

Assessment for training: testing for National Olympic Teams

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Testing for Olympic Teams

Testing sessions used to:

- Verify training process
- Optimize biomechanical and physiological factors

Testing protocols are designed to:

- Multiparametric evaluation
- Increase the specificity of testing
- Answer to trainers question



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Testing for Olympic Teams

Alpine ski

VO₂ max - cycloergometers

Snowboard

Supramaximal test - cycloergometers

Ski Jump

CM Jump, Squat Jump

Nordic Combined

Repeated jumps 60s

Cross Country Skiing

Leg Press Force

VO₂ max - roller ski

Double Poling Power

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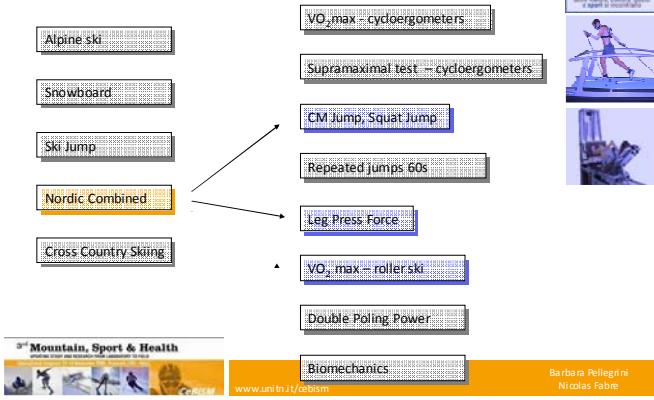
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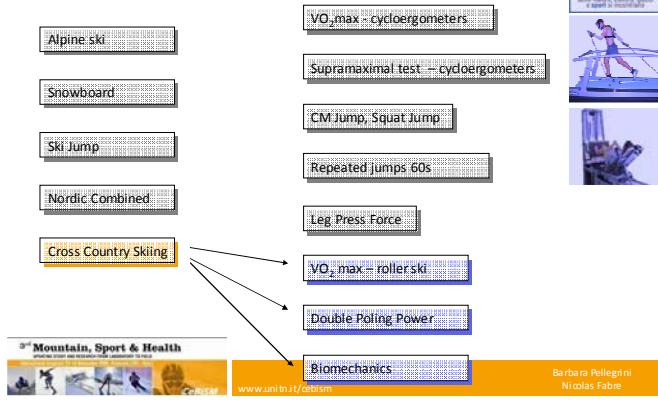
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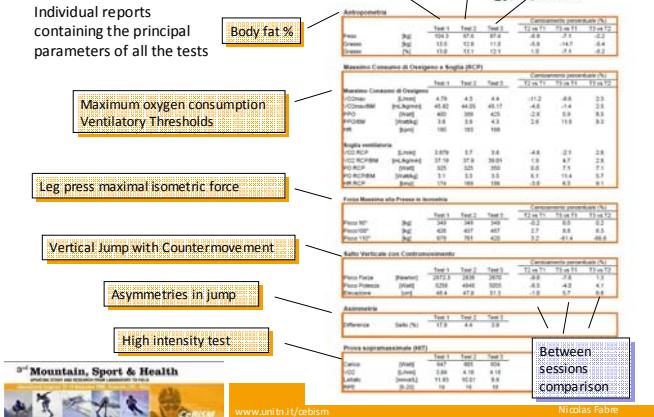
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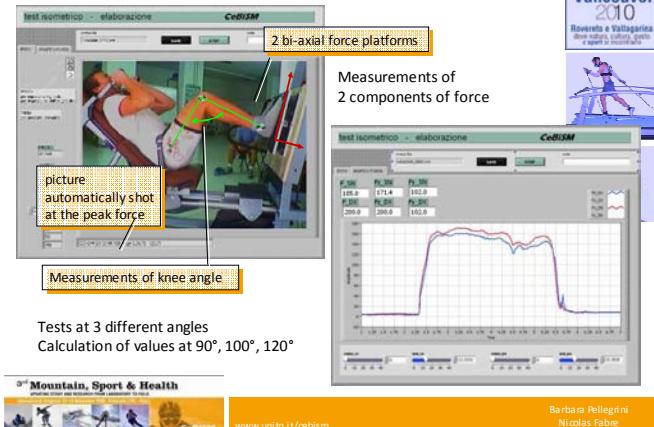
reports



