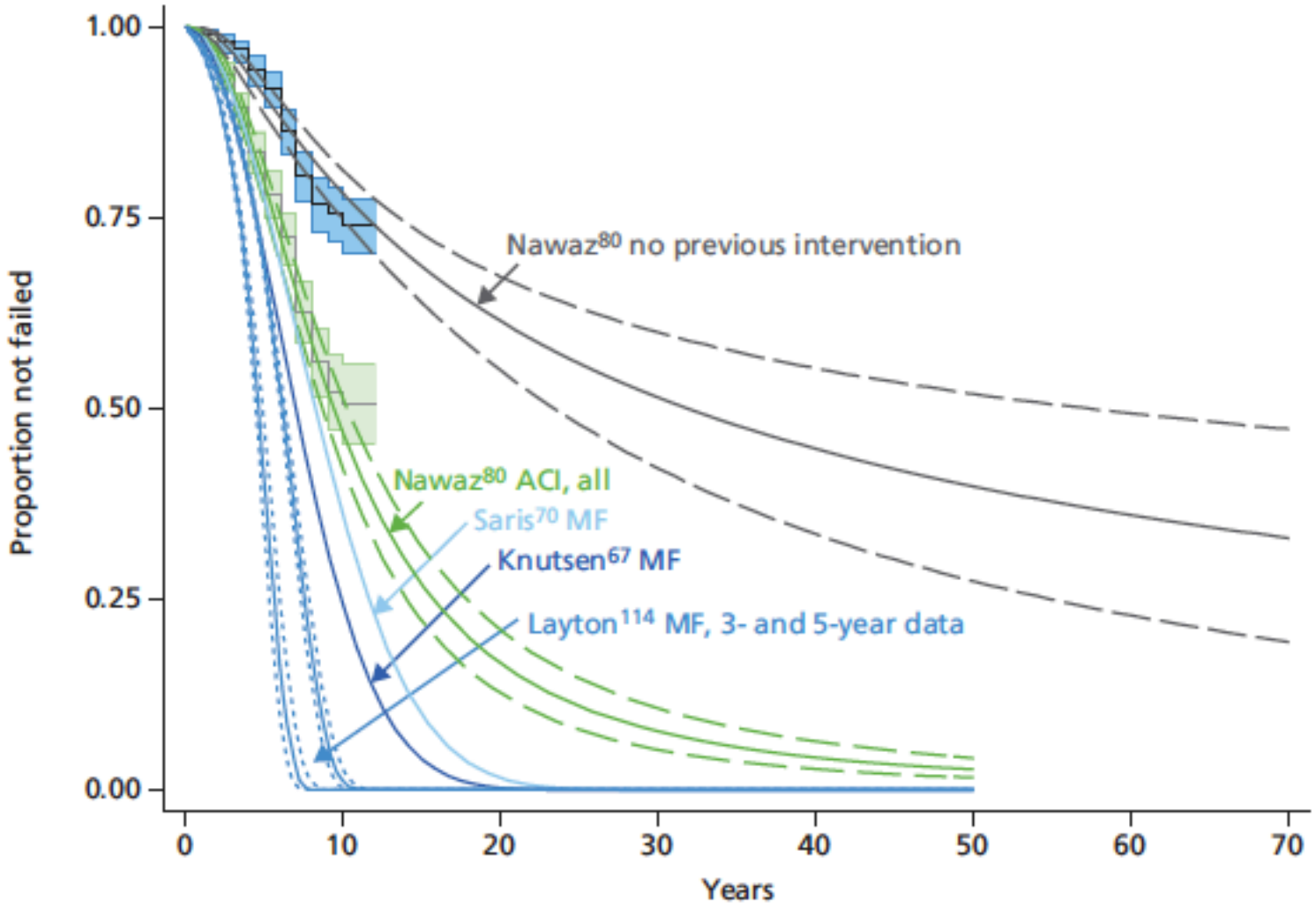
Mistry H, 2017

ACI survival curves



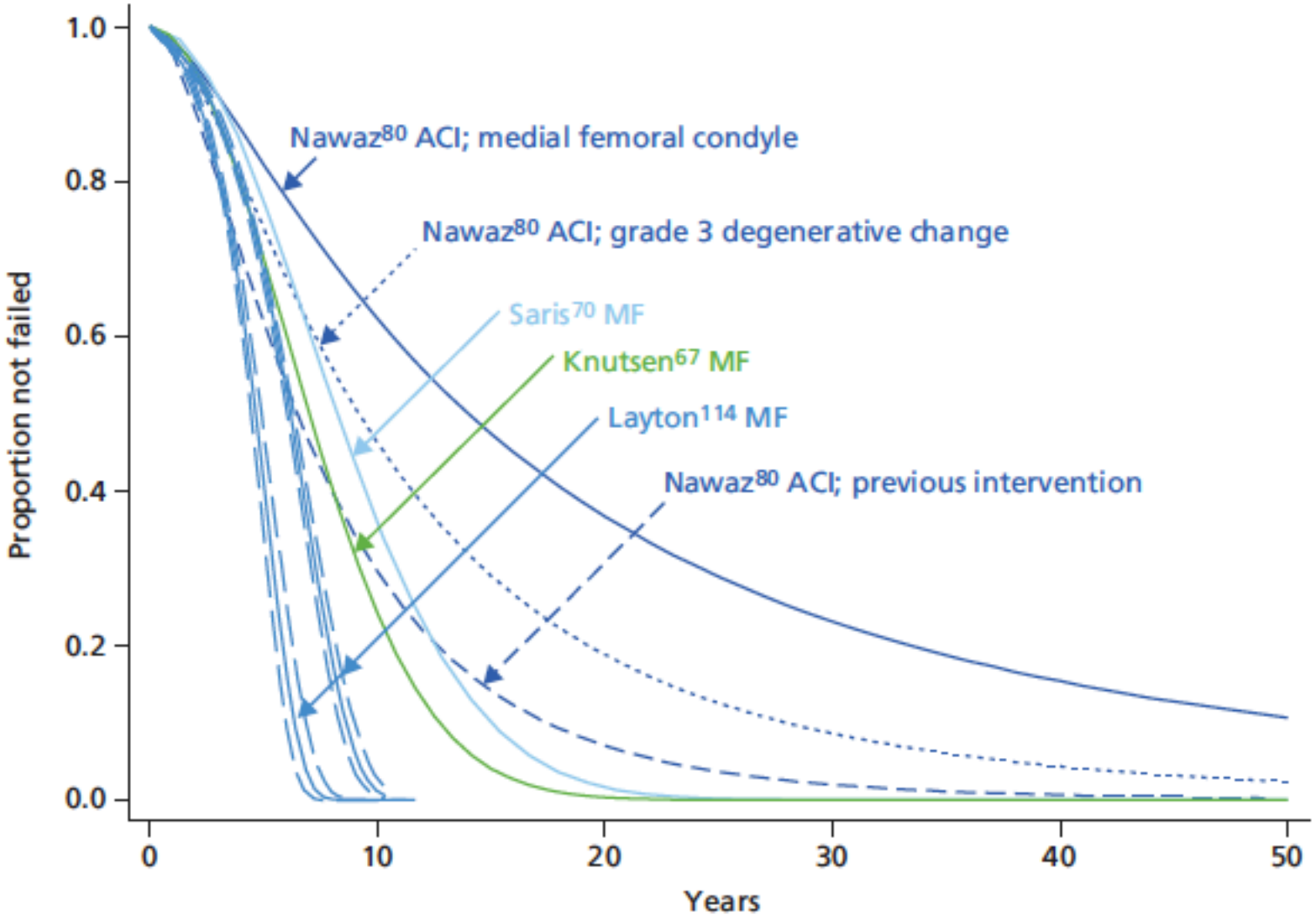
Nawaz SZ, JBJS-A 2014

ACI vs MF



Mistry H, 2017

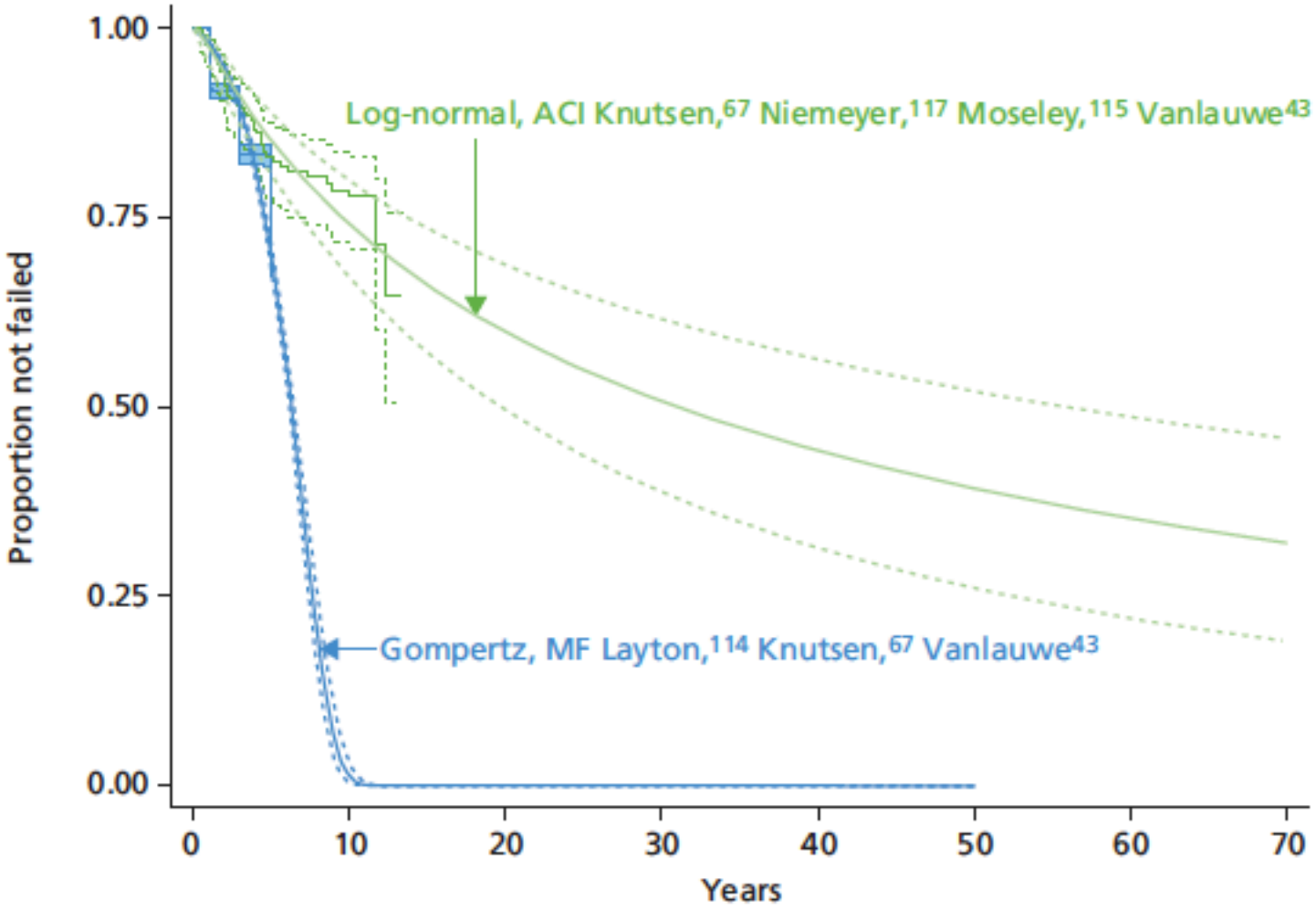
ACI vs MF



Mistry H, 2017

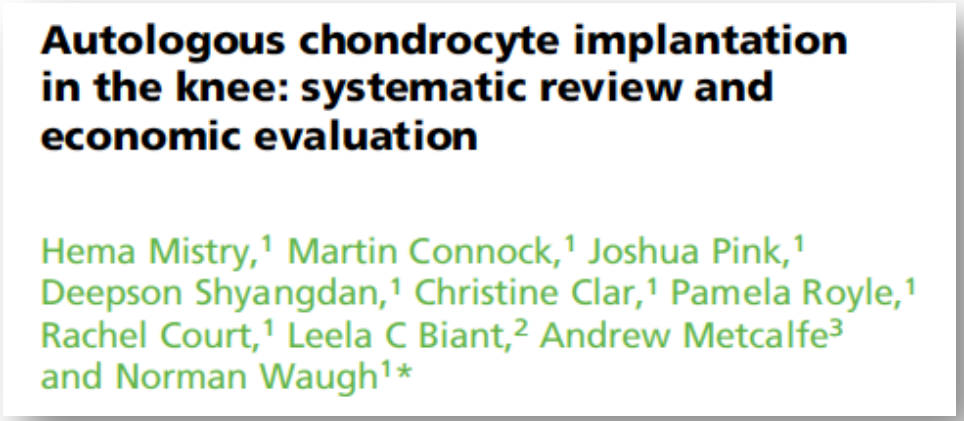
ACI vs MF

Pooled data



Mistry H, 2017

Summary



