



Co-funded by the  
Erasmus+ Programme  
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# Modern Coach - A seminar for young coaches

How to become a top coach - Case Iivo Niskanen  
Biomechanics of endurance training, technology

## Road to Olympic winner - case Iivo

Story of Athlete and Coach development

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**Lecture 22.3.2022**

# Agenda

- Olli Ohtonen - Coach story
- Vuokatti area athlete support National Olympic Training Center and University of Jyväskylä
- Iivo Niskanen - Athlete story



# Olli Ohtonen – Coach story



# Coach path

Skier  
1995-2007



# Coach path

Skier  
1995-2007



Skier-Coach  
2007-2010





# Coach path

Skier  
1995-2007



Skier-Coach  
2007-2010



Coach  
2010-



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Vuokatti-Ruka



# Coach path

- **Significance of own career**
  - Same feelings with athletes: physical and mental level
  - Same “language” with athletes
- Continuous learning as coach
  - Academic field
  - Other ski coaches
  - Coaches from other sports
  - Athletes

**DISCUSSION**  
—  
**SHEARING AND  
RECEIVING KNOWLEDGE**

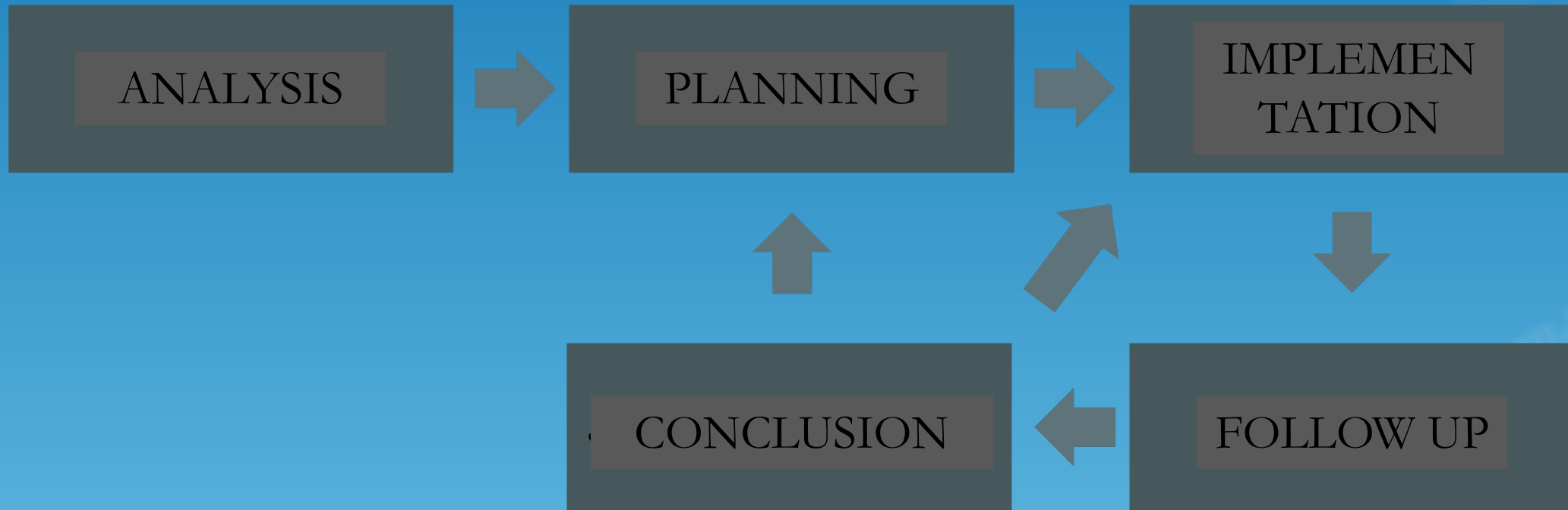
# Mentors

- Jouko Käsmä
- Reijo Jylhä
- Jarmo Riski
- Several other persons





# Coaching process



# Coaching process

- Goal directs work!
  - 1-2 goal for training season
- Race and training programs
- Periodization
  - Don't train when tired – at least too long time
- Testing / measuring
- Documentation



# Meaning

- Repeat: Train – Eat – Sleep
- Use time to basic things and it will reward



## Some notes / Ideas

- Understand the meaning of different things
  - There are things which needs to be in certain level
  - There are things constantly which develops athlete to higher level
- "Not as much as possible, but as little as needed"
- Risk vs. return: sometimes aiming to minimal return can cause total failure



