

# Road from Sochi to Rio for Germany

## „German results in Sochi 2014 – conclusions for elite sport training having Rio 2016 in mind<sup>1</sup>“

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<sup>1</sup> in cooperation with:

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**Dr. Michael Koch & Stefan Ehrlicher (Biathlon)**

**Dr. Christine Ostrowski & André Wilhelm (Cross-Country Skiing)**

Gefördert durch:



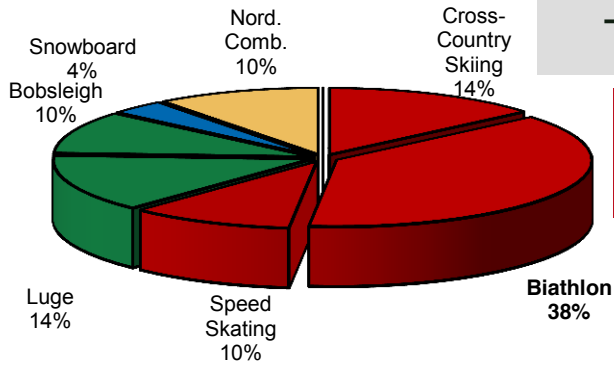
aufgrund eines Beschlusses  
des Deutschen Bundestages

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# Analysis of the Olympic Games Sotschi 2014 Endurance Sports

