

# Evaluation of the Support of Young Athletes in the Elite Sport System

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## Description

- The German support system

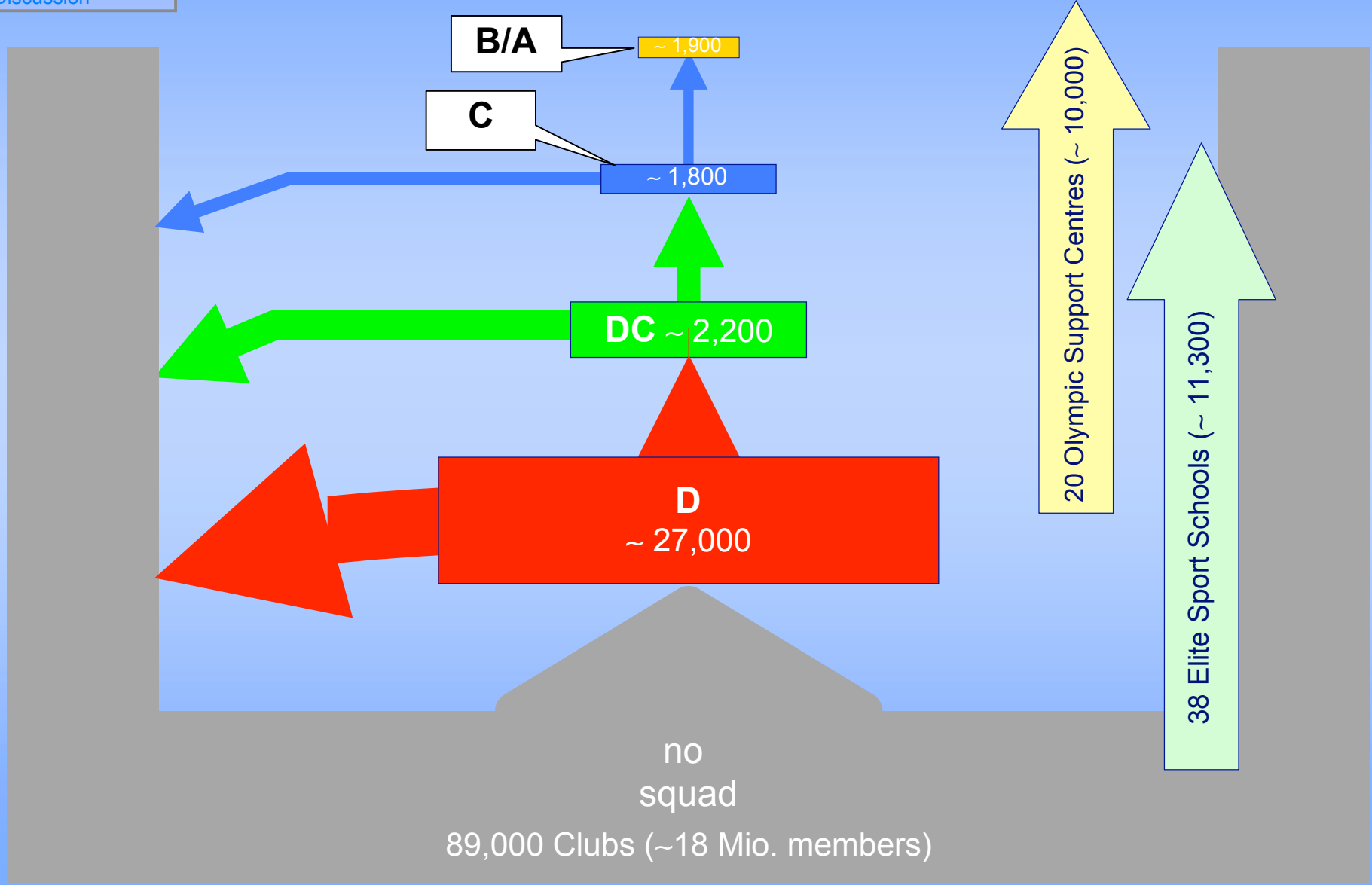
## Evaluation

- Preliminary remarks
- Methods
- Results

## Summary and discussion

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- Description
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# Evaluation of the Support of Young Athletes in the Elite Sport System

## Staging of the evaluative issue

**Evaluation:** Systematic application of *scientific methods* in order to *evaluate* to what degree a programme or a measure *contributes* systematically to the *achievement* of the *purpose* the programme or measure is designed for

*Conditions* in childhood and adolescence for *long-term* success in *elite* sport at *individual* level



*Structural* conditions and conditions that facilitate such conditions at *individual* level



*Steering model* to raise the probability of purpose-rational behaviour among cooperating institutions

### Comparative Approach

- Elite athletes with *higher* and *lower success* ( $t_2$ )
- *Conditions* at *varying* times during *childhood* and *adolescence* ( $t_1$ )

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## Directivity of athlete-related support measures

Measures in the support system	Support system		Expected Effects	
	Incentive	Reduction of individual costs/ risks	Expansion of training time (extensive time-economy)	Increment of training efficiency (intensive time-economy)
<p>Complex of measures designed to facilitate a behaviour that increases the long-term success-probability in elite sport</p>				
Organisation and funding of participation in <i>competitions</i>	+	(+)		
Providing <i>facilities</i> and <i>equipment</i>			+	+
<i>Additional training</i> at centres, courses, clinics, training camps			+	(+)
Providing <i>coaches</i>			+	(+)
(Further) <i>education</i> of coaches				+
Talent <i>search</i> , squad <i>recruitment</i>	+			
<i>Medical</i> and <i>paramedical</i> care		(+)	+	+
Performance and training <i>diagnosis</i> and <i>control</i>				(+)
Social environment <i>management</i> , pedagogical <i>support</i> measures		(+)	+	
Elite sport <i>schools</i> , <i>boarding</i> facilities	+	(+)	+	
Support in armed forces, police universities, apprenticeship ...		(+)	+	
<i>Individual</i> funding	+	+		

## Evaluation of the Support of Young Athletes in the Elite Sport System

### Hard core of underlying assumptions

- Long-term continuous involvement in *one* sport
- *Continuous* inclusion in support system
- Increment of success over *involvement time*
- Juvenile performance and success are *valid predictors* for long-term success in elite sport