Testing for Olympic Teams



Isometric leg press force

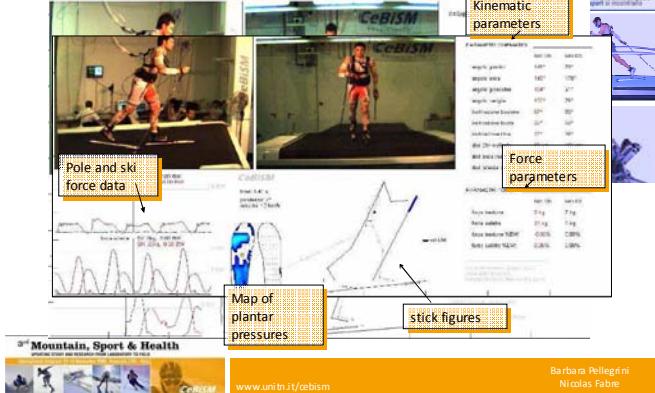


Biomechanics XCS



Biomechanical analysis

All the parameter presented in a video:



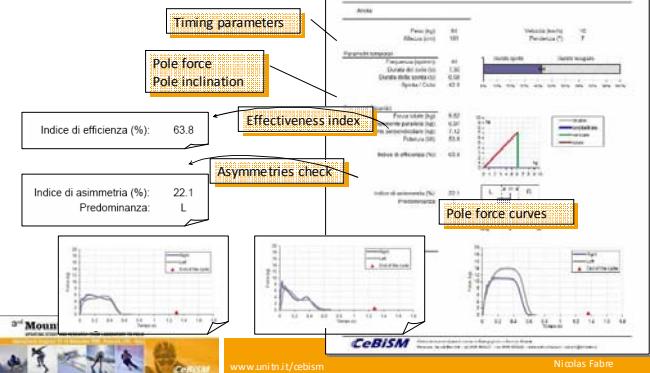
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Poling force

Individual and team report on pole force measurements



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Incremental tests to exhaustion

Skating technique

Protocol 1: Slope: constant (men 3°, women 2°)
Speed: increment 1 km/h every 1min

Protocol 2: Slope: constant (2°),
Speed: increment 1 km/h every 3-min

Diagonal stride technique

Speed: constant (men 10 km/h, women 9 km/h),
Slope: start at 2°, increment: 1° every 3-min

Double poling technique

Slope: constant (3°),
Speed: start at 12 km/h, increment: 0.5 km/h every 30s

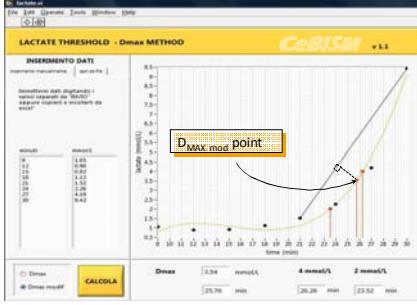


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Incremental tests analysis

Lactate thresholds determination



Bishop D., Jenkins DG., MacKinnon LT. Medicine & Science in Sports & Exercise 1998
Fabre N., Boilestre F., Pellegrini B., Schena F. Journal of Strength and Conditioning Research, In press

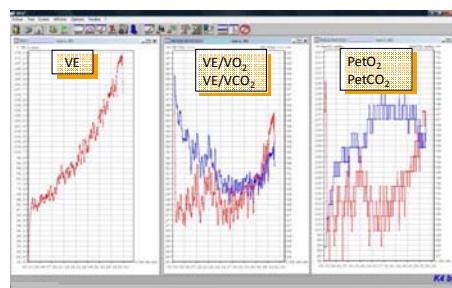
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Incremental tests analysis