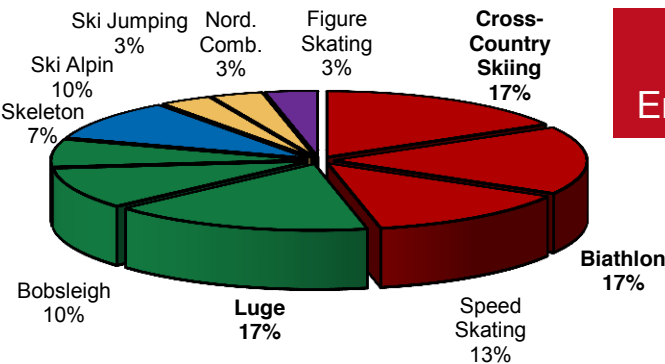
Turin 2006

**62 %  
 Endurance**



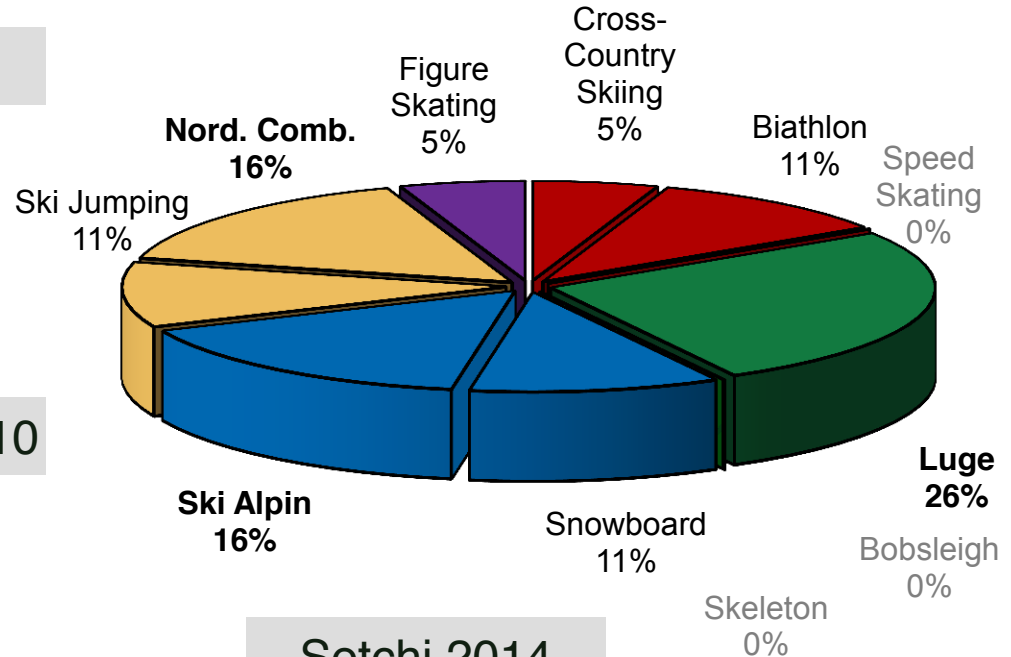
Vancouver 2010

**47 %  
 Endurance**



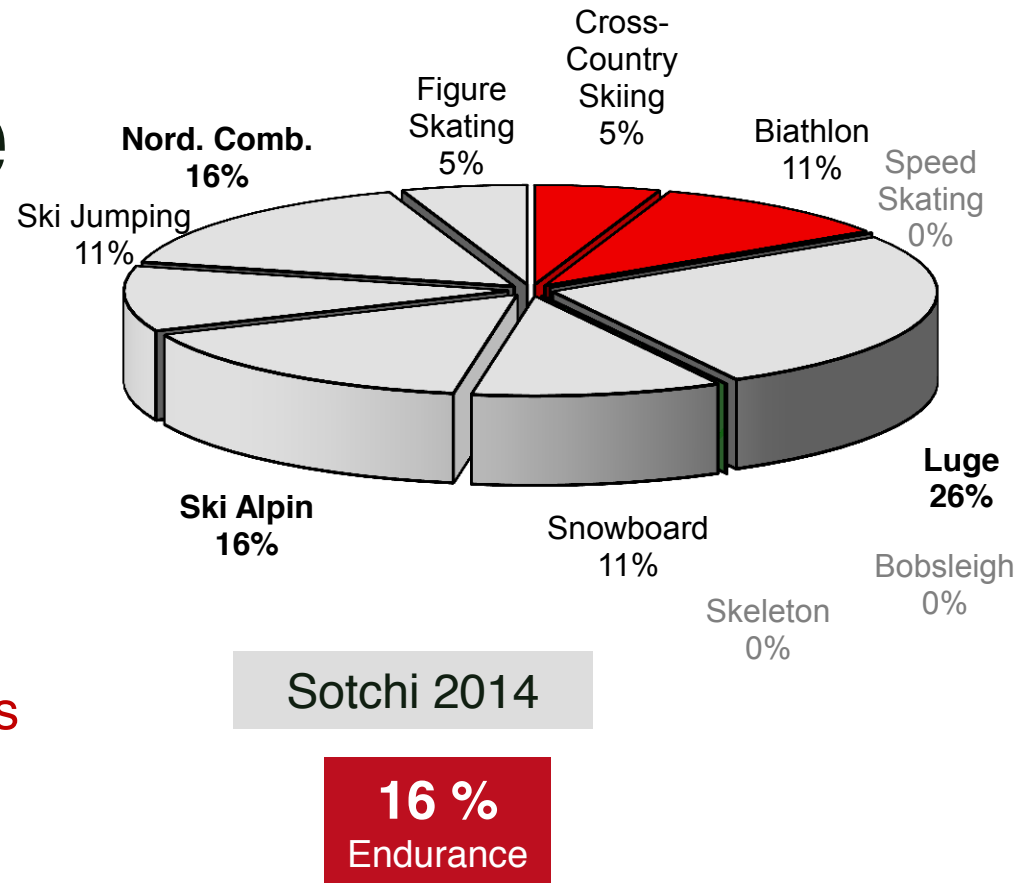
Sotchi 2014

**16 %  
 Endurance**



## What are the CAUSES for ?

- Less Medals in total
- **Decrease in Endurance Sports**



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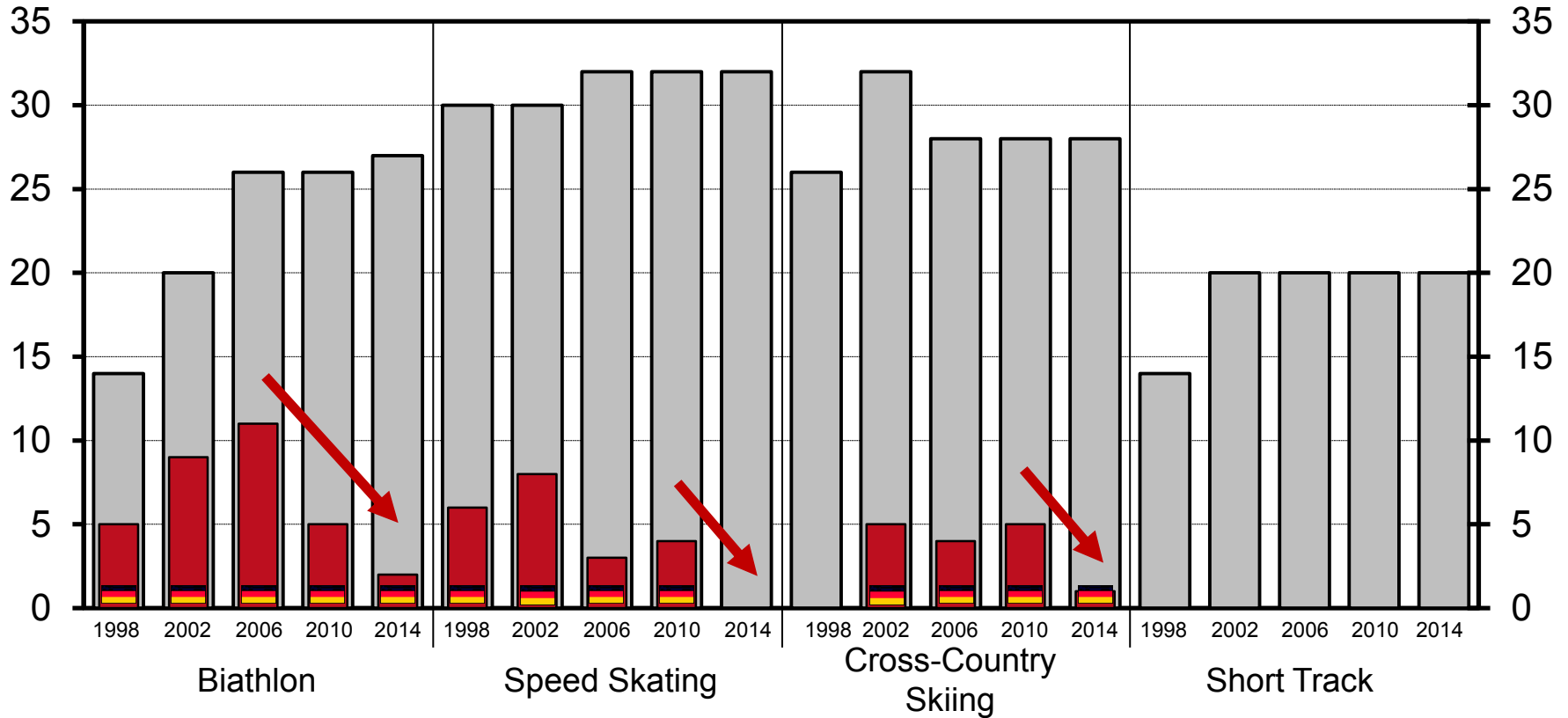
- 1 International and National Trends
- 2 Performance Density
- 3 Training
- 4 Training Regulation and Control
- 5 Summary and Future Prospects

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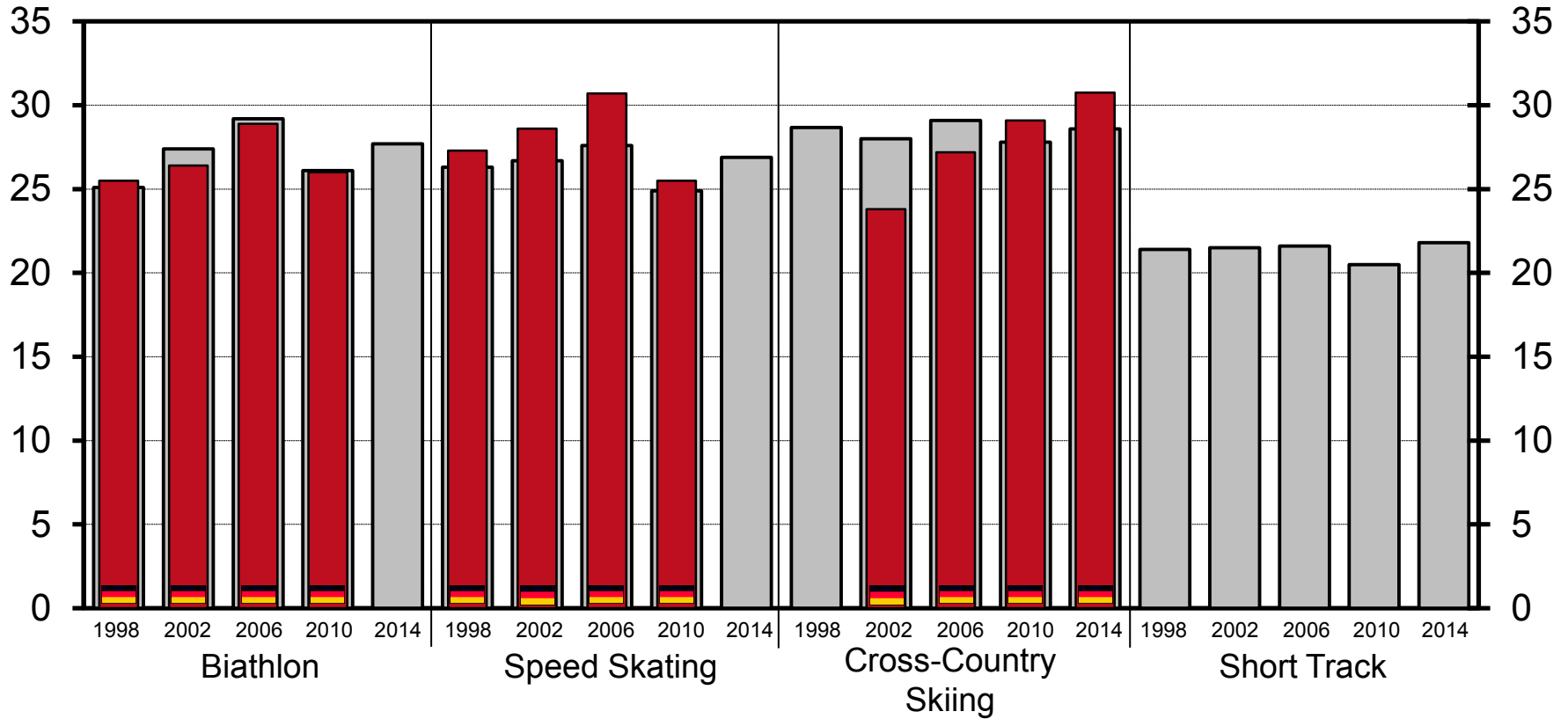
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# 1 International and National Trends