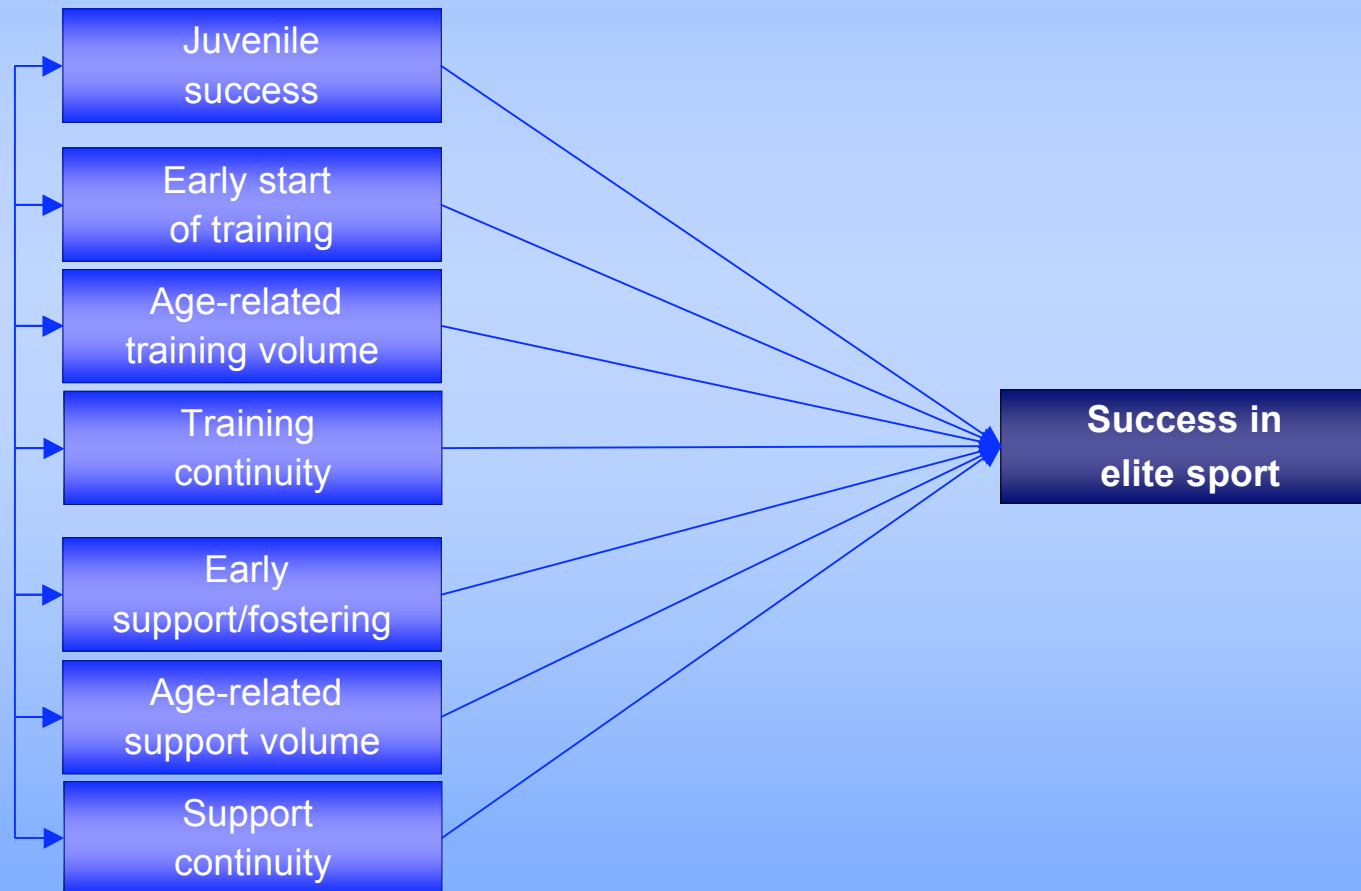
- The construction of the support system is based on a hard core of *time-economic* observational *assumptions*
- Athlete-related support measures mainly aim at *extensive* and/or *intensive time-economy*
- Current concepts: Further *dynamisation* of time

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## Hard core of underlying assumptions

Sport in childhood and adolescence ...      ... elite sport at peak performance age



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## Empirical basis: Methods

Project	Subjects, design, data collection	Variables
Squad career	<ul style="list-style-type: none"> <li>• Squad members D to A, n=4,972</li> <li>• 7 olympic sports</li> <li>• Document analysis, longitudinal 7 y</li> </ul>	<ul style="list-style-type: none"> <li>• Status squad membership</li> <li>• Age-related cornerstones</li> <li>• Continuity</li> </ul>
Athletes' survey	<ul style="list-style-type: none"> <li>• Squad members D to A</li> <li>• Survey, all Olympic sports</li> <li>• Transsectional and retrospective: n=1,558; longitudinal 3 y: n=224</li> </ul>	<ul style="list-style-type: none"> <li>• Success</li> <li>• Training volume (intensity), continuity</li> <li>• „Noise“ factors (injury, transition, ...)</li> <li>• Support (squad, OSC) intensity, subjective contentment</li> </ul> <p>&lt;10, 11-14, 15-18, 19-21, &gt;21 years  <i>Main sport and other sports</i></p>
Training documentation	<ul style="list-style-type: none"> <li>• Squad members track cycling (endurance), diving, rowing, n=230</li> <li>• Daily documentation, longitudinal 3 y</li> </ul>	<ul style="list-style-type: none"> <li>• Performance diagnosis, success</li> <li>• Volume/intensity of training activities</li> </ul>
Elite sport schools	<ul style="list-style-type: none"> <li>• Olympians survey n=199; document analysis n=465</li> <li>• Retrospective</li> </ul>	<ul style="list-style-type: none"> <li>• Olympic success, educational “success”</li> <li>• Membership ESS, training volume, interference, coordination</li> </ul>

*Talent promotion in sports clubs, n=247; biographical figures of worldwide Olympians, n=6,385; affinity patterns of sports participation, typology of careers in high-performance sport, n=1,558*

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- Description
- Evaluation
- Preliminary remarks
- Methods
- Results
- Discussion

