

Sport Specific Outcomes, Concomitant Injuries, and Return to Sport Rates After Pediatric and Adolescent ACL Reconstruction

Philipp W. Winkler^{1,2}, Baldur Thorolfsson¹, Ramana Piussi¹, Thorkell Snaebjörnsson¹, Rebecca Simonsson¹, Jon Karlsson¹, Kristian Samuelsson¹, Eric Hamrin Senorski¹

¹Sahlgrenska Sports Medicine Center, Sahlgrenska Academy, Gothenburg, Sweden

²Department for Orthopaedics and Traumatology, Johannes Kepler University, Linz, Austria



Disclosures

Philipp W. Winkler: Web editor for Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA).

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Eric Hamrin Senorski: Assoc. editor of the Journal of Orthopaedics & Sports Physical Therapy.

Musculoskeletal Injuries in Adolescents

Early sport specialization:

Increasing rate of musculoskeletal injuries

Increasing rate of adolescent ACLRs

Satisfactory results after adolescent ACLR

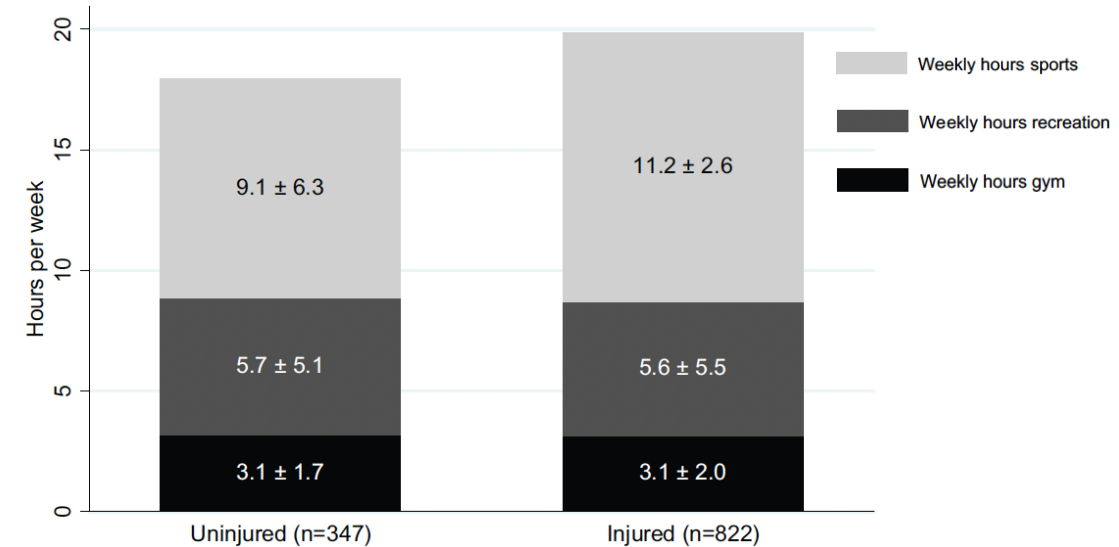
Return to sport rate $\sim 90\%$

Migliorini et al. KSSTA. 2024.

Kooy et al. AJSM. 2023.

LaPrade et al. OJSM. 2016.

Jayanthi et al. AJSM. 2015.



Objective

To evaluate differences in sport-specific concomitant injuries, clinical outcomes, return to sport (RTS) rates, and second ACL injuries after adolescent ACL reconstruction between the most popular sport disciplines and between females and males.

Hypothesis

Clinical outcomes, concomitant injuries, second ACL injuries and RTS rates after adolescent ACL reconstruction would vary by the type of sport.

Swedish National Knee Ligament Registry

Prospective data collection

>90% coverage for primary ACL reconstructions

Ahldén et al. AJSM. 2012.

Surgeon-related section

Patient-related section (KOOS subscales)

Inclusion

- 10-18 years at primary ACLR
- Autologous ACL graft
- Registered in the SNKLR

Exclusion

- Fractures, nerve, blood vessel, or tendon injuries
- ACL repair
- >48 months between injury and ACLR



Study-specific Survey

Experts in the management of ACL injuries

Aim: To assess sport-specific variables (type of sport, level of sport, etc) and RTS rates

3 patient-specific questions and 30 knee-related questions

Successful Return to Sport:

Have you returned to the sport you were active in before your first ACL injury?