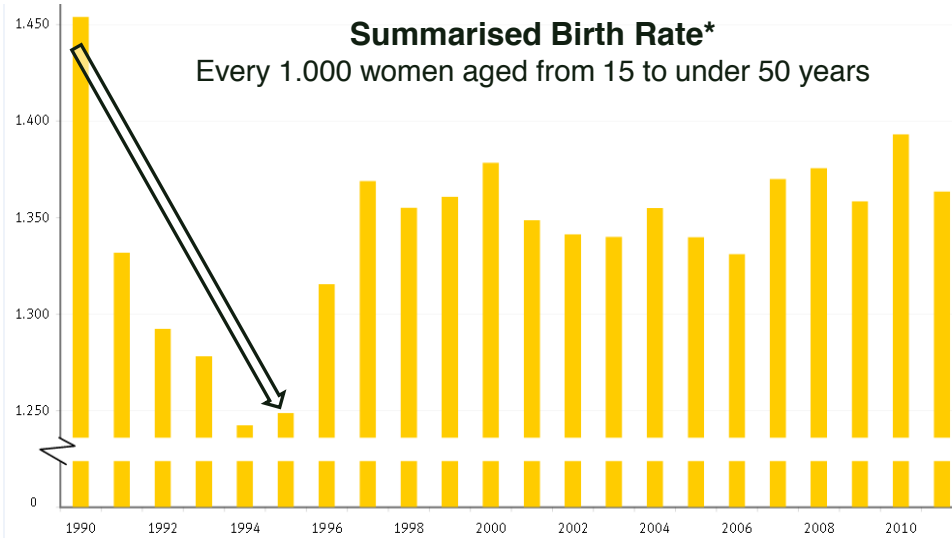
Number of reachable and reached Medals 1998 to 2014

# 1 International and National Trends



Age of Medal Winners (women) 1998 to 2014

# 1 International and National Trends



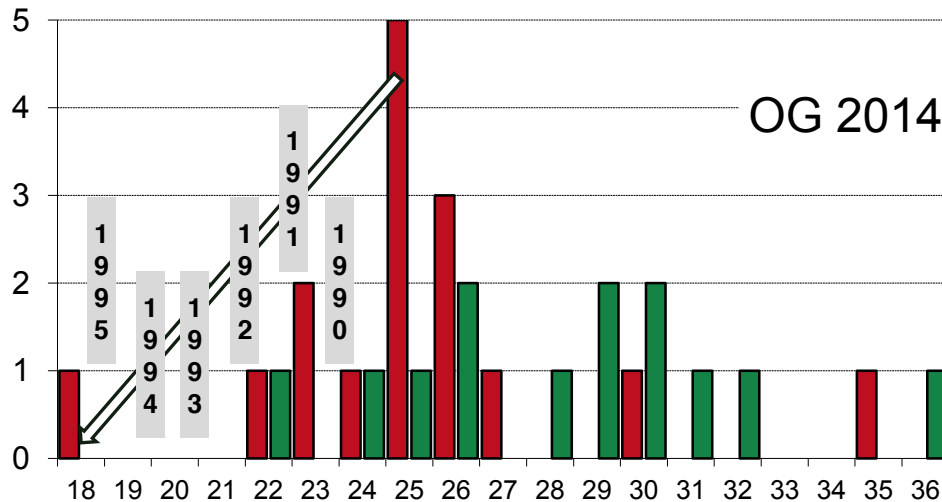
## The Population Development in Germany

hits the

- Society in general

and the

- Performance Sport in particular (as well as in other areas with special selection criterions)