## Juvenile success and success in elite sport

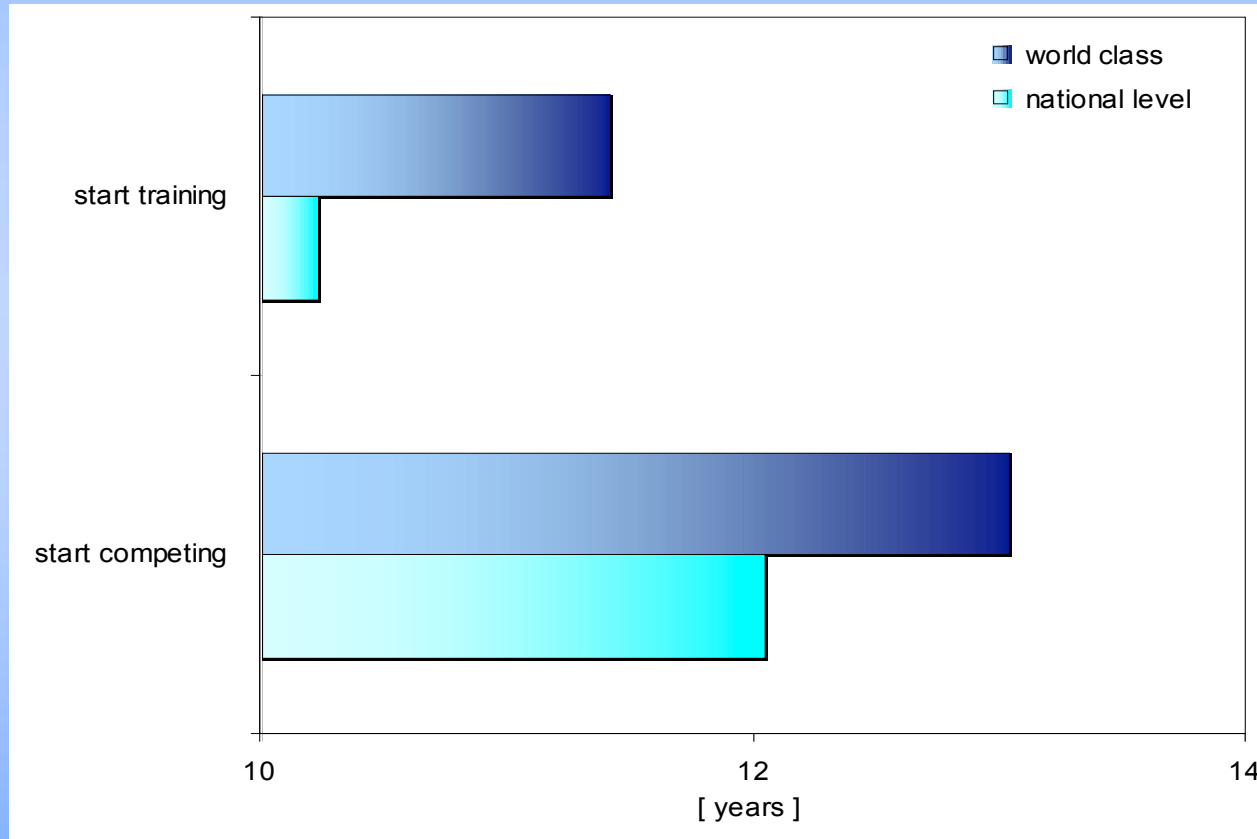
		11-14 y	15-18 y	19-21 y	>21 y
<11 y	R	0,34 **	0,09 <sup>ns</sup>	- 0,03 <sup>ns</sup>	0,07 <sup>ns</sup>
	n	329	279	112	60
11-14 y	R		0,24 **	0,18 **	0,08 <sup>ns</sup>
	n		769	322	154
15-18 y	R			0,32 **	0,10 <sup>ns</sup>
	n			510	246



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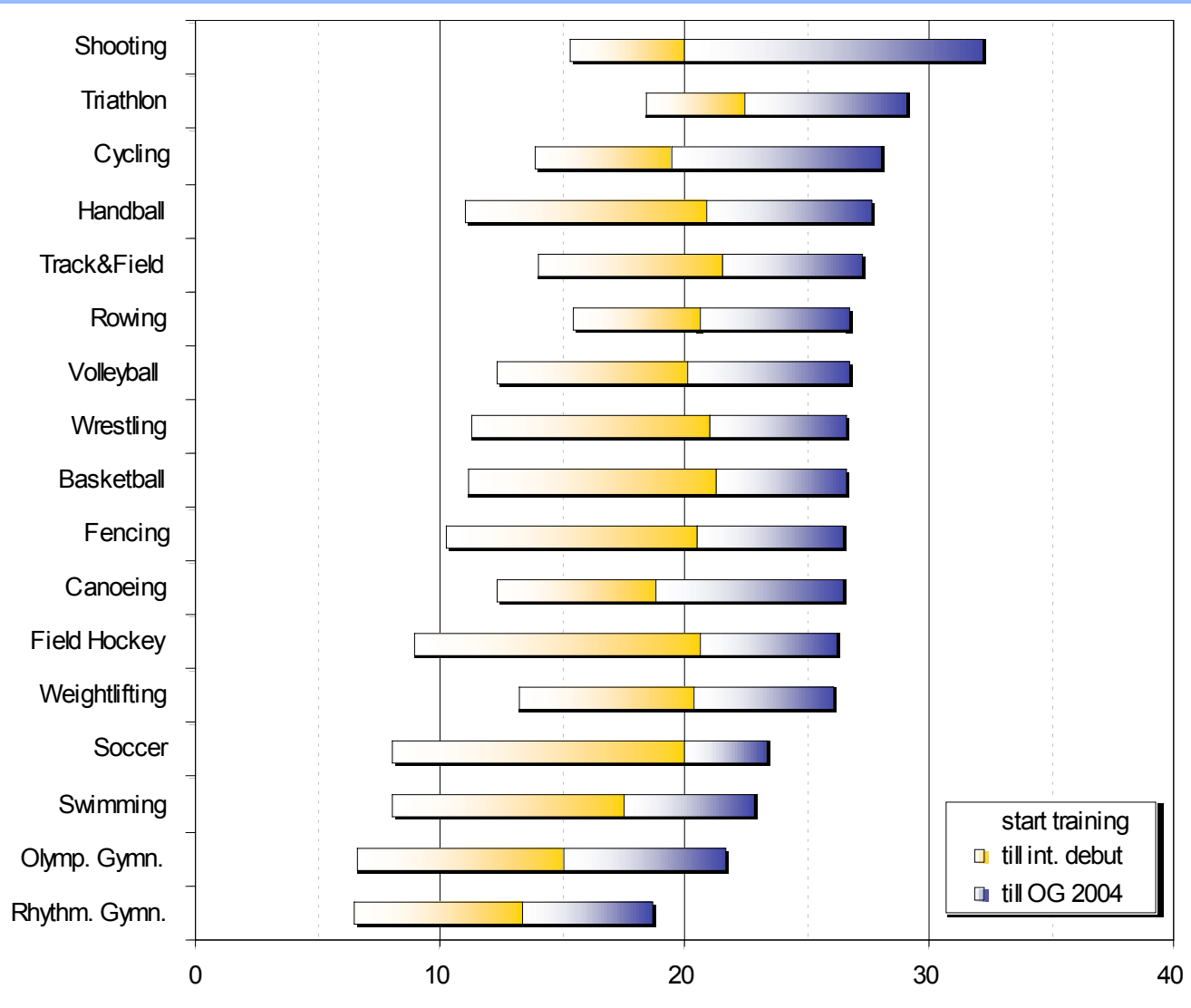
## Starting age in the *main* sport



