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# Return To Sport After Primary ACL-R In Sweden: A longitudinal registry-based cohort study of 511 patients from the SPARX cohort

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STOCKHOLM SPORTS TRAUMA  
RESEARCH CENTER

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# Faculty Disclosure Information

- Nothing to disclosure.

## Aim

- To study return to sports (RTS) in primary ACL-R in competitive athletes (Tegner Activity Scale  $\geq 7$ )

## Outcome

- Primary outcome: RTS rate and time to RTS to Tegner  $\geq 7$  Sports
- Secondary outcome:
  - RTS rate to same/higher level and time to RTS to same/higher level
  - Predictors to RTS and RTS to same/higher level



## Methods

- Prospective longitudinal registry-based cohort study
- Inclusion:
  - Primary ACL-R in Swedish National Knee Ligament Registry (SNKLR)
  - 16-40 years
  - Tegner  $\geq 7$  prior to ACL injury
  - Available telephone number or email
  - Participation at least up to survey for month 6 after ACL-R

## Material

- Web-based monthly questionnaires
- Extensive questionnaires at selected time points
- Patient and surgical data from SKNLR
- Study recruitment: December 2019 and May 2021.

## RTS definition

- RTS to a Tegner  $\geq 7$  Sport
- Full participation with or without knee problems
  - Adapted from OSTRC questionnaire





3055 patients from SKNLR

1684 eligible patients

748 accepted participations

511 included

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- 1360 without contact information
- 11 not eligible (language, cognitive deficiencies, etc.)

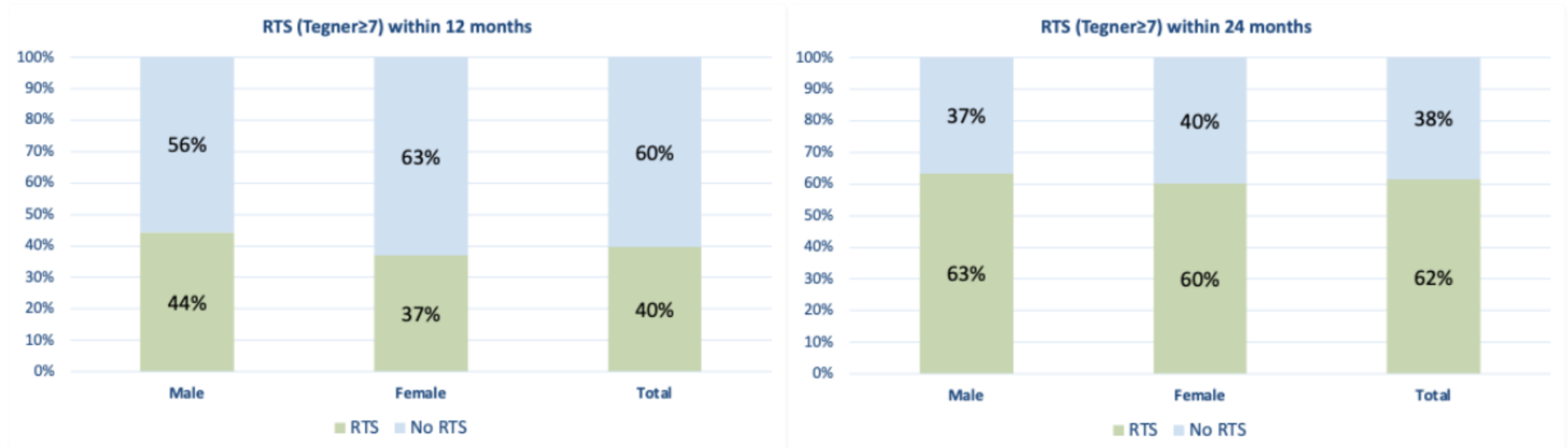
- 587 non-response individuals
- 270 did not want to participate
- 79 accepted participation but did not answer baseline