\* Modified by Federal Statistical Office 2013

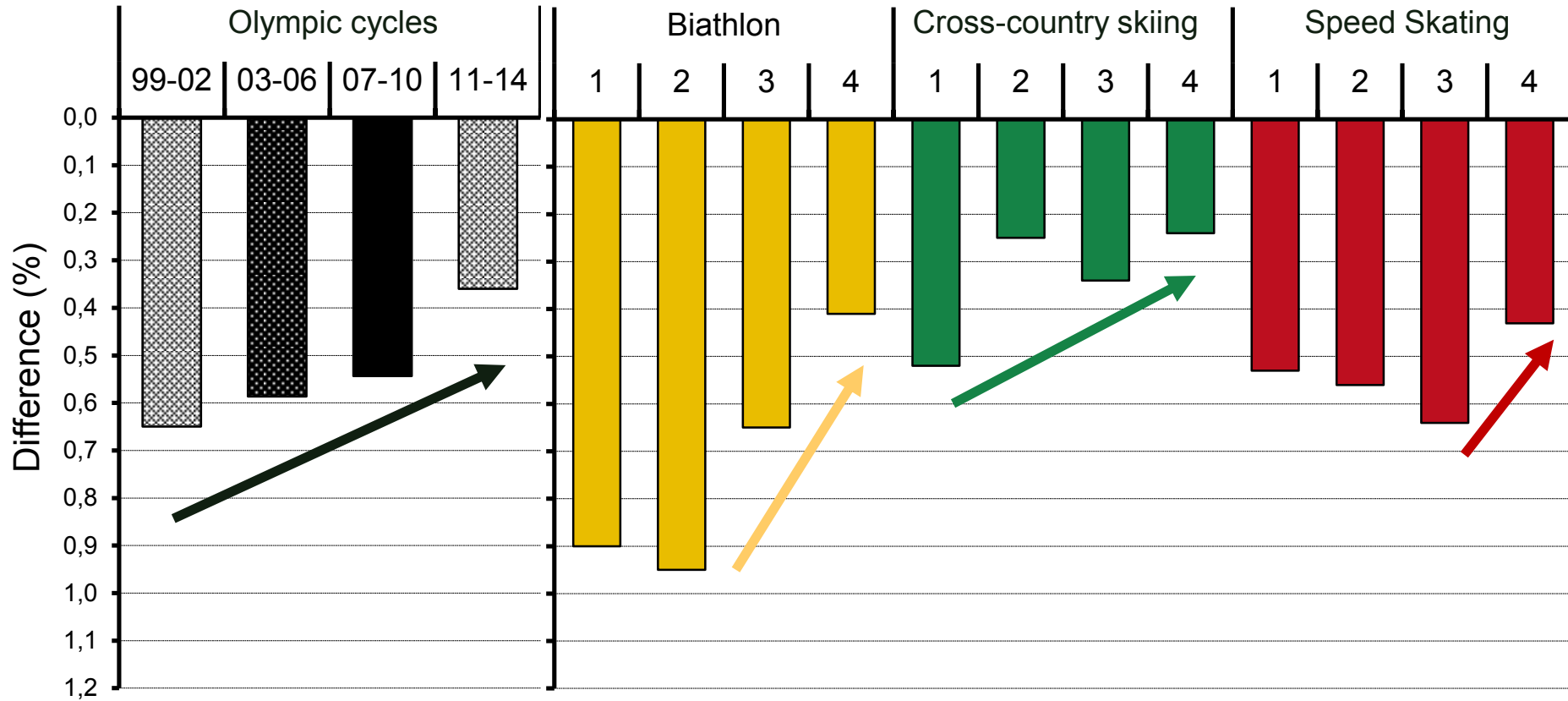


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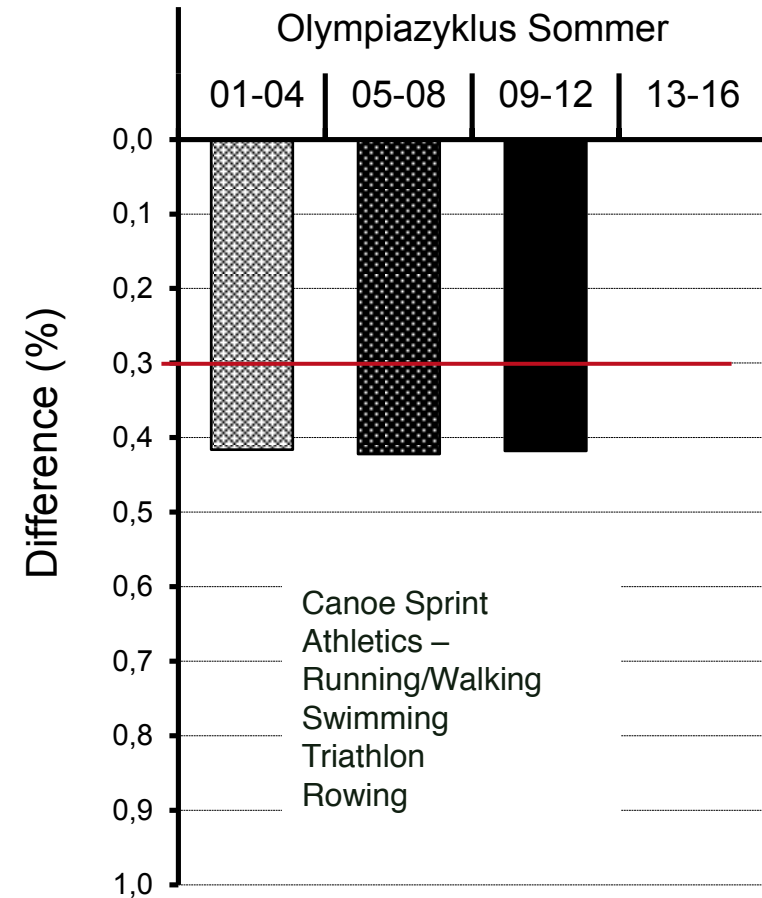
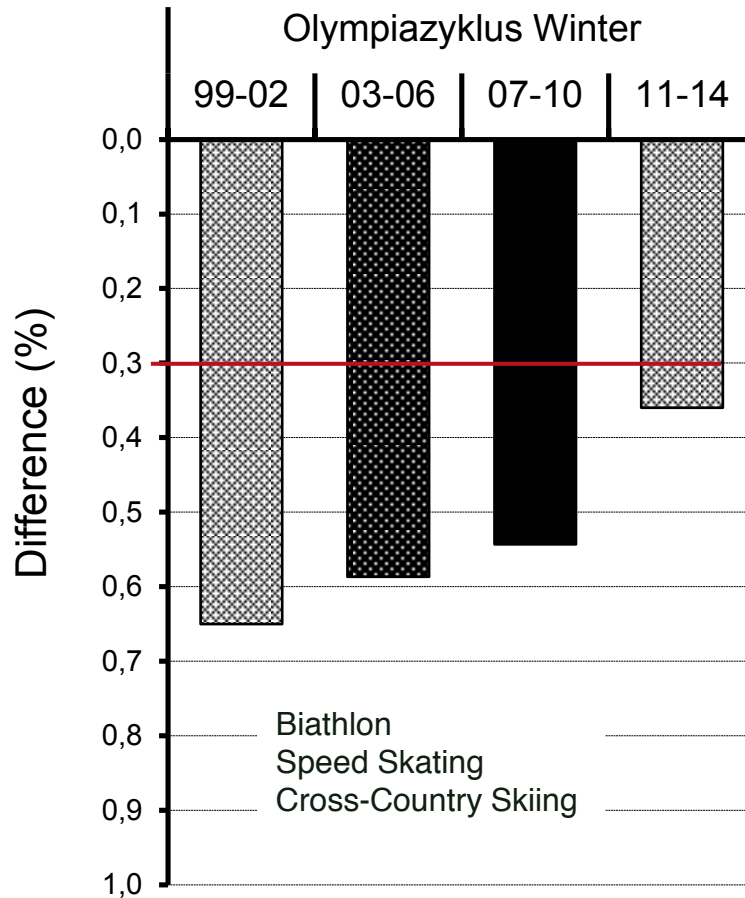
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## 2 Performance Density



Development of Performance Density (OG/WC, Ø Place 1-3, Olympic Disciplines) - Men

## 2 Performance Density



Comparison of Performance Density Winter - Summer (OG/WC, Ø Place1-3, Olympic Disciplines) - Men