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- Description
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## Olympians Worldwide



Description

Evaluation

Preliminary remarks

Methods

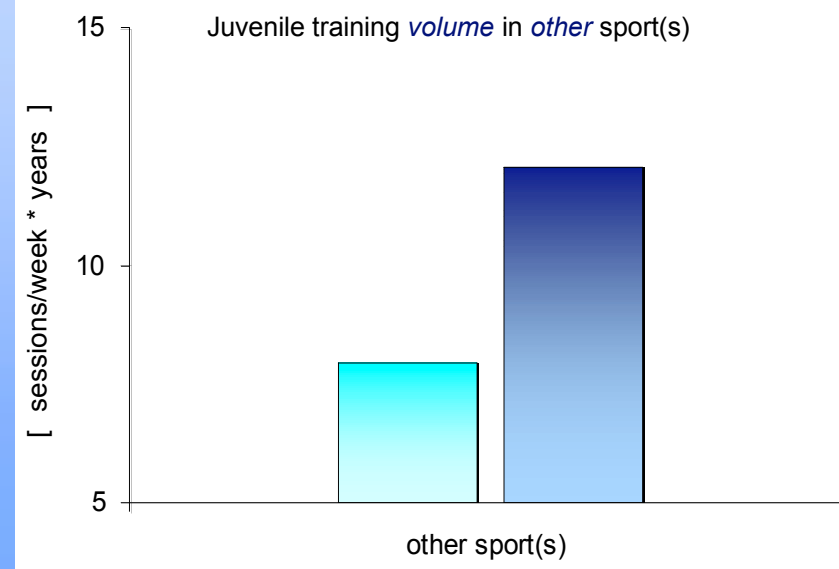
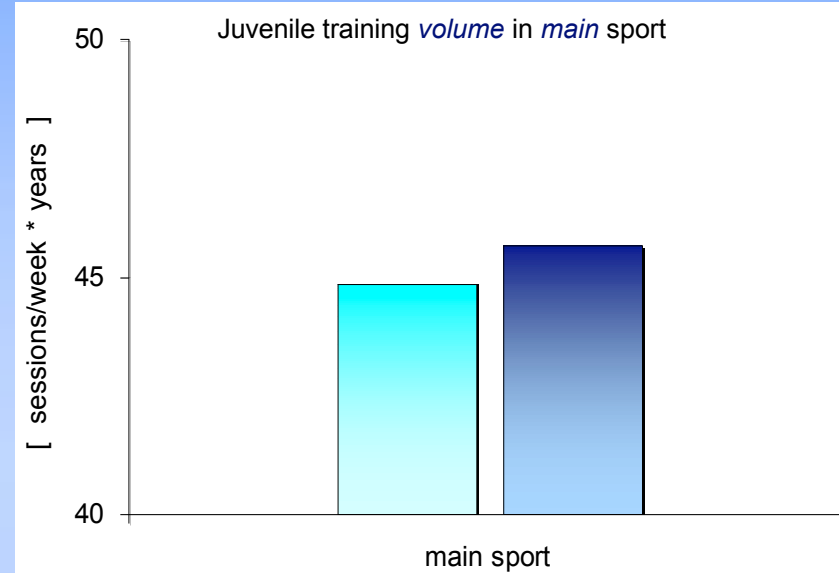
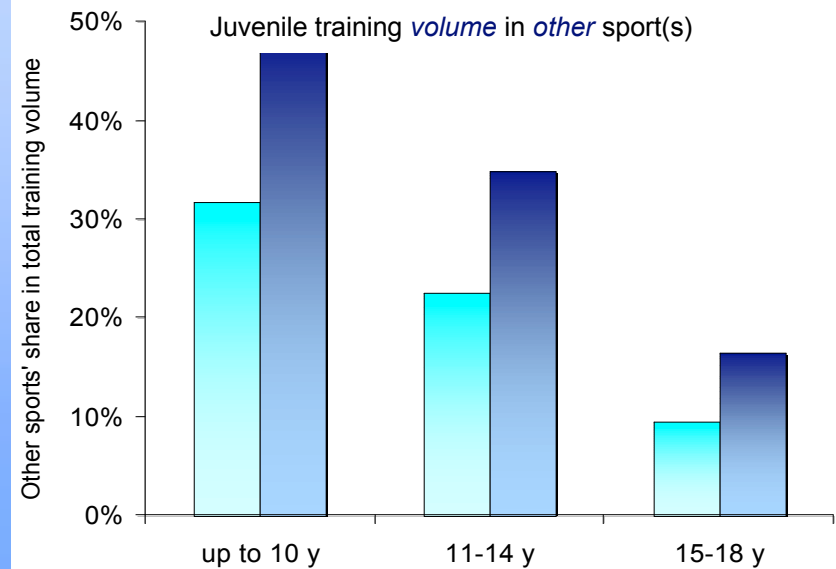
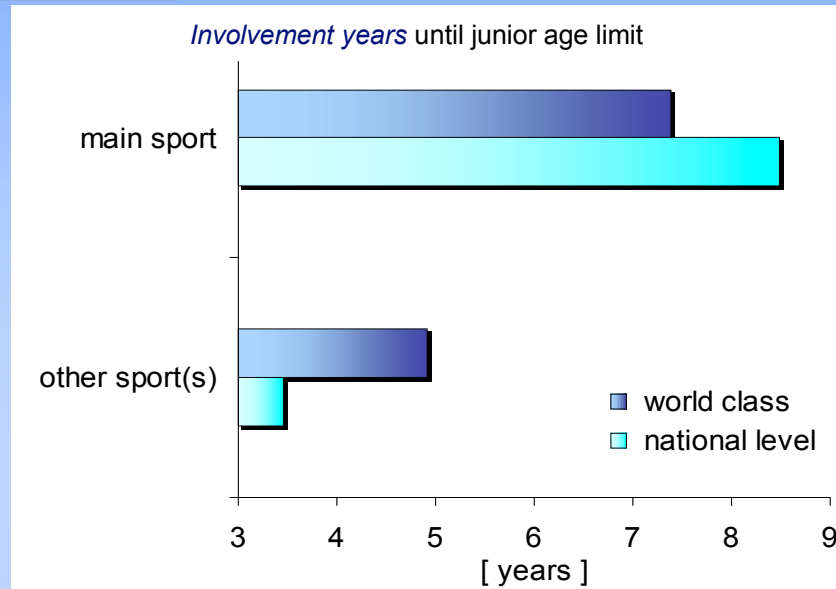
Results