# Caring

- Caring, contacting, listening
- Most important question: How do you / did it feel
  - Athletes feels that he/she is being cared
  - Athletes' self knowledge and differentiation of own feeling increases



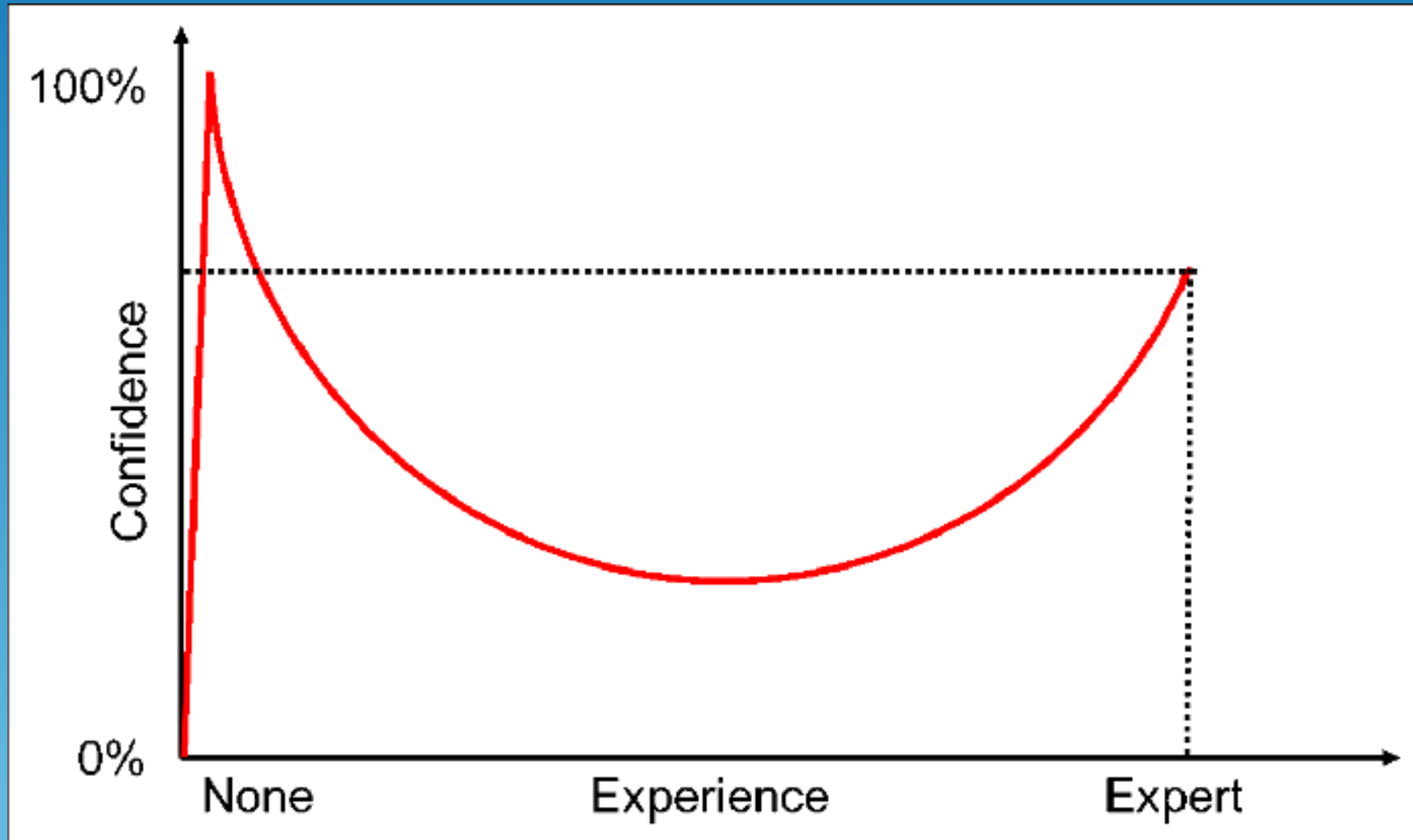


# To Conclude

- Own career
- Formal studies
- Work in supporting and stimulating environment
- Urge to learn new things