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## 3 Training

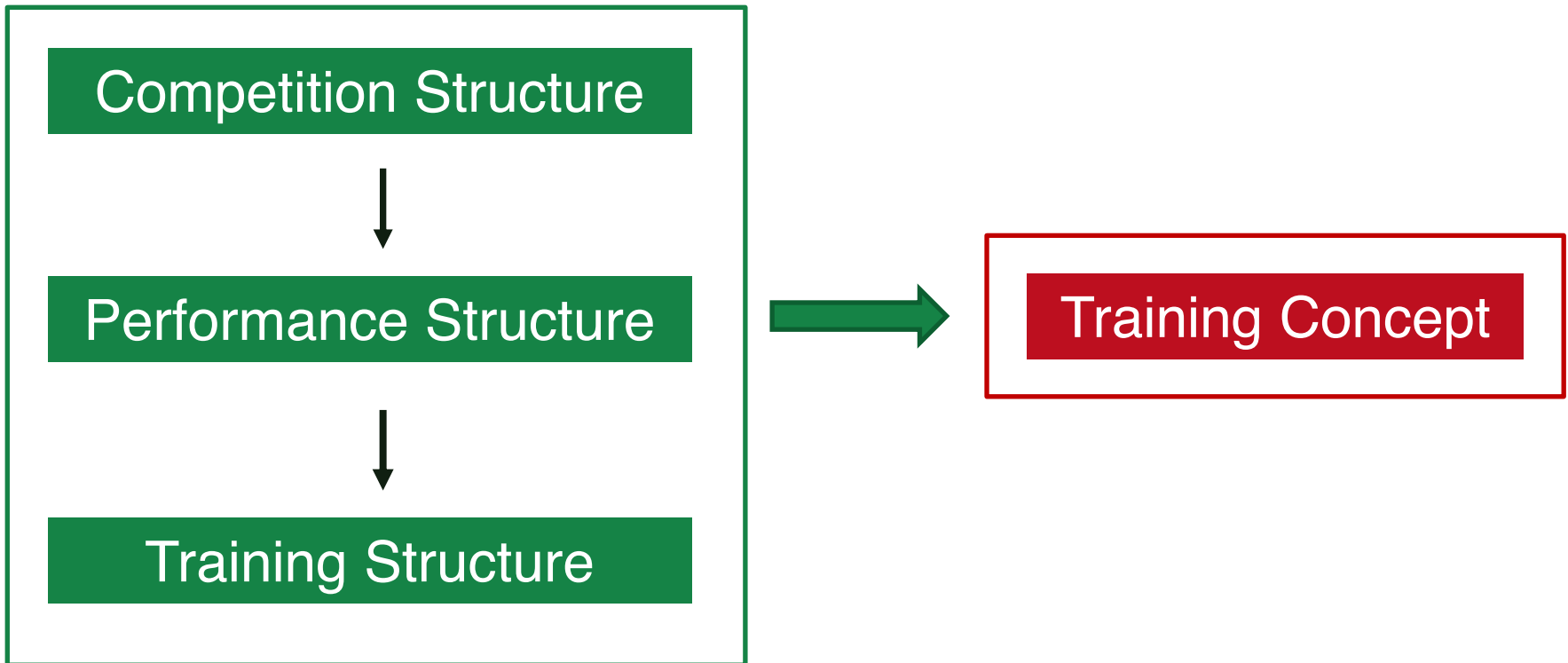
Interview with Federal Coach Swimming Henning Lambertz (Der Tagesspiegel, 02.03.2014)

“Now we should reflect again that Swimming is a endurance sport in which we have to train a lot. At the moment in Germany were only small training volumes realised – with that only small results could be expected.”

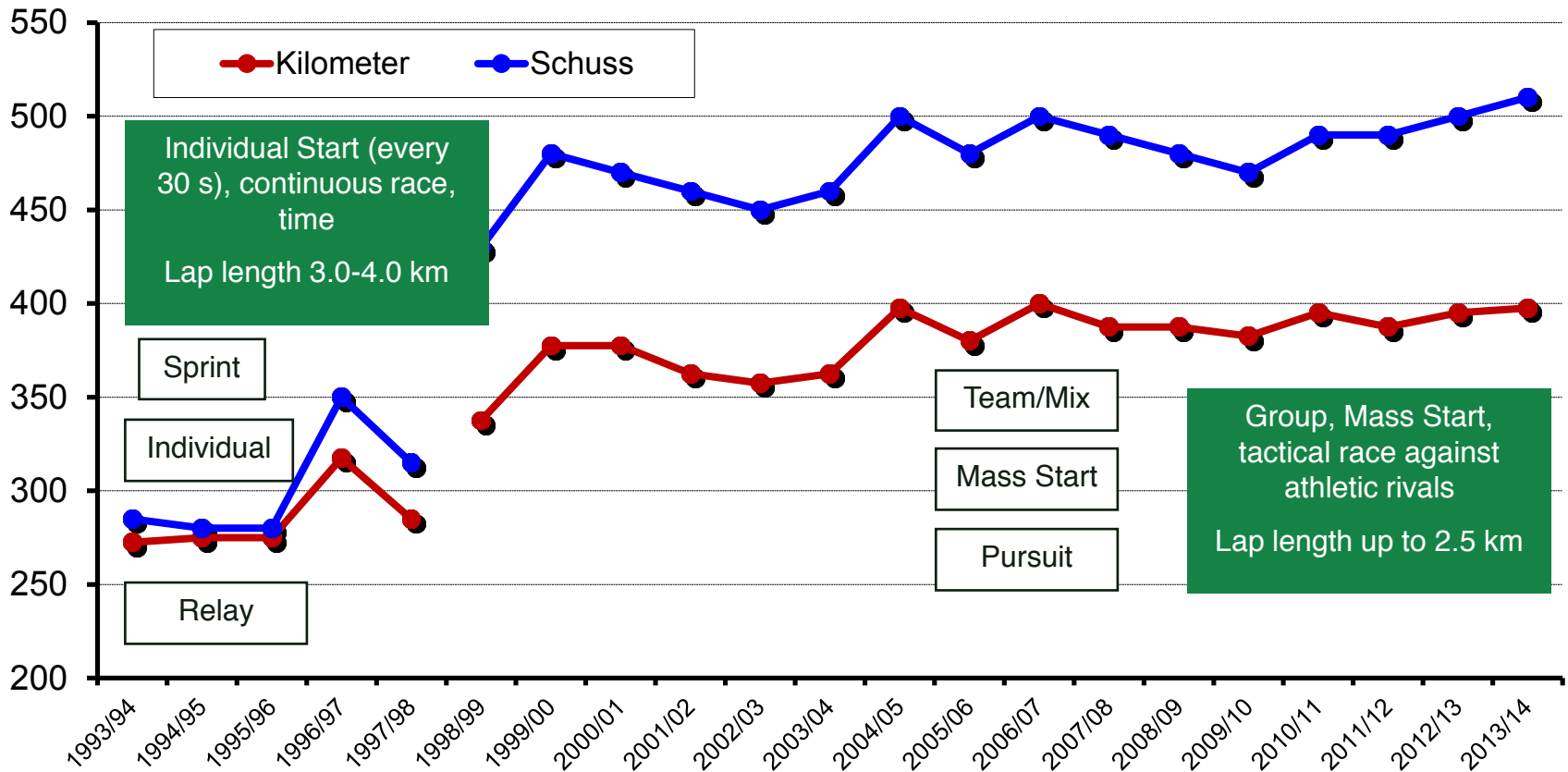
Spannagel (2014, p. 21)

## 3 Training

**Do we have an Endurance concept  
and how consistently do we pursuing it?**



# 3 Training – Concept



Typical ability-oriented Load Organisation in Biathlon (Schote, 1995)

## 3 Training – Concept

Many endurance sports are characterized by...

- a significant increase in the number of competitions
- a very tight competition calendar
- an increase in the performance density
- an increase in individual performance

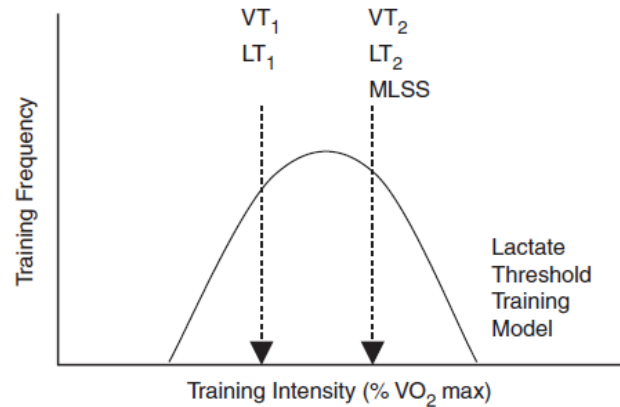
Is the current training concept  
still aligned to the increased requirements?