Discussion

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## Juvenile training volume



Description

Evaluation

Preliminary remarks

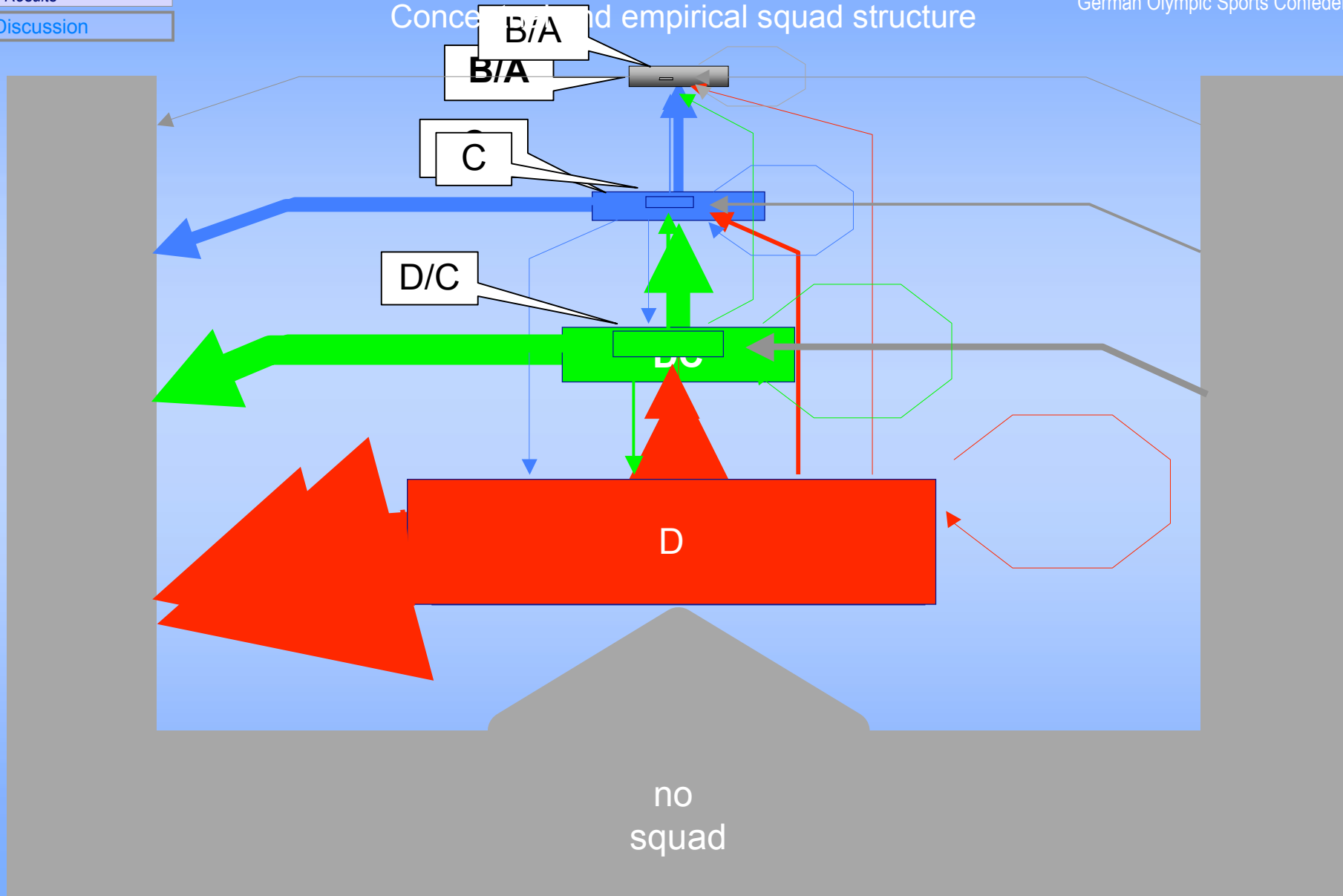
Methods

Results

Discussion

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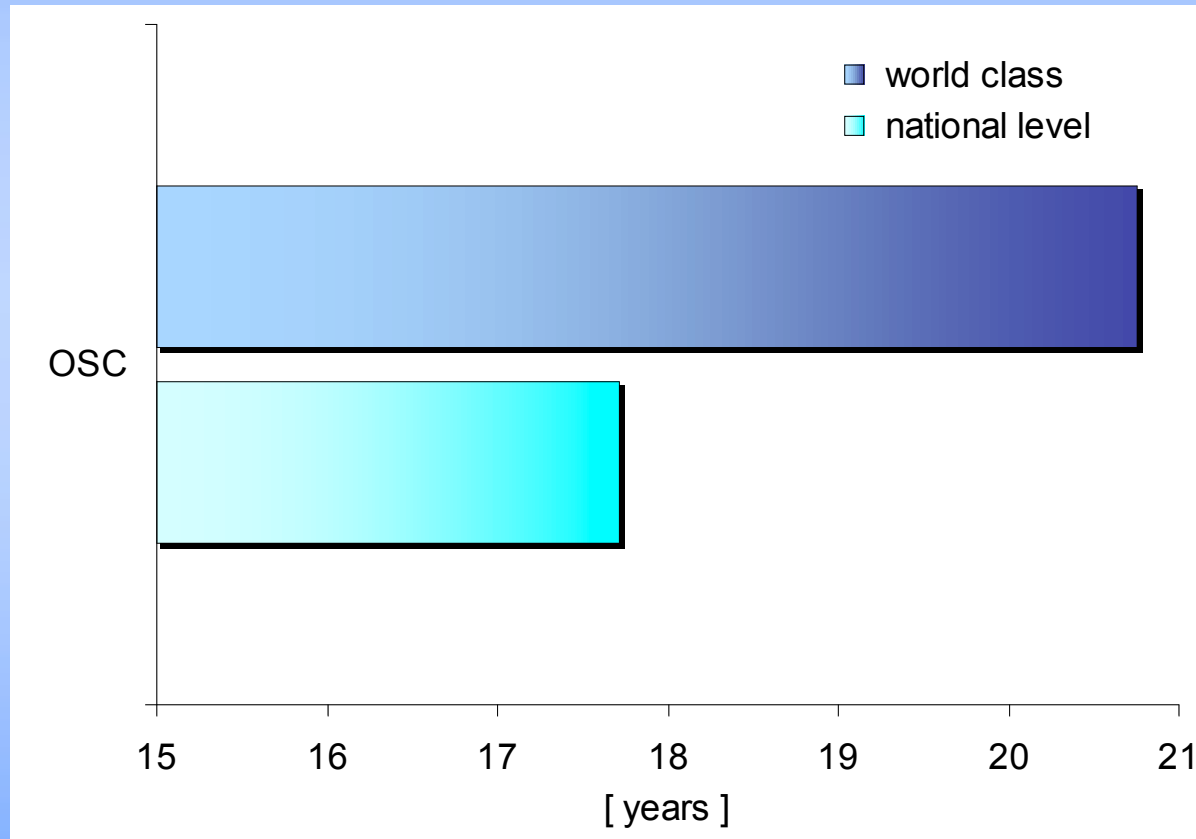
Conceptual and empirical squad structure