- 201 Tegner < 7
- 34 lost to follow up early on (< 6 months)
- 4 had C-ACLR not primary ACL-R

### Lost to follow up prior to possible RTS

- 94% response rate at 12 months (33 cases)
- 84% response rate at 24 months (84 cases)

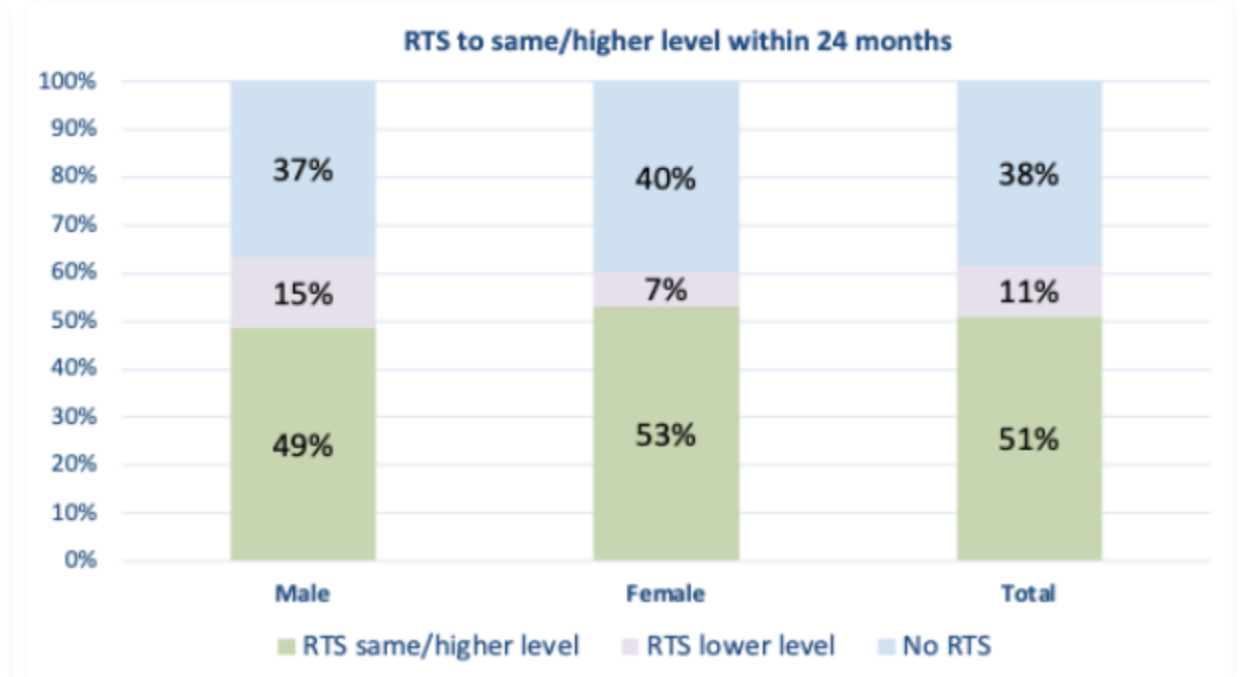
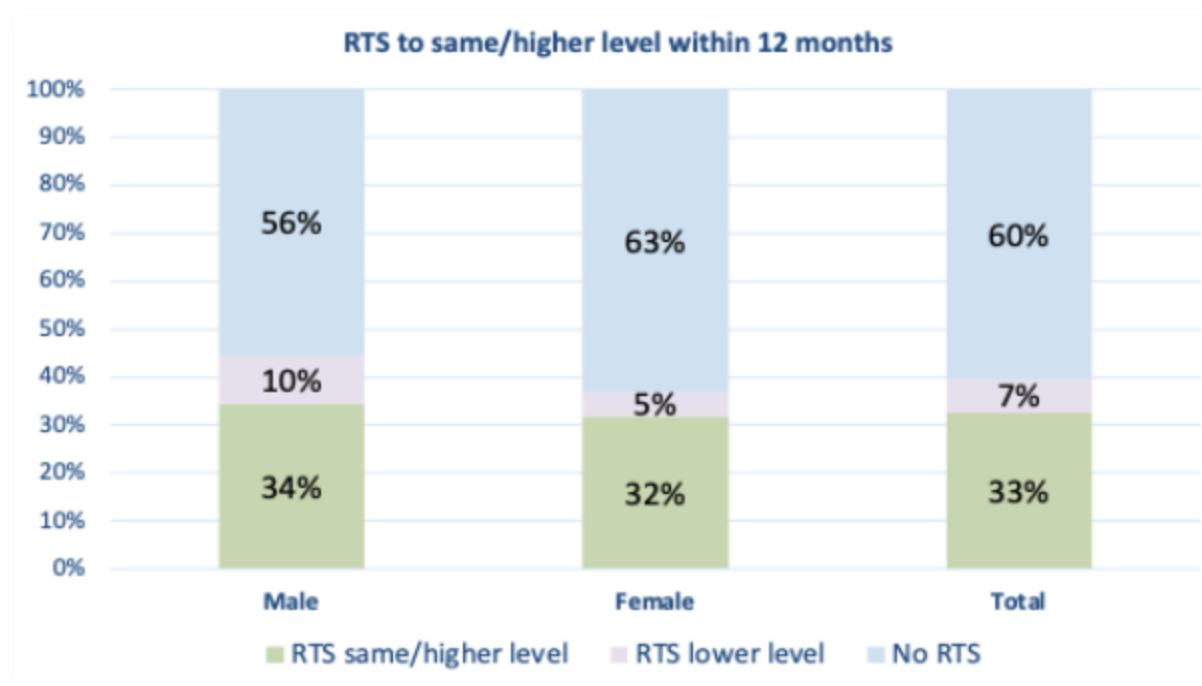
# Return to Sports to Tegner $\geq 7$