### 3 Training – Concepts in Comparison

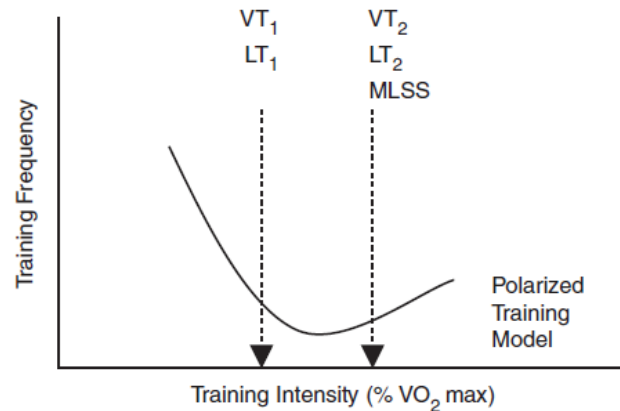
#### Lactate Threshold Concept

Germany



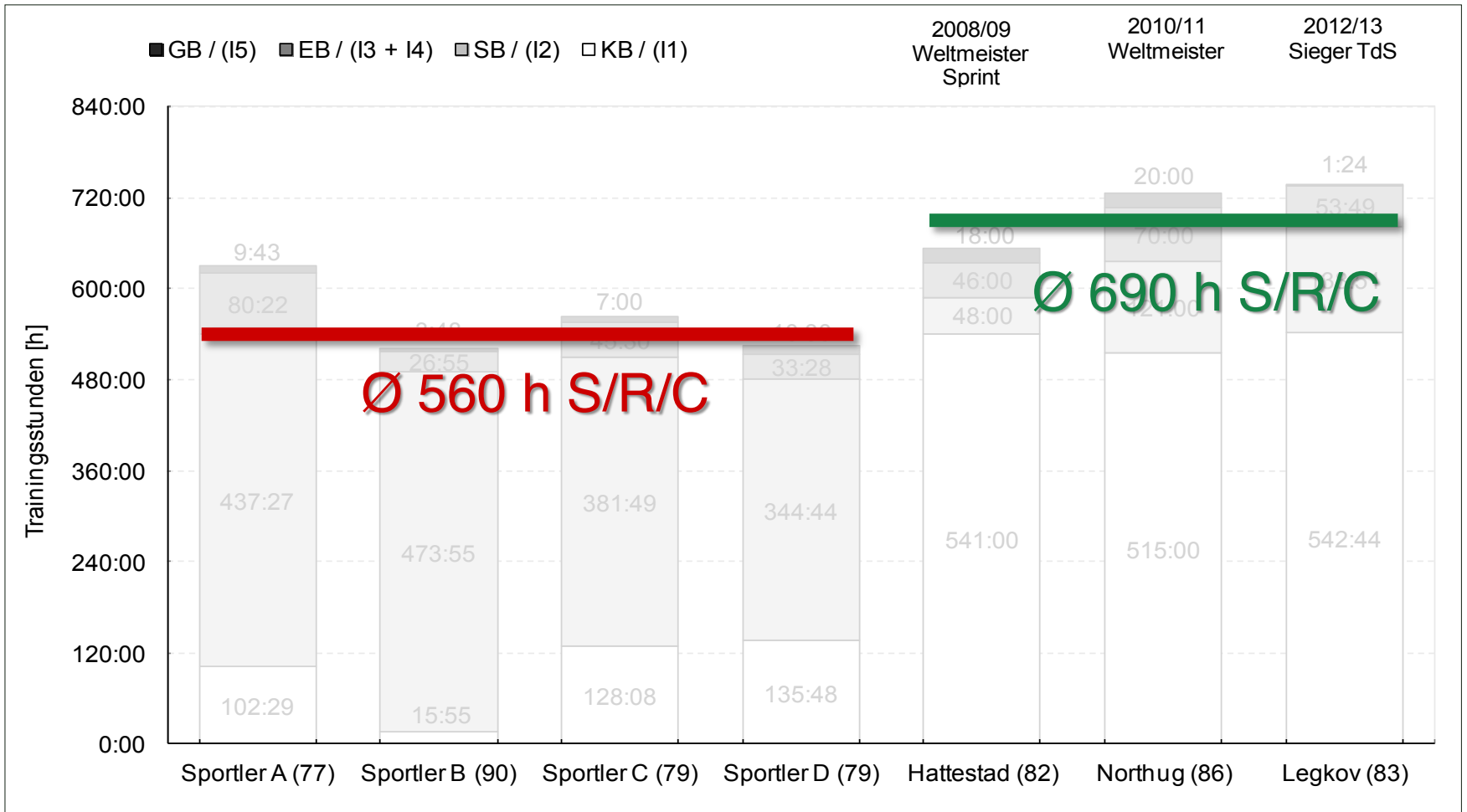
#### Polarized Training

Norway



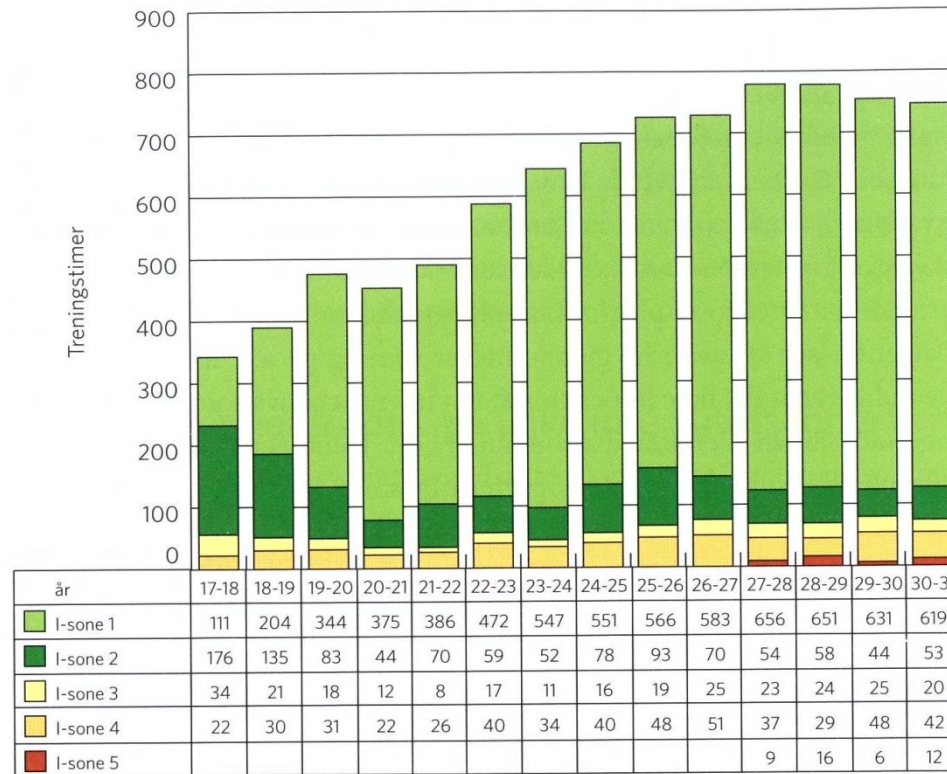
Seiler & Kjerland (2006, p. 50)