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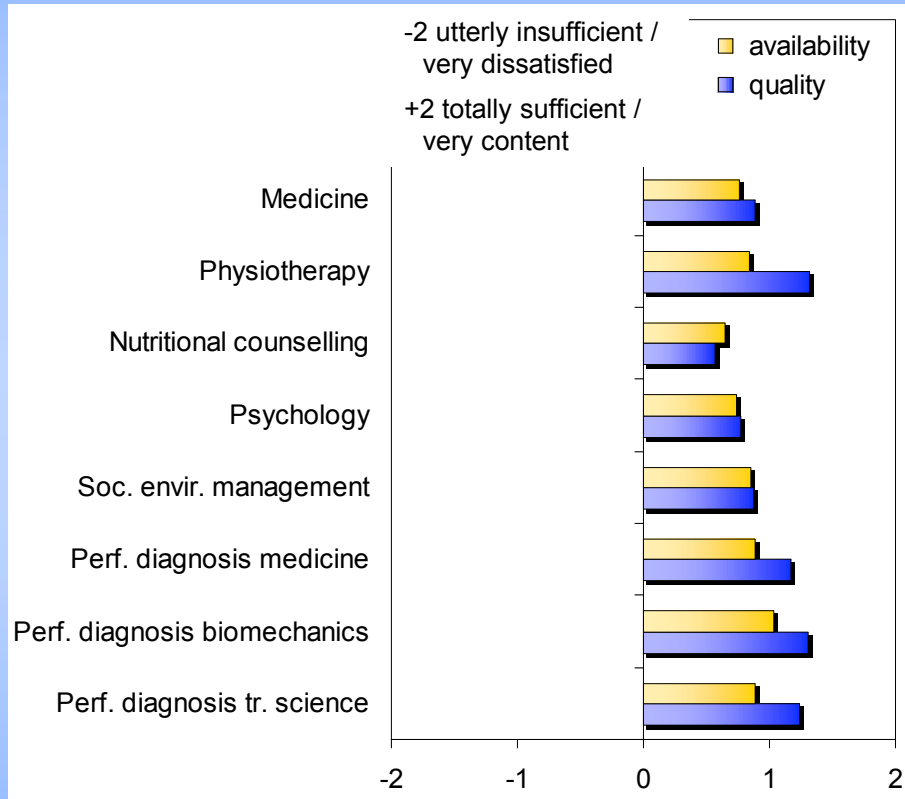
Juvenile support volume  
- recruitment age OSC -



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## Subjective contentment with OSC-service



## Longitudinal effects of OSC-service (3 y)

Support at t <sub>1</sub>	Injury at t <sub>2</sub>		Success development t <sub>1-2</sub>		Success at t <sub>2</sub>	
<b>Total</b>						
<i>Use of support</i>			+	o	-	o
<i>Intensity of support</i>				o		o
<i>Subj. contentment</i>				o	-	o
<i>Support institution</i>				o		o
<i>Duration of support</i>					-	o
<b>Injury at t<sub>1</sub></b>						
<i>Use of support</i>	o	-		o		o
<i>Intensity of support</i>	o			o		o
<i>Subj. contentment</i>	o	-		o		o
<i>Support institution</i>	o	-		o		o
<b>No injury at t<sub>1</sub></b>						
<i>Use of support</i>	o	-		o	-	o
<i>Intensity of support</i>	o			o		o
<i>Subj. contentment</i>	o			o		o
<i>Support institution</i>	o			o		o

Description

Evaluation

Preliminary remarks

Methods

Results

Discussion

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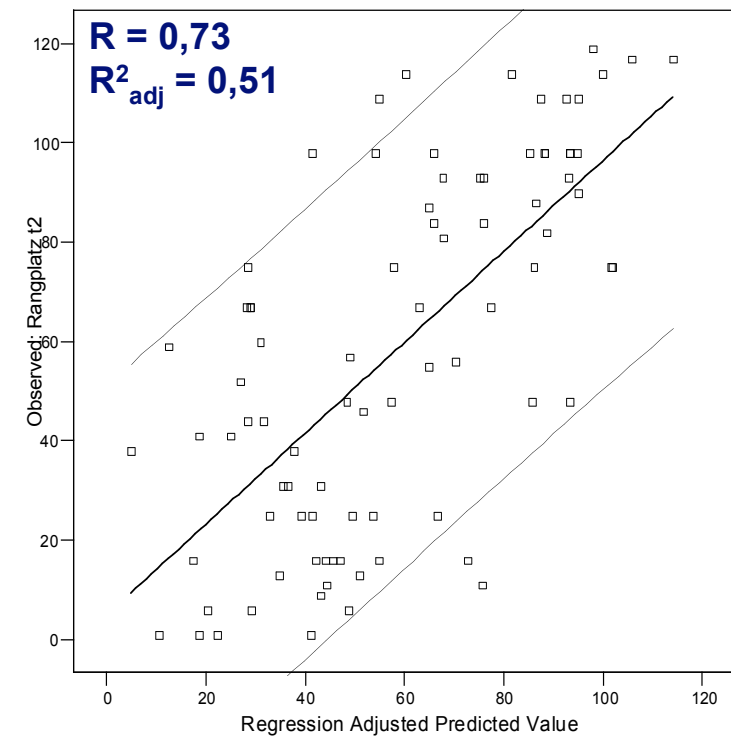
## Predicted and observed success

$$\text{Success } t_2 = 22,02 + 0,71 \cdot a - 0,20 \cdot b - 0,19 \cdot c + 0,07 \cdot d$$