- **Yes**
- *No*

Elite Athlete

Which is the absolute highest level you have been competing in AFTER your ACL injury?

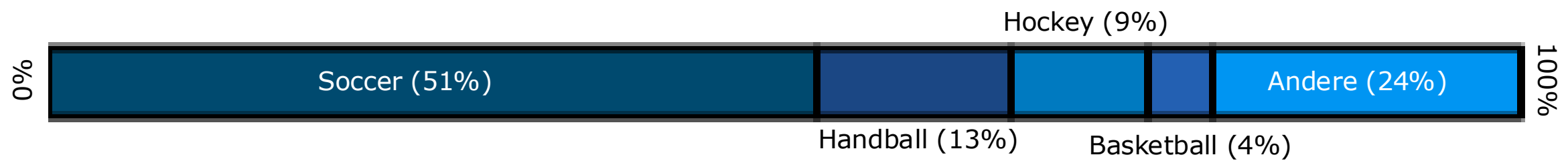
- **International competition; national team; world elite**
- **National elite (highest in your country)**
- **Elite (national classified leagues under the highest league / junior elite)**
- Active competition non-elite
- Motion and recreation

Statistical Analysis

- (1) Descriptive statistics
- (2) Preoperative vs. 1 and 2 years postoperative
- (3) Comparison between the most popular sport disciplines