# 3 Training – Concepts in Comparison



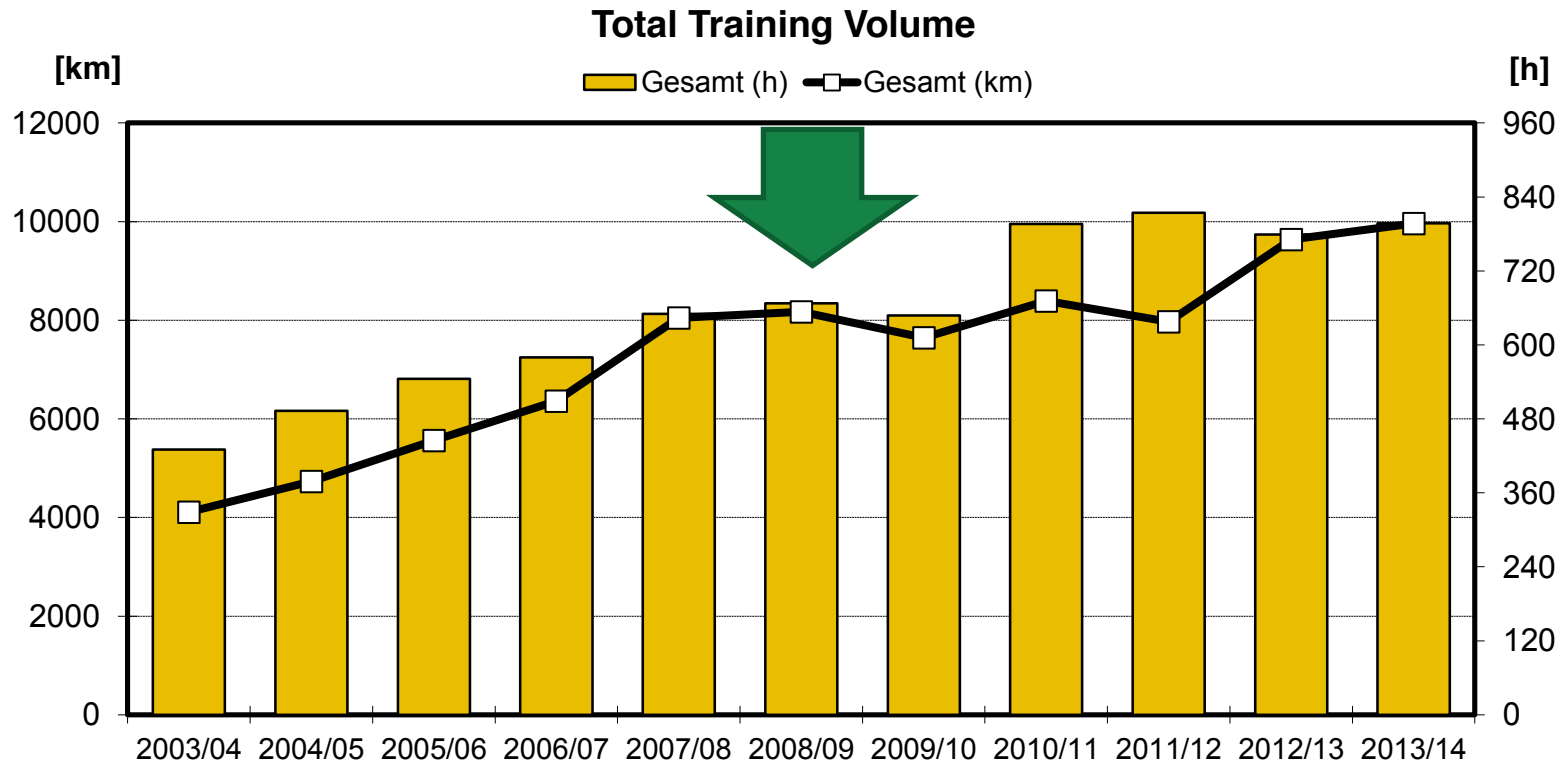
Training volume of elite cross-country skiers – 850 - 900 hours  
(skiing, roller skiing, running and strength training)

## 3 Training



Development of Training Duration (hours) , divided in the Intensity Zones of age 17-18 to 30-31 Years for Bente Skari, one of the most Successful Cross-Country Skiing Athlete of all time (Tønnessen & Enoksen, 2013, p. 152)

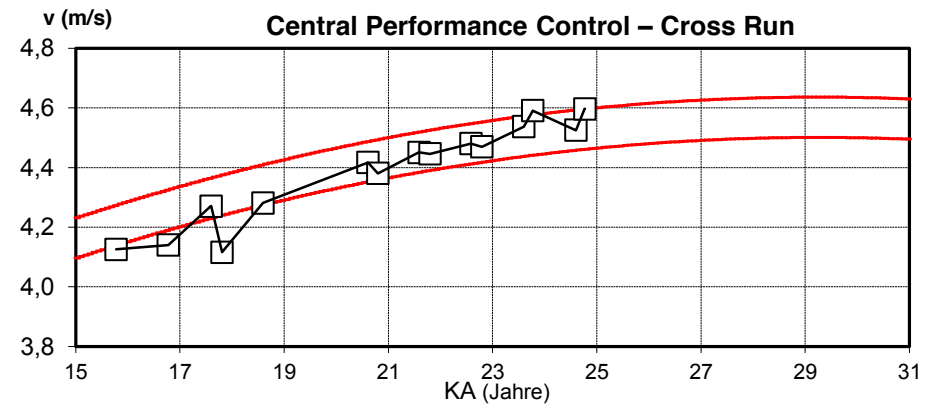
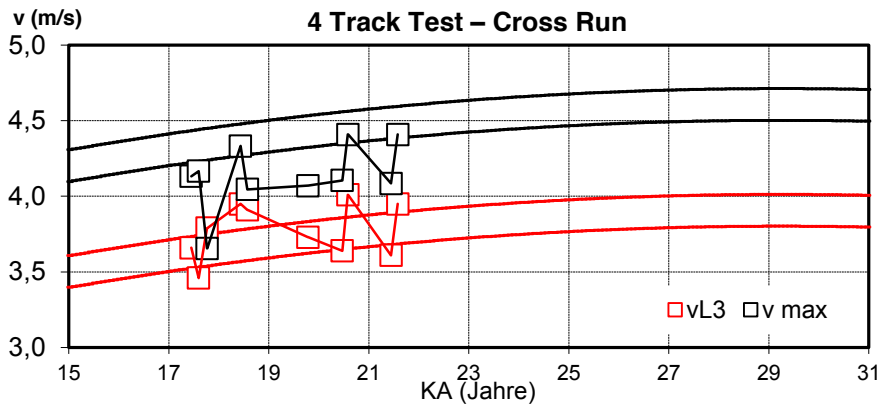
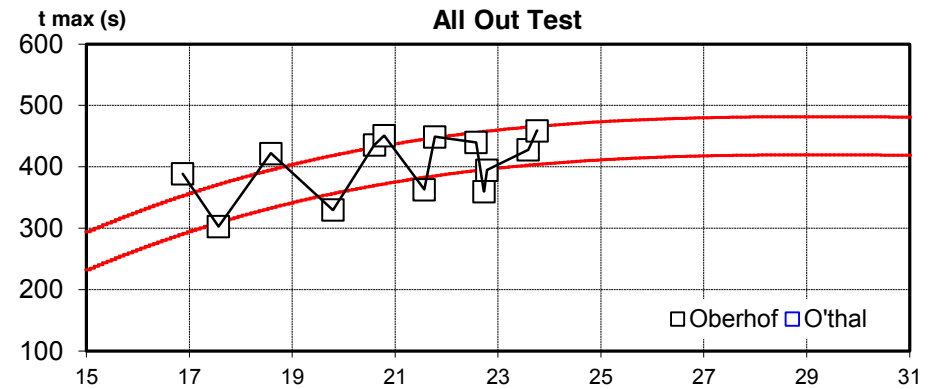
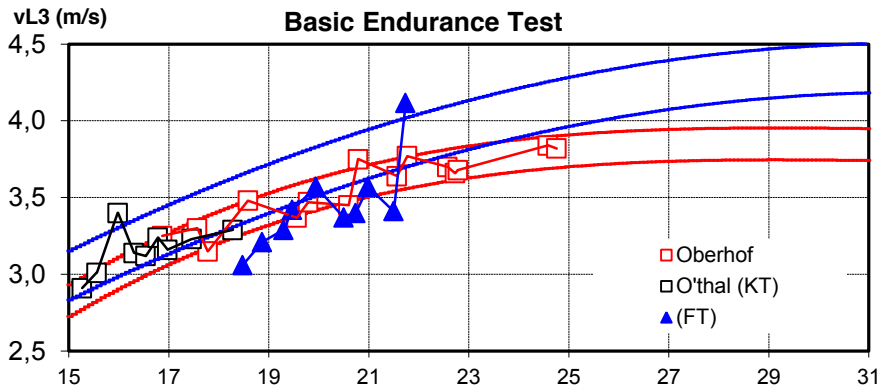
# 3 Training