- a** Success  $t_1$  (rank)
- b** Training volume in *other sport(s)* until  $t_1$
- c** Duration of *injury-induced* training *reduction* at  $t_1$
- d** Relative *duration* of inclusion in *support system* until  $t_1$

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Annotation: lower rank value – higher success

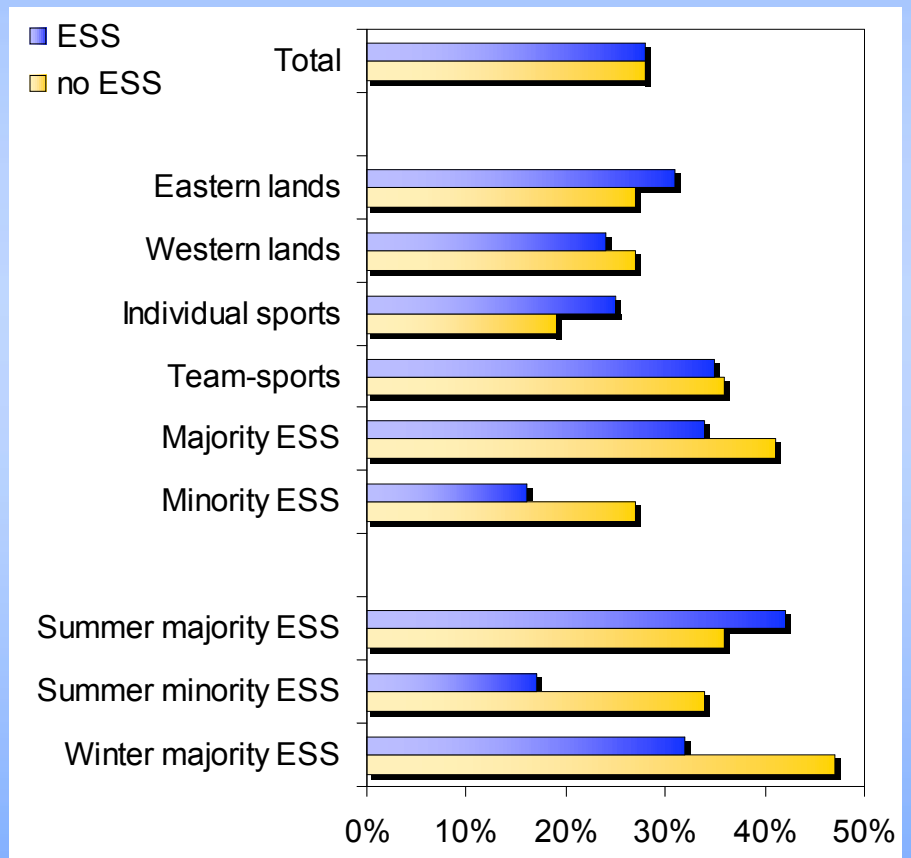


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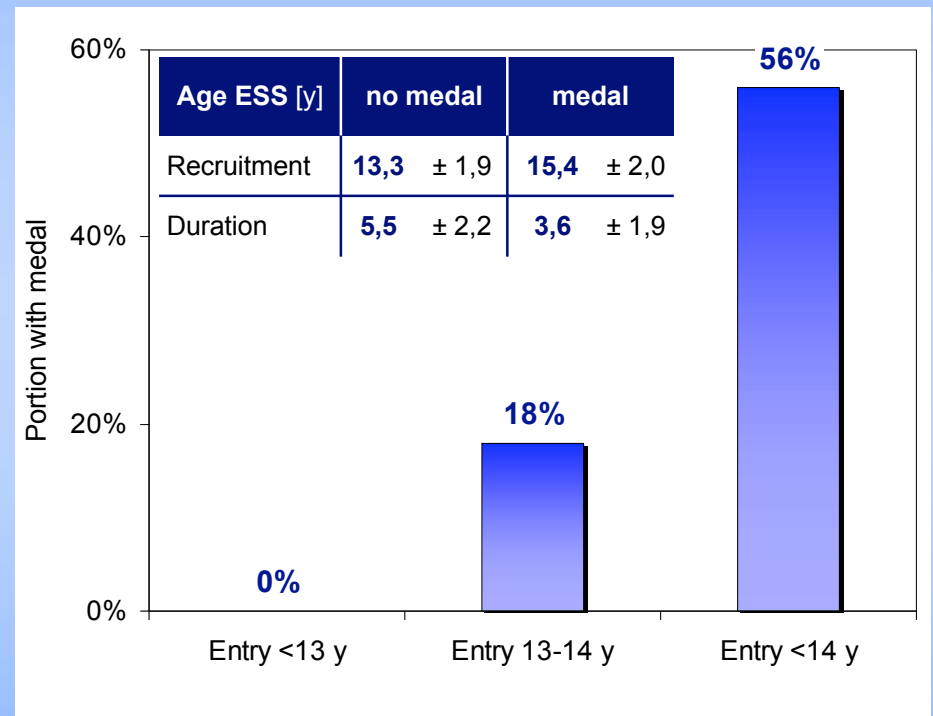
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## Elite sport schools

### Olympic medals



### Age structure





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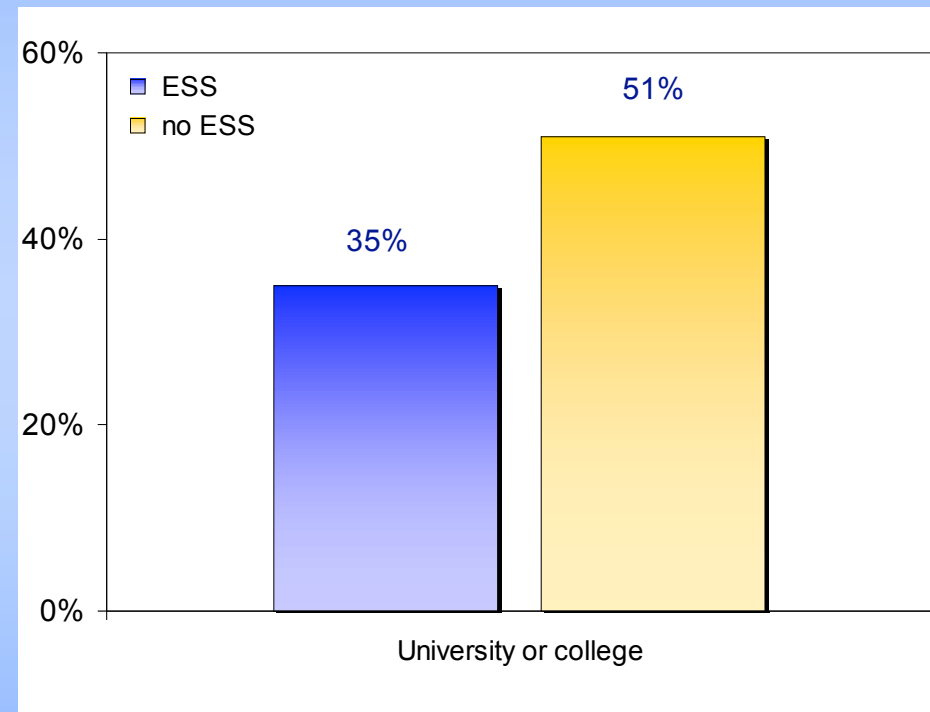
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## Elite sport schools