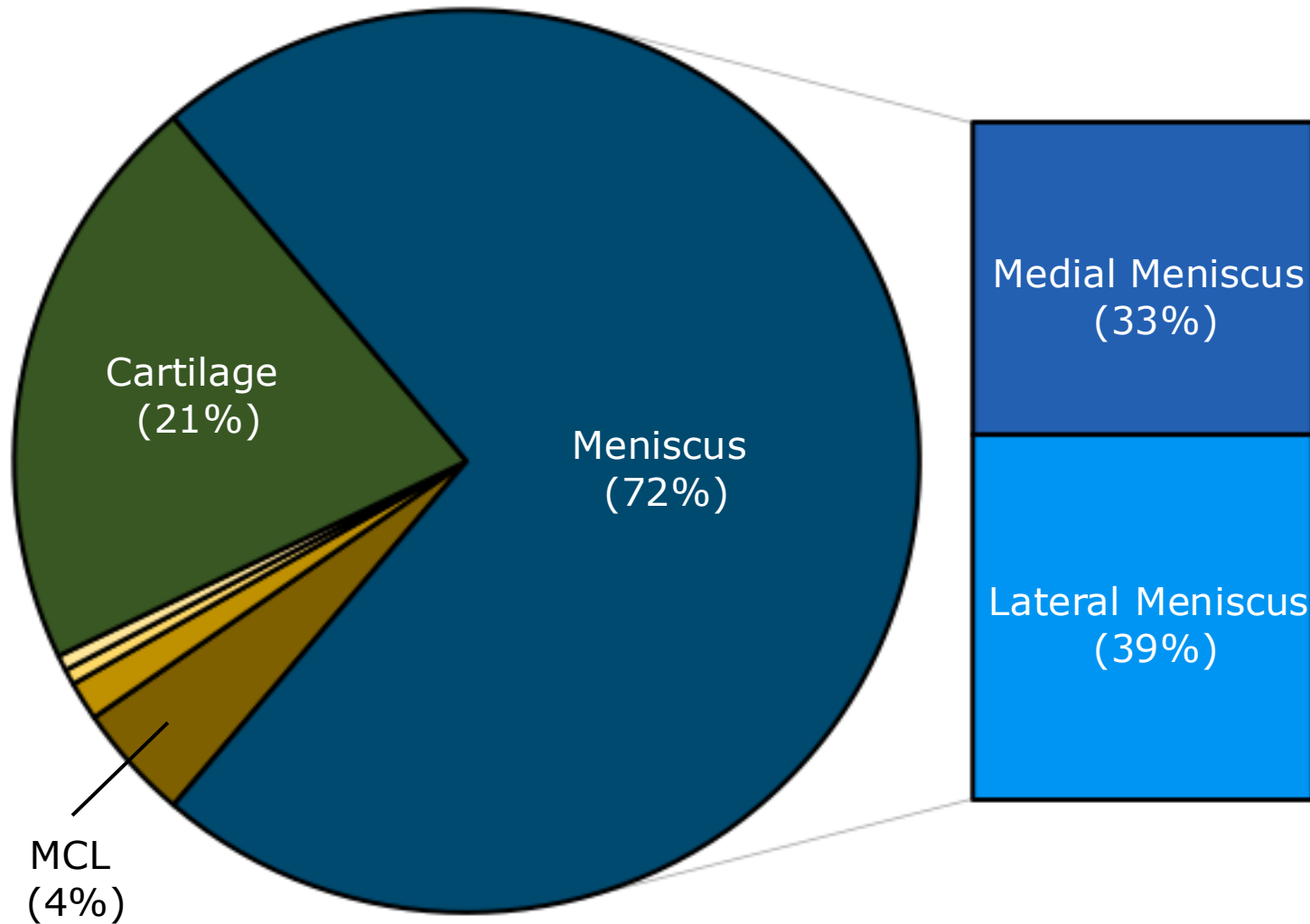
Demographic Data

	Total (n=1.392)	Soccer (n=712)	Handball (n=187)	Hockey (n=132)	Basketball (n=60)	Other (n=328)
Female, [%]	73%	71%	89%	69%	93%	66%
Age, [years]	16.4 ± 1.4	16.3 ± 1.4	16.3 ± 1.4	16.7 ± 1.1	16.2 ± 1.5	16.4 ± 1.5
Hamstring, [%]	94%	94%	95%	95%	95%	91%



Time between ACLR and survey completion: **9.7 ± 4.2 years**

Concomitant Injuries



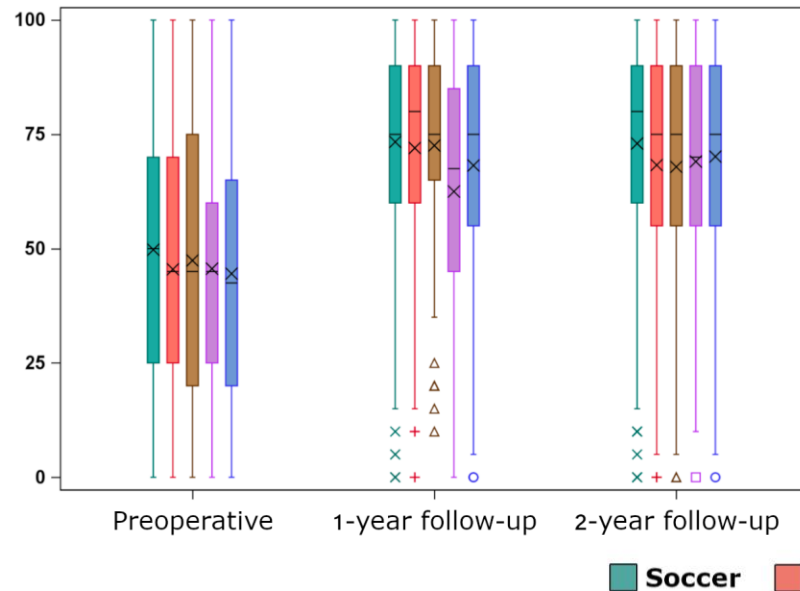
Any concomitant injury: 71%

Significantly more MCL injuries in handball and other sports compared to soccer (6% and 6% vs. 2%, $p=0.002$).