Autologous chondrocyte implantation in the knee: systematic review and economic evaluation

Hema Mistry,[1] Martin Connock,[1] Joshua Pink,[1] Deepson Shyangdan,[1] Christine Clar,[1] Pamela Royle,[1] Rachel Court,[1] Leela C Biant,[2] Andrew Metcalfe[3] and Norman Waugh[1]*

1. Evidence base for ACI has improved since last appraisal by National Institute for Health and Care Excellence.
2. Cost-effectiveness ratios for ACI compared with MF are acceptable.
3. Research is needed into long-term results of new forms of ACI.

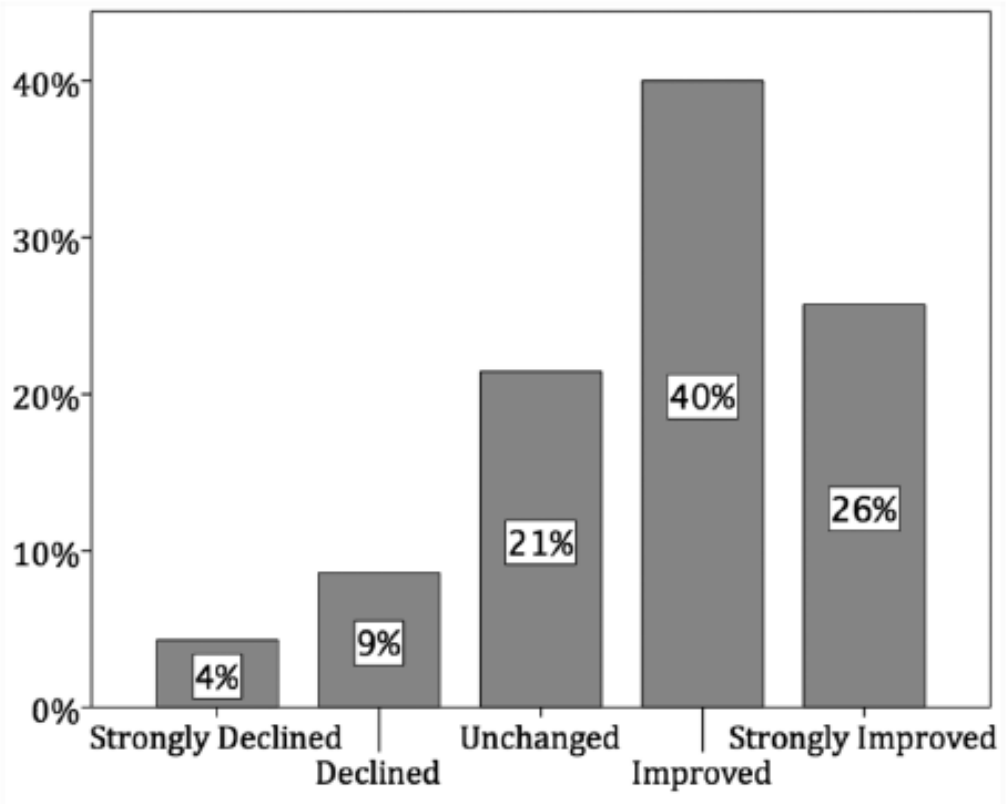
Mistry H, 2017

Sporting Activity Is Reduced 11 Years After First-Generation Autologous Chondrocyte Implantation in the Knee Joint

Benjamin Erdle,[*†] MD, Simon Herrmann,[†] MD, Stella Porichis,[†‡] MD, Markus Uhl,[§] MD, Nadir Ghanem,[§‖] MD, Hagen Schmal,[†¶] MD, Norbert Suedkamp,[†] MD, Philipp Niemeyer,[†#] MD, and Gian M. Salzmann,[†**††] MD
Investigation performed at the Department of Orthopedics and Trauma Surgery, University Medical Center Freiburg, Faculty of Medicine, Albert Ludwig University of Freiburg, Freiburg, Germany

Sports ?