Development of Total Training Volume (Hours and Kilometres) of a Successful German Cross-Country Skiing Athlete

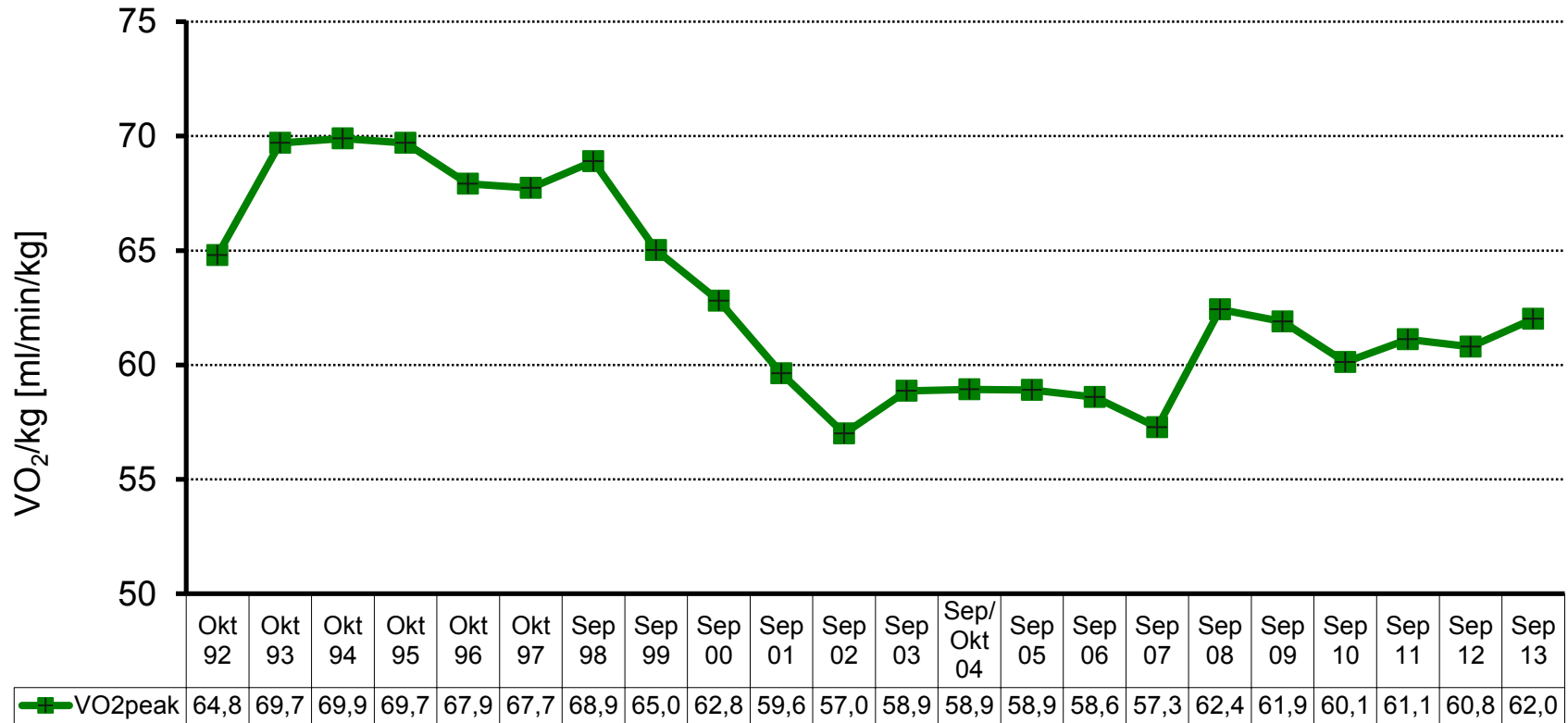


# 3 Training – Performance



Performance Development of a Cross-Country Skiing Athlete – pictured by Performance Diagnostic Parameters\*

# 3 Training – Performance/Performance Prerequisites



VO<sub>2</sub> peak of Graded Exercise Test /Cycle-Ergometric, Speed Skating-Men's National Team, Central Complex Performance Diagnostics\*, n = 15 (Ø)

The goal is therefore:

- to identify and to develop the essential performance prerequisites
- to define the training of young athletes as a training of the prerequisites
- not short-term specific success but the long-term preparation for peak performance
- adjustments in the national competition system of young athletes

# Training Regulation and Control



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## 6 Summary and Future Prospects

- Individual performance is increasing and the performance density continues to increase
- To be successful it is necessary to be guided by the best athletes of the world.
- Unfavourable demografic development (in Germany) and therefor potentially less talents



- Increase of quality of the training
- Develop and implement new training concepts
- Further individualisation in elite sport
- Further efforts are needed in the junior level
- Training and further education of trainer
- Social recognition

# Thank you for your attention!

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