# Dunning-Kruger effect





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JYVÄSKYLÄN YLIOPISTO  
UNIVERSITY OF JYVÄSKYLÄ

# Vuokatti area – athlete support

National Olympic Training Center  
University of Jyväskylä

# National Olympic Training Center Vuokatti-Ruka

Help to make results  
Enable/provide excellence and conditions

BI

Alpine

FS

SB

CC

NC

1. Snowsports SKIWALLEY - Continuous
2. Olympics/WCS preparation - Olympiad
3. Yearly work with sports – 1 year

Coaching

Expert work

Research &  
Development + Big  
games project

Conditions





JYVÄSKYLÄN YLIOPISTO  
UNIVERSITY OF JYVÄSKYLÄ

# SPORTS TECHNOLOGY UNIT Vuokatti



Euroopan unioni  
Euroopan aluekehitysrahasto  
Euroopan sosiaalirahasto

Vipuvoimaa  
EU:lta  
2014–2020



Euroopan unioni  
Euroopan sosiaalirahasto



Kainuu



CEMIS

Centre for Measurement and Information Systems



# Sports technology – Coachtech



Switch to normal mode

20.10.2019 13:03 IN\_22

Show/Hide Comments

HR [bpm]		CYCLE			POLES	
avg	end	CT [s]	CL [m]	index [cm/ms]	Ft [ms]	Push / Swing [%]
-	-	2.15	13.15	4.3	308	14.3/85.7

speed: 21.9



2.00

One frame back

Play both

One frame forward

Cameras:  side  rear Video speed: 0.1x  0.5  1x

20.10.2019 13:03 IN\_22

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HR [bpm]		CYCLE			POLES	
avg	end	CT [s]	CL [m]	index [cm/ms]	Ft [ms]	Push / Swing [%]
-	-	2.15	13.15	4.3	308	14.3/85.7

speed: 22.3



1.71

One frame back

Play both

One frame forward

Cameras:  side  rear Video speed: 0.1x  0.5  1x

# Sports technology – Coachtech

- Combine videos and analog data and **3D-kinematics**
- Online calculated parameters
  - Cycle length / frequency
  - Push / Swing time
  - Force production
  - Body joint and other angles – coming up
  - Propulsion – coming up
- Web storage
  - Coach and athlete have access to files with credentials







Photo: Jesse Väänänen

# Iivo Niskanen – Athlete story

# Iivo Niskanen

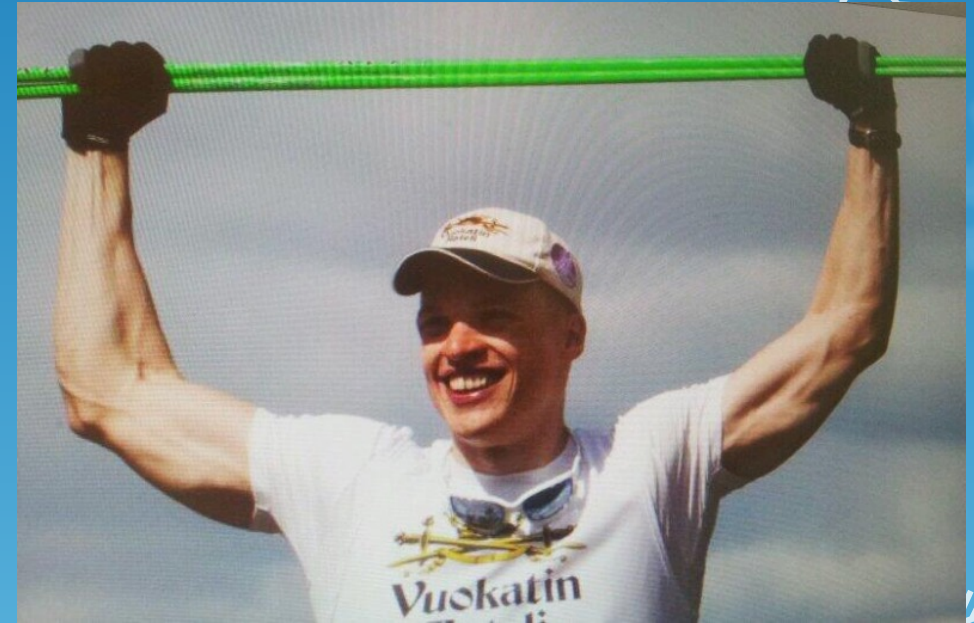
- Youth
  - Diverse background in sports
  - Invigorating and supporting environment at home
- Vuokatti sports high school 2008-2012
  - Guided coaching
  - Coach: Esko Paavola 2008-2013
    - Learning to train and believe in tough work
    - Classic technique
    - Potential young man





# Iivo Niskanen

- Desire to win!!
- High motivation to work hard
- To know oneself





# Practical situations problems and succedings



# Sotshi 2014

- Health problems during summer
- Topspin of successes
  - ScanCup – JWCS – WC – Olympics
- Greatest sport related change in life