Subjective sporting ability after surgery



Erdle B, AJSM 2017

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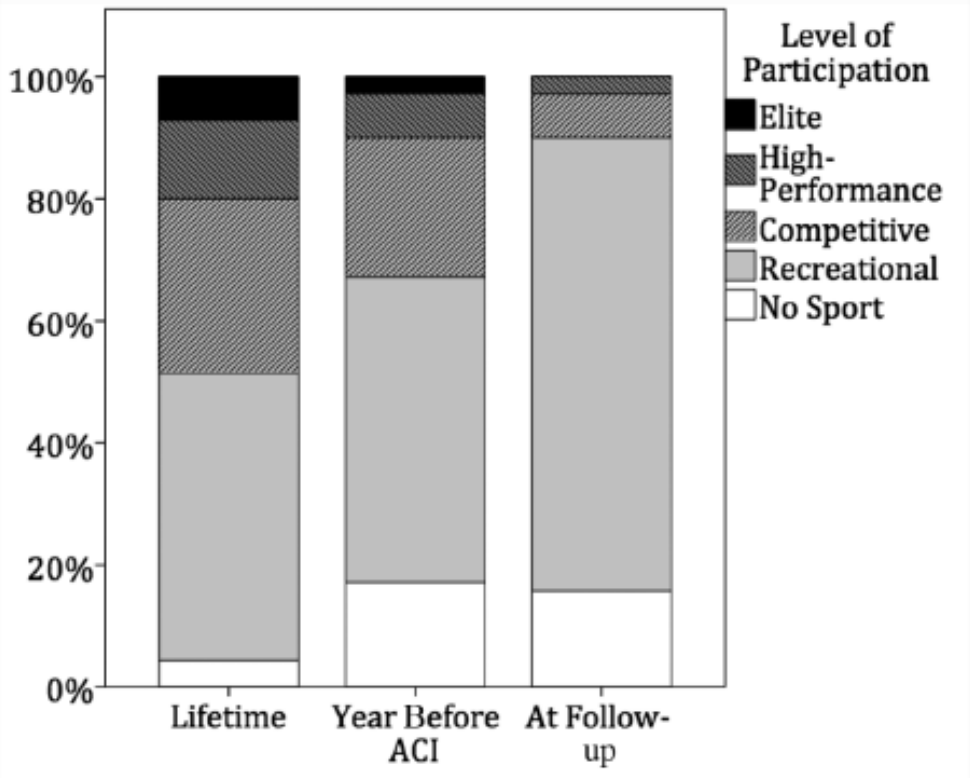
Sports ?

Level of participation



82,9 % of patients still active in sports after 10 years!