Mean Time to RTS was 12.3 months. No difference between sexes (11.9 vs 12.6;  $p=0.156$ )



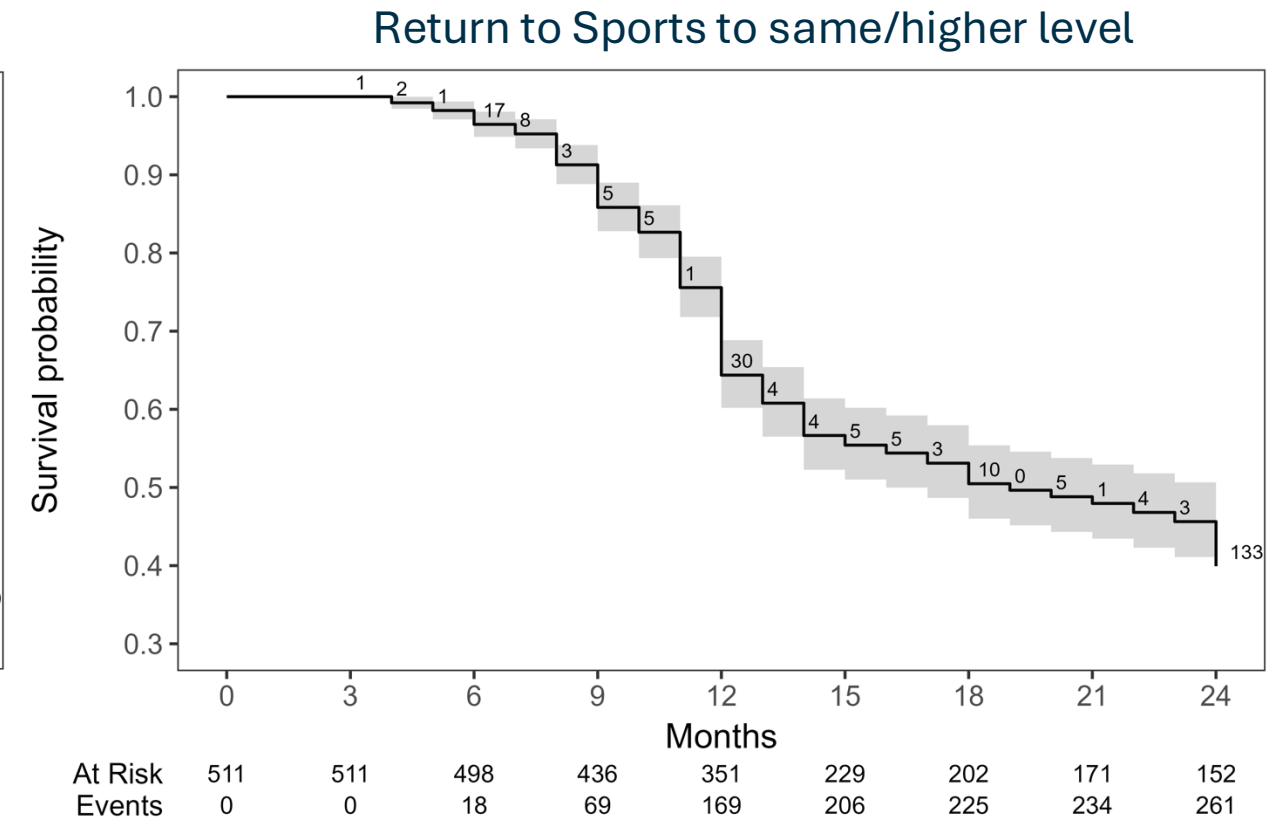
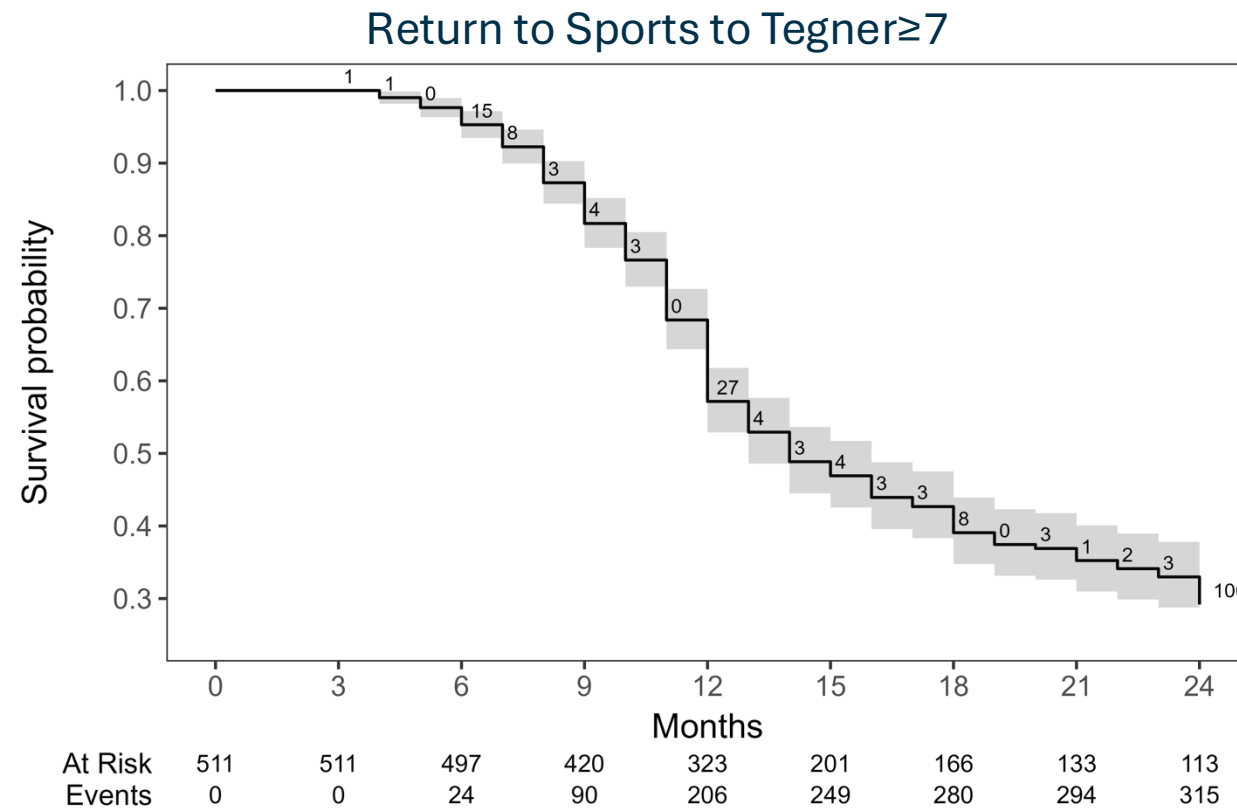
# Return to Sports to same/higher level