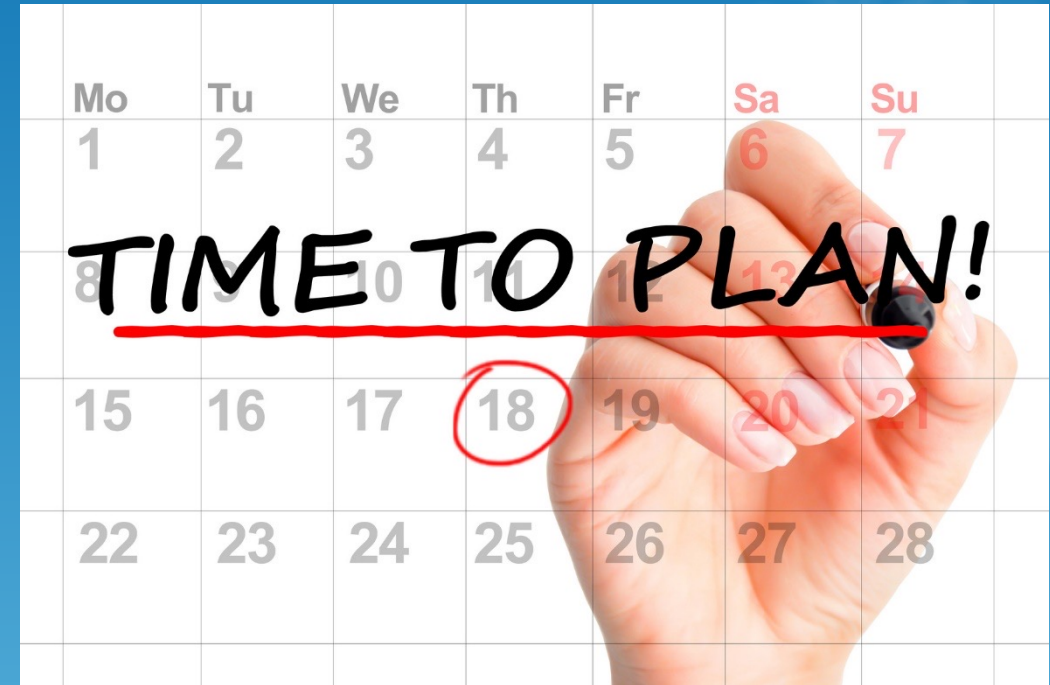
## 2015 - 2016

- Healthy summer
- Fall and winter problems
- Glimpse of lights
  - 1. WC victory in Ruka
  - Outstanding victory in Finnish champs 50 km
- Need to do something...



# Lahti 2017

- Analysis in summer
  - Only one goal and releasing it
  - Training plan
    - Programming
    - Following training load
  - Race plan
    - Throughout main competitions