Erdle B, AJSM 2017

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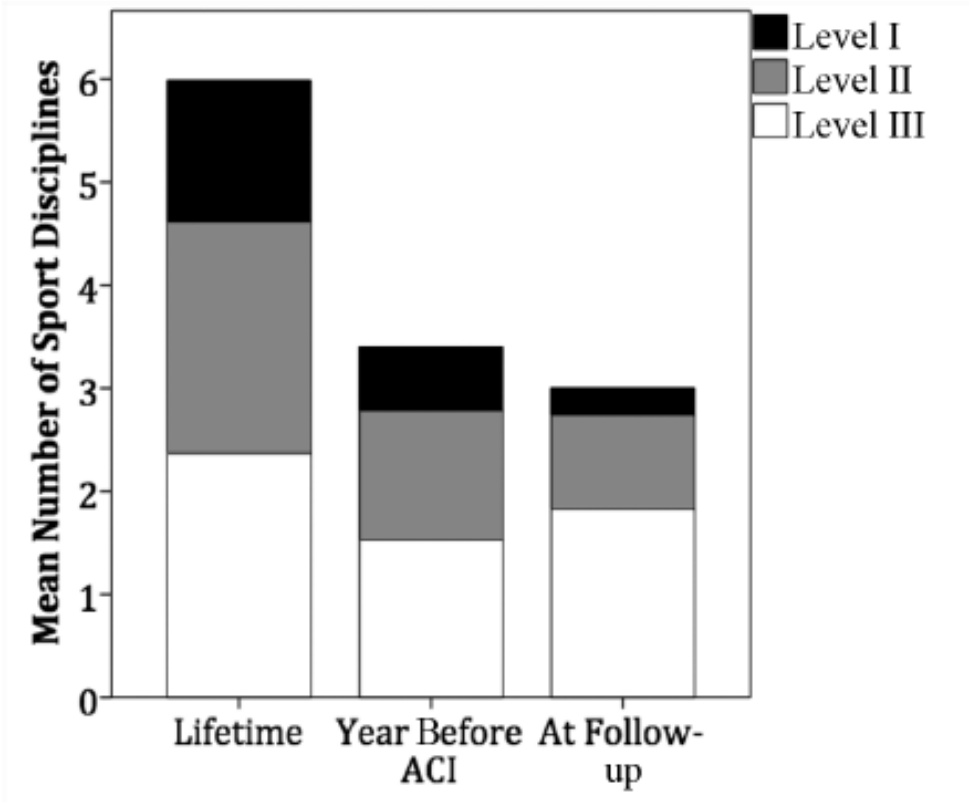
Type of sports



Erdle B, AJSM 2017

Campbell AB, Pineda M, Harris JD, Flanigan DC

Return to Sport After Articular Cartilage Repair in Athletes' Knees: A Systematic Review.

Arthroscopy. 2016 Apr;32(4):651-68.

Sports ?

Rate of return to sport after:

1. Osteochondral autograft transplantation (89%)
2. Osteochondral allografts (88%)
3. ACI (84%)
4. Microfracture (75%).

Better prognosis if:

1. Younger patients
2. Shorter preoperative duration of symptoms
3. No previous surgical interventions
4. More rigorous rehabilitation protocol
5. Smaller cartilage defects

RTS

Peterson L, 2010
96% @ 3-5 y.

Mithoefer K, 2009
52% @ 7 Y.

Campbell AB, Arthroscopy 2016

Timing ?

Does Intensive Rehabilitation Permit Early Return to Sport Without Compromising the Clinical Outcome After Arthroscopic Autologous Chondrocyte Implantation in Highly Competitive Athletes?

Stefano Della Villa,* MD, Elizaveta Kon,†‡ MD, Giuseppe Filardo,‡ MD, Margherita Ricci,* MD, Ferruccio Vincentelli,* MD, Marco Delcogliano,§ MD, and Maurilio Marcacci,‡ PhD
*From the *Education Research Department, Isokinetic Medical Group, Bologna, Italy, the ‡Department of Orthopedic and Sports Trauma, Biomechanics Laboratory, Rizzoli Orthopaedic Institute, Bologna, Italy, and the §Orthopaedic Department, IDI San Carlo Hospital, Roma, Italy*

Stage 1: Protection and Recovery of Walk[a]

Goal: Recovery of Normal Gait

	Home	Swimming pool	Gym
Protocols	• No weightbearing for 3-4 weeks • Cryotherapy • ROM: CPM or self-assisted between 0° and 90° if tolerated 24-48 h after surgery • Eventual CPM (1 cycle/min, 6-8 h/day • Voluntary and NMES isometric contractions of the quadriceps • Straight-leg raises • Active mobilization of the ankle joint in order to activate the muscular pump • Stretching program for hamstring, calf, and quadriceps	• Exercises in water with load between 10% and 20% of the body weight • Recovery of the normal gait cycle • Exercises for articular fluidity • Proprioceptive exercises (from the 6th week) • Strengthening exercises with short flipper (from the 7th week) • Deep-water running: 30% of the body weight (at thorax level) from the 6th week, 50% of the body weight (at pelvis level) from the 8th week	• Early isometric strengthening exercise • Isotonic contractions at a reduced ROM with distal loads reaching a maximum of 5 kg until the 6th week, after that gradually increase loads • Free load horizontal stationary bike • Stretching program for the posterior muscular chain • Load progression from 20% (4th week) up to 100% (7th-8th week) of the body weight
Indicative timing	From week 0 to week 2	• From week 3 to week 10	• From week 3 to week 10 (or more)
Frequency	Daily	• At least 3 times/wk	• At least 2 times/wk or more for professional athletes

Timing ?