Ventilatory thresholds determination



Wasserman K., Whipp BJ., Koyal SN., Beaver WL. Journal of Applied Physiology 1973
Lucia A., Hoyos J., Perez M., Chicharro JL. Medicine & Science in Sports & Exercise 2000
Bentley DJ., Newell J., Bishop D. Sports medicine 2007

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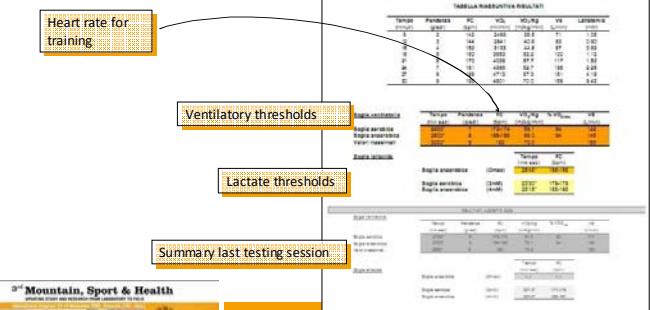
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Incremental tests analysis

Individual and team report on aerobic capacity

Heart rate for training



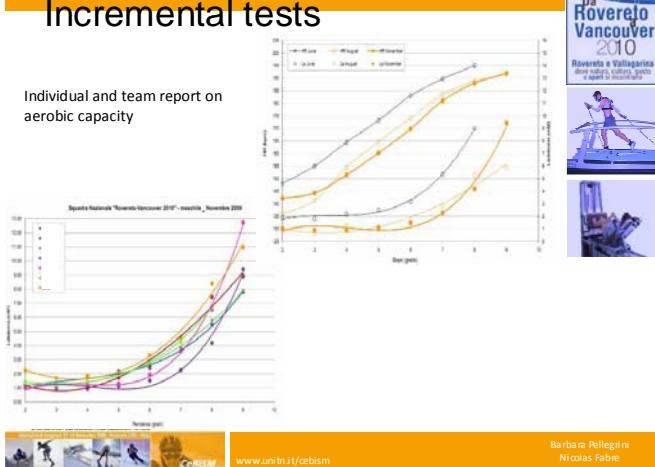
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Incremental tests

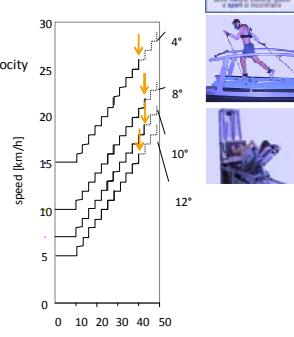
Individual and team report on aerobic capacity



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Maximal force and power

Upper body maximal force and power is determined during an incremental test



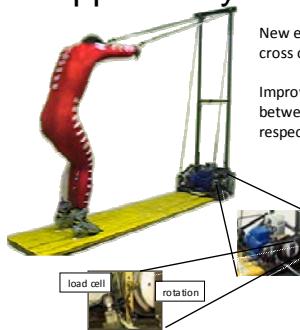
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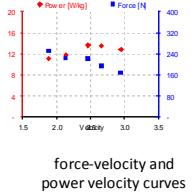
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Upper Body Power

New equipment for upper body power in cross country ski testing.



Improve motion similarity and correlation between sport performance and lab test respect to the traditional apparatus



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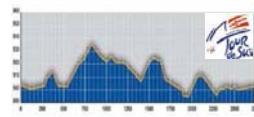
Bortolon L., Pellegrini B., Schena F., The Journal of Sports Medicine and Physical 2008

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Assessment for training: perspectives

XC-ski course profile: succession of steep Δ and Δ

Yard d'Armen, Mentre 12 km (2x2 km) 800 (200-600)



Modern races (mass start, double pursuit): anaerobic capacity = determinant

Yard d'Armen, Mentre 12 km (2x2 km) 800 (200-600)



Necessity:
to be able to quickly recover + to have high anaerobic capacity

New specific ski tests
on treadmill:

Course profile simulation

Adaptation of the Wingate test
for XC-skiers

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Thank you



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