Mean Time to RTS was 12.7 months. No difference between sexes (12.2 vs 13.1;  $p=0.148$ )



# Return to sports



Kaplan-Meier analysis of the cumulative probability of returning to sport Tegner  $\geq 7$  (left), and of returning to sport to the same/higher Tegner level (right). Y-axis shows the proportion not yet returned; X-axis shows the time since surgery (months). Censored participants are depicted in the curve as numbers at the different time points.

# Multivariate Cox regression

RTS to Tegner≥7		
		Hazard ratio      P-value
Sex		0.71 (0.56-0.90) 0.005
Age		0.98 (0.96-1.00) 0.045
Sporting level	Elite	Ref
	Competitive	0.69 (0.53-0.90) 0.006
	Recreational	0.32 (0.18-0.56) <0.001
Time to surgery	0-3 months	Ref
	3-6 months	1.19 (0.89-1.59) 0.238
	6-12 months	0.91 (0.65-1.25) 0.548
	>12 months	0.57 (0.39-0.84) 0.005
Meniscus injury		0.84 (0.66-1.06) 0.140
Cartilage injury		0.93 (0.70-1.25) 0.629
MCL injury		0.40 (0.15-1.07) 0.069
ACL-RSI > 4.2 at 3 months		1.61 (1.26-2.07) <0.001



# Multivariate Cox regression

RTS to same/higher level		
		<i>Hazard ratio</i> <i>P-value</i>
Sex		0.83 (0.64-1.08) 0.170
Age		0.97 (0.95-0.99) 0.003
Sporting level	Elite	Ref
	Competitive	0.87 (0.65-1.16) 0.332
	Recreational	0.51 (0.27-0.94) 0.032
Time to surgery	0-3 months	Ref
	3-6 months	1.07 (0.78-1.46) 0.693
	6-12 months	0.90 (0.63-1.28) 0.552
	>12 months	0.48 (0.31-0.75) 0.001
Meniscus injury		0.73 (0.56-0.94) 0.016
Cartilage injury		0.93 (0.66-1.29) 0.656
MCL injury		0.37 (0.12-1.15) 0.086
ACL-RSI > 4.2 at 3 months		1.70 (1.28-2.25) <0.001

# Conclusion



The overall RTS rate was 62%, but only 51% made it back to same/higher level of sports



The mean time to RTS is 12.3 months, and mean time to RTS to same/higher level is 12.7 months.



Several factors serve as negative predictors for RTS; female sex, older age, lower sporting levels, time to surgery over 12 months, meniscus surgery



ACL-RSI at 3 months, that is potentially modifiable, can be used to assess patients at risk for not RTS



SPARX cohort is a selected group of athletes and selection bias in the study can limited the generalizability to general population