Does Intensive Rehabilitation Permit Early Return to Sport Without Compromising the Clinical Outcome After Arthroscopic Autologous Chondrocyte Implantation in Highly Competitive Athletes?

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Stage 2: Transition and Recovery of Running[a]		
Goal: Recovery of Correct Run		
	Gym	Gym
Protocols	• Voluntary and NMES quadriceps strengthening program within painless ROM on leg extension • Horizontal leg press with reduced ROM • Eccentric strengthening of the triceps muscle • Core stability exercises • Proprioceptive exercises with bipodalic load • Stretching of the posterior muscular chain	• Isokinetic exercises at high angular speed • Gradual eccentric activity of the quadriceps • Proprioceptive exercises with monopodalic load • Controlled jumps on elastic horizontal leg press • Gradual test runs on the treadmill (from week 16) • Reconditioning program (stepper, exercise cycle)
Indicative Timing	From week 11 to week 14 (or more)	From week 15 to week 30 (or more)
Frequency	4 sessions per week or more for professional athletes	4 sessions per week or more for professional athletes

Timing ?

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Stage 3: Maturation and Athletic Recovery

Goal: Recovery of Sport-specific Skills and Return to Team and Competitions

	Gym
Protocols	• Exercises for strengthen quadriceps, triceps, gluteus, abdominal muscles • One-legged hop test: performance <20% compared to the contralateral limb[a]
Indicative timing	From week 31 to week 40 (or more)
Frequency	3 sessions per week or more for professional athletes

Timing ?

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Stage 4: Turnover and Maintaining (From Week 41)

Goal: Maintenance of Physical Fitness and Prevention of the Risk of Reinjuries

	Gym
Protocols	• Strength exercises for muscular groups of both the injured and the noninjured limbs • Stretching of the posterior muscle chain of the lower limbs
Indicative timing	From week 41
Frequency	2-3 sessions per week or more for professional athletes

Timing ?