### Interference between school and sport

Impairment <b>school</b> ...	... by <b>sport</b> interference	
	training	competitions
Lessons	○	—
Exams	○	—
Homework	○	○
Content	○	○
Impairment <b>sport</b> ...	... by <b>school</b> interference	
	in general	lessons
Training	○	○
Competition	○	○

### Post-school career



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Summary: Training, support, and success  
 - short-, mid-, and long-term effects on success -

	Training total			Training main sport			Training other sport(s)			Support		
	short	mid	long	short	mid	long	short	mid	long	short	mid	long
<b>Juvenile training and support</b>												
<b>Early start</b>	+	o	o	+	o	-	-	o	+	+	o	-
<b>Early volume</b>	+	o	o	+	o	-	-	o	+	+	o	-
<b>Total duration</b>	+	o	o	+	+	-	-	o	+	+	+	-
<b>Total volume</b>	+	o	o	+	+	o	-	o	+	+	+	-
<b>Continuity</b>	-	+	o							o	o	o

+ positive effect   
 - negative effect   
 o no effect

Description

Evaluation

Preliminary remarks

Methods

Results

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## Summary and discussion

- Implications 1: Juvenile *conditions* for long-term *success* in senior elite sport
- Implications 2: *Evaluation* research on training and support in juvenile high-performance sport
- Implications 3: *Practise* of support systems

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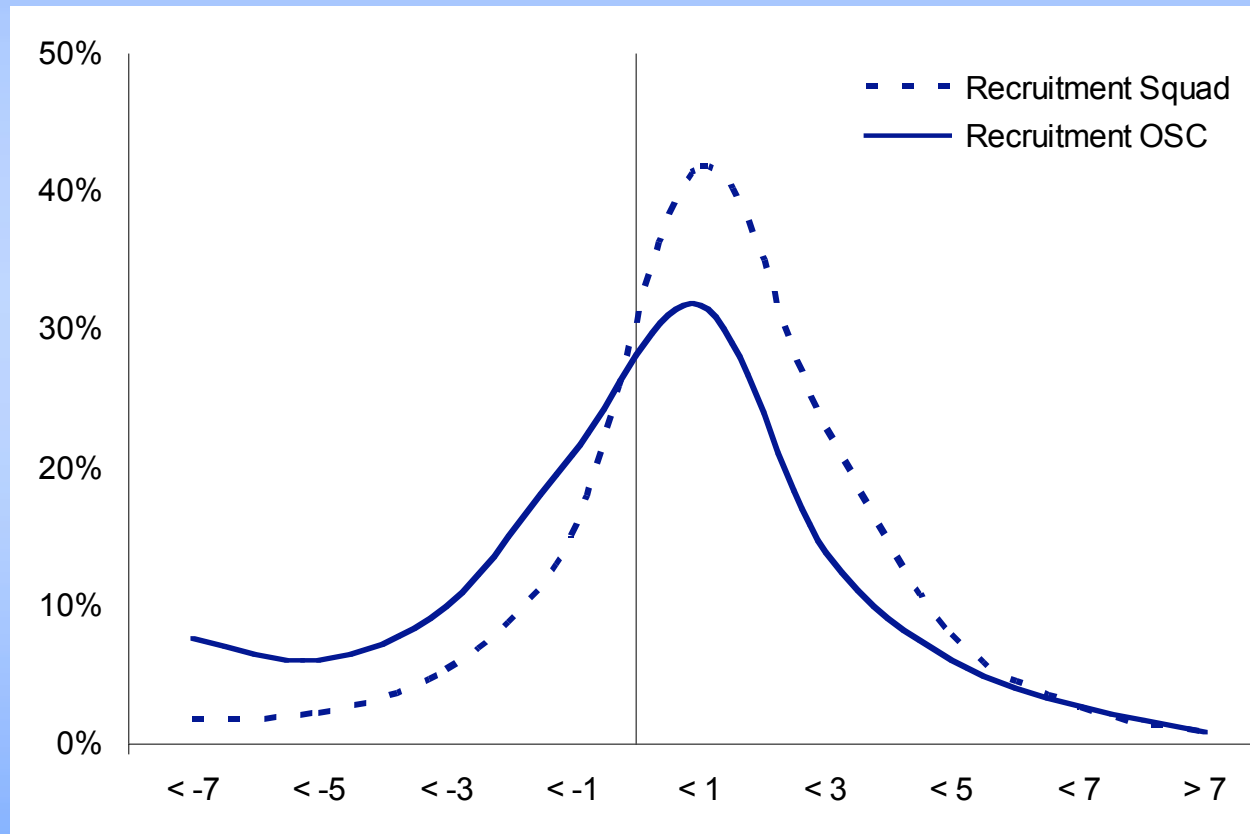
- Description
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Merkmal	Junioren		Spitze	
	Anteil	Dauer	Anteil	Dauer
Systematisches Training	70 %	5,4 ± 3,6 J.	87 %	7,7 ± 5,9 J.
Wettkämpfe	85 %	5,6 ± 3,6 J.	100 %	6,5 ± 5,5 J.
Kader	14 %	3,4 ± 3,0 J.	18 %	3,8 ± 2,4 J.
Merkmal	Anteil	Diff. zu Hauptsp.	Anteil	Diff. zu Hauptsp.
Einstiegssportart syst. Training	88 %	-3,3 ± 3,8 J.	93 %	- 4,7 ± 4,4 J.
Einstiegssportart Wettkämpfe	95 %	-5,3 ± 3,9 J.	94 %	- 7,4 ± 6,0 J.

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## Age of international debut and of recruitment into the support system



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## Use of service