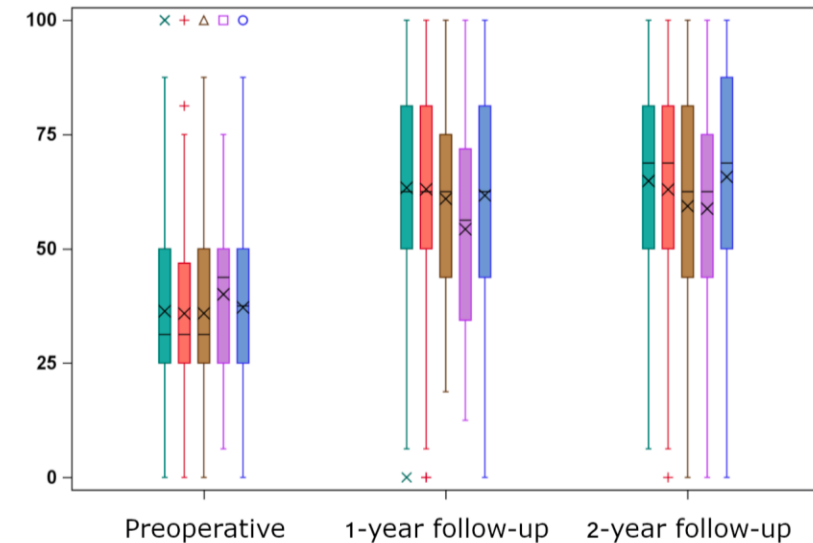
More males suffered lateral meniscus injuries in soccer (37% vs. 24%, $p=0.003$) compared to females.