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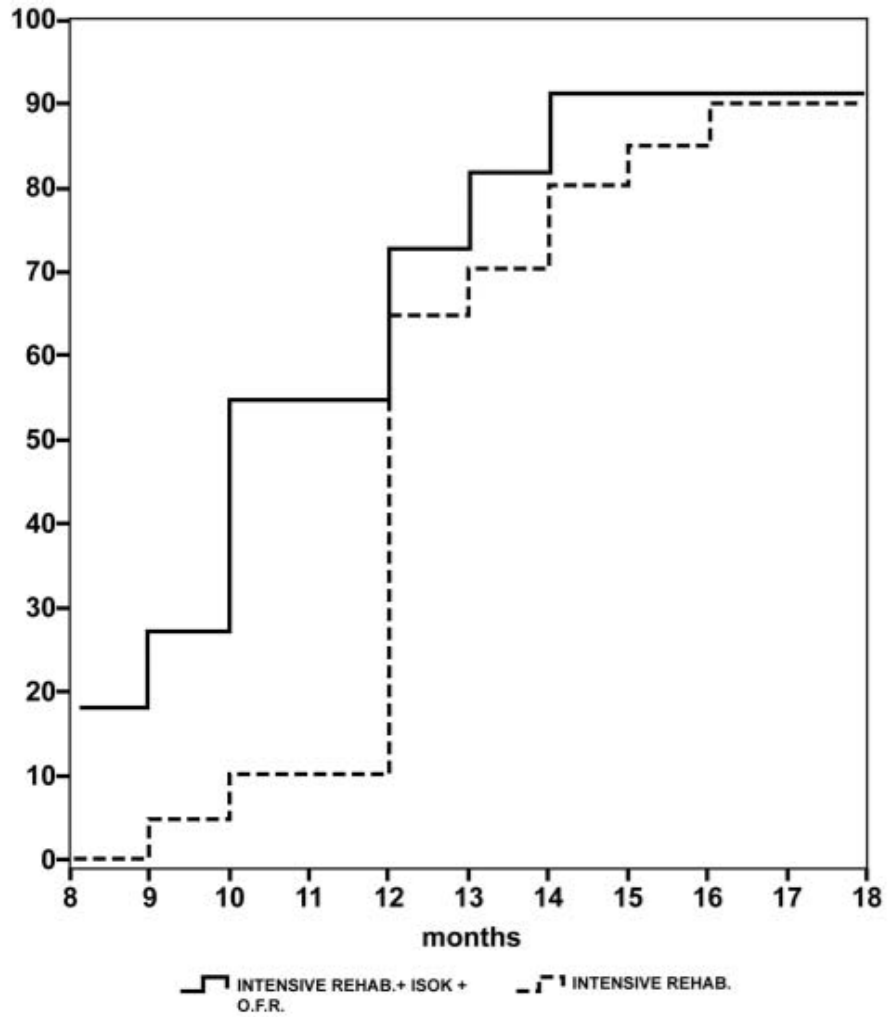
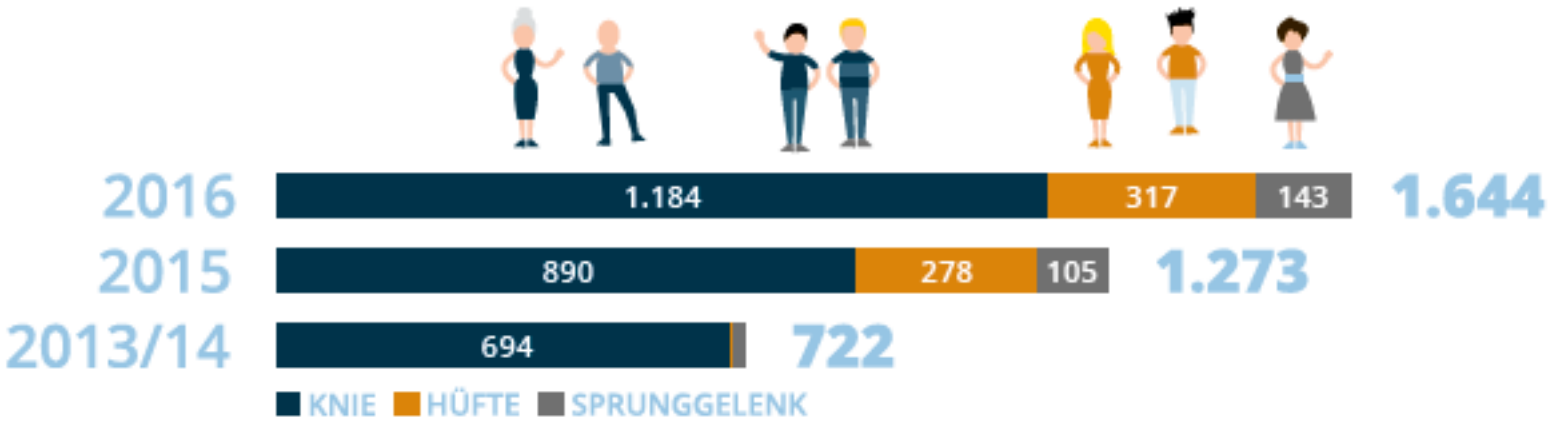


Figure 3. Resumption of sports activity.

Future ?

More data needed !



Niemeyer P, Angele P

Future ?

ETHIK-VOTEN/ STELLUNGNAHMEN

32 für Deutschland liegen vor.
Zusätzlich liegt 1 Votum für Wien und 1 Votum für die Schweiz* vor.

*mehrere Standorte; zentralisiertes Verfahren

3-Jahres-Follow-Up

erreichte der erste Patient am 19. Oktober.

8 Anträge
wurden 2016 zur Auswertung multizentrischer Daten gestellt.

4 Publikationen
wurden 2016 veröffentlicht.

Summary

- RTS possible
- Long rehabilitation & RTS
- Few data, but slowly improving
- Collective data acquisition needed

See You in Glasgow

18th ESSKA Congress
9 – 12 May 2018

SECC, Glasgow, Scotland

www.esska-congress.org
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