



Modelling of Physical Health Parameters based on GIS and Sensor Integration

“Cardio topographic map” -
a study for modern GPS and GIS driven
sports and fitness applications

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On the Road: „Eco-Routing“



For Fitness and Outdoor: „Cardio Topographic Map“



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Approach:

GIS modelling of physical and health-relevant information

➤ **Enrich available map data base with static and dynamic parameters:**

Landscape model, trail surface, DEM, slope, weather forecast (wind, temperature, humidity)

➤ **Identify and adapt sensor-determined individual personal parameters:**

Heart-rate and -variability, power, cadence, pace, weight, body fat, etc.

➤ **Integrate medical expertise**

- Basics on exercise testing and prescription: Information on relevant physical health
- Parameters and thresholds, training theory, medical background on target groups

➤ **Provide and monitor achievable output**

- Suggestion on dedicated trails, training time and efficiency for different use cases
- Energy consumption
- Individual training plan/schedule for any type of outdoor environment
- Exercise intensity
- Information on individual fitness status



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GARMIN Connect.. myConnect Durchsuchen