KOOS Subscales

KOOS - Sport and recreation function

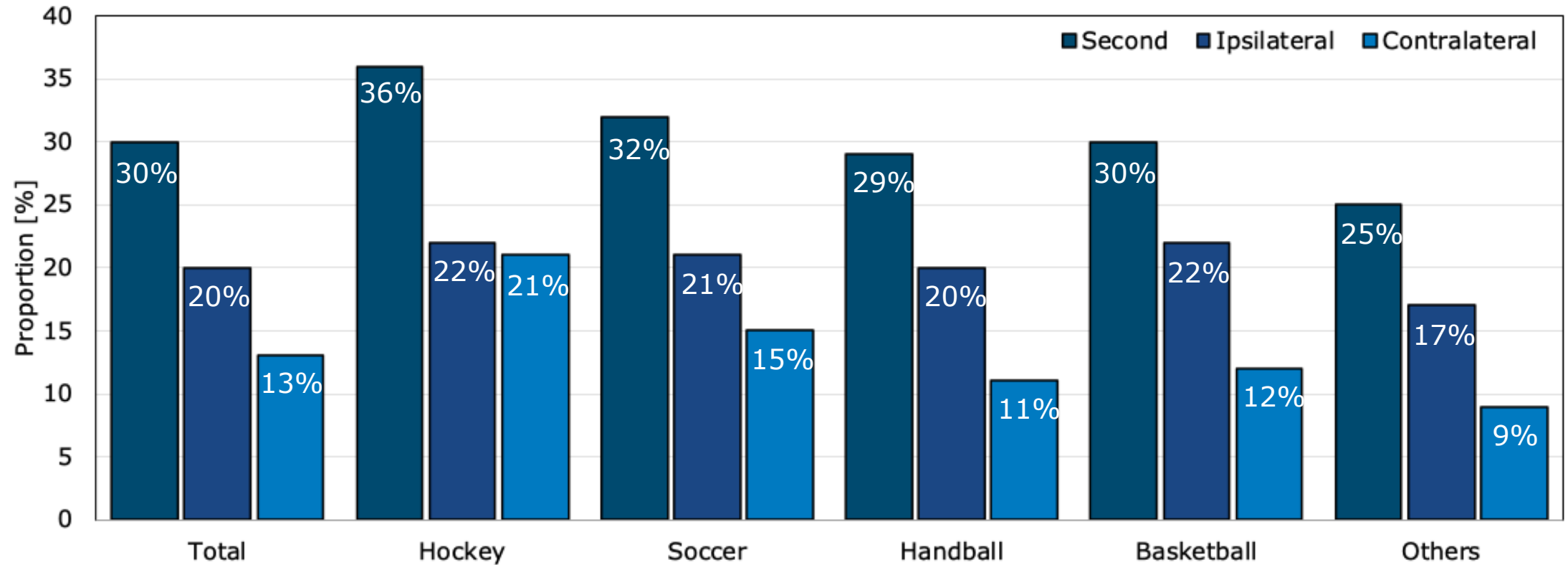


KOOS - Knee-related quality of life



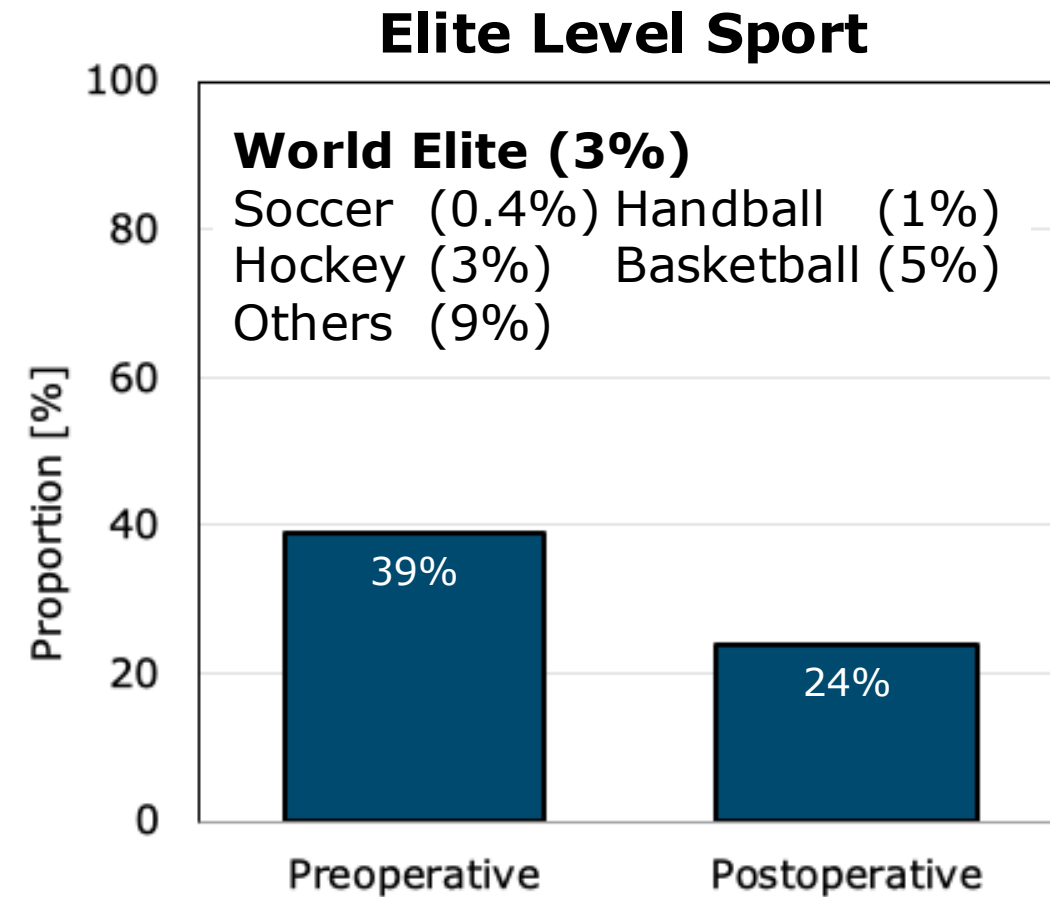
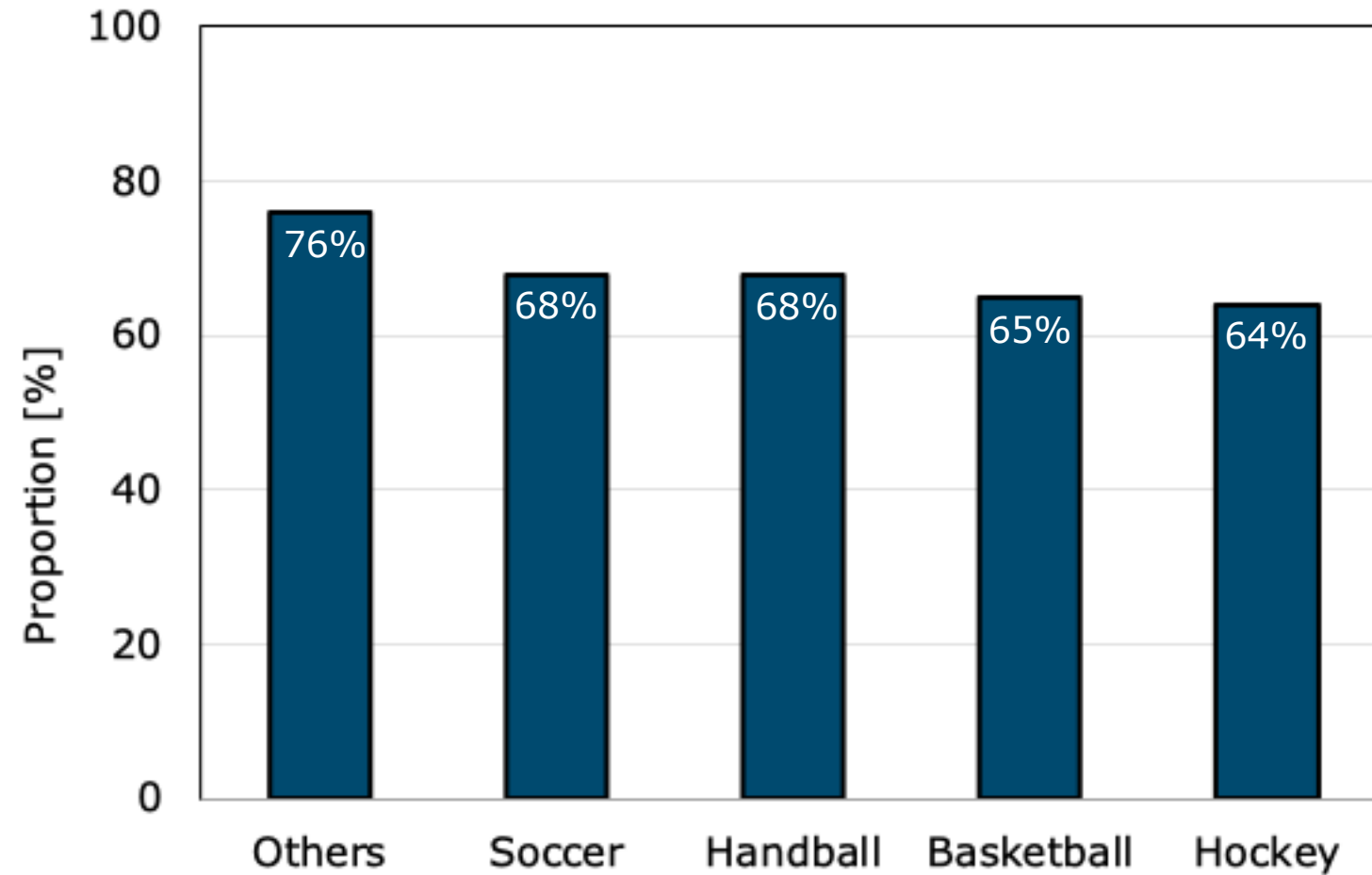
For all sports, statistically significant improvements could be observed in all KOOS subscales between baseline and the 1 and 2 years follow-ups ($p < 0.001$).

Second ACL Injuries



Contralateral ACL injuries were more common in hockey compared with other sports (21% vs. 9%, $p=0.002$), and with handball (21% vs. 11%, $p=0.036$).

Return to Pre-Injury Level of Sport



Conclusion

Anterior cruciate ligament reconstruction in adolescence was associated with an overall high rate of concomitant injuries (71%), particularly meniscus and MCL injuries, and second ACL injuries (30%) in a variety of popular sport disciplines. Although significant improvements in KOOS subscales could be observed among the different sports, 8% of patients did not RTS at all after ACL reconstruction.

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