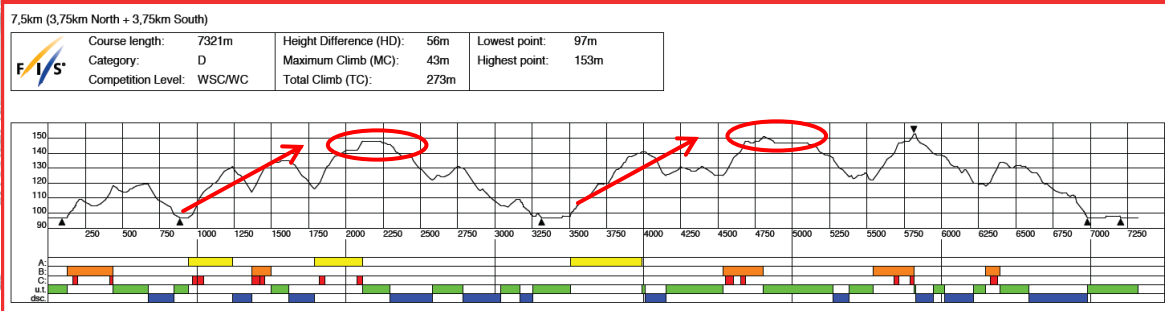
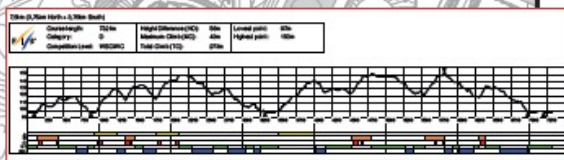
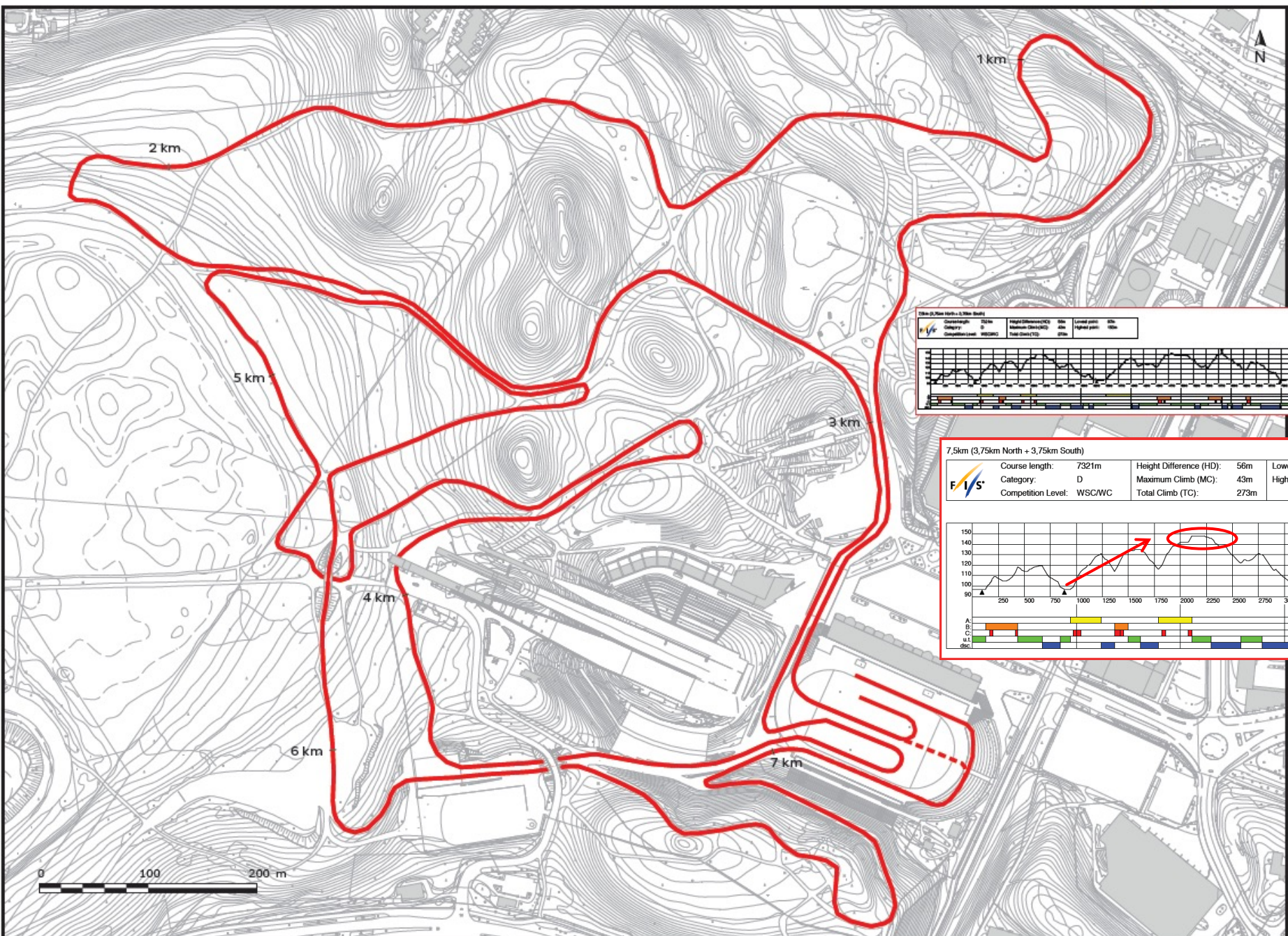
# Lahti 2017

- Moderate amount of competitions
- Scandinavia Cup
- Tactics to 15 km race





**CC Interval Start Men [CL] – 7.5km (3.75km North + 3.75km South)**



**Lahti 2017** 





# Lahti 2017

- Sprint relay

and events after







# PyeongChang 2018

- Goal: 50 km classic
- To get skating into new level
- Adjust working training models



# PyeongChang 2018

- Challenges in pre-camp
- Skiathlon and coaches suffer
- Last weeks topspin
- Tactics in **Race**





  
PyeongChang 2018



# Oberstdorf 2021

- Great changes in training
- Excellent summer – terrible fall
- Reacts in November
- Problems in preparation
- Lead to proper analysis and re-think



# Peking 2022

- Changes in training – back to old with modifications
- Simplification
- Peking project in terms of conditions



# Thank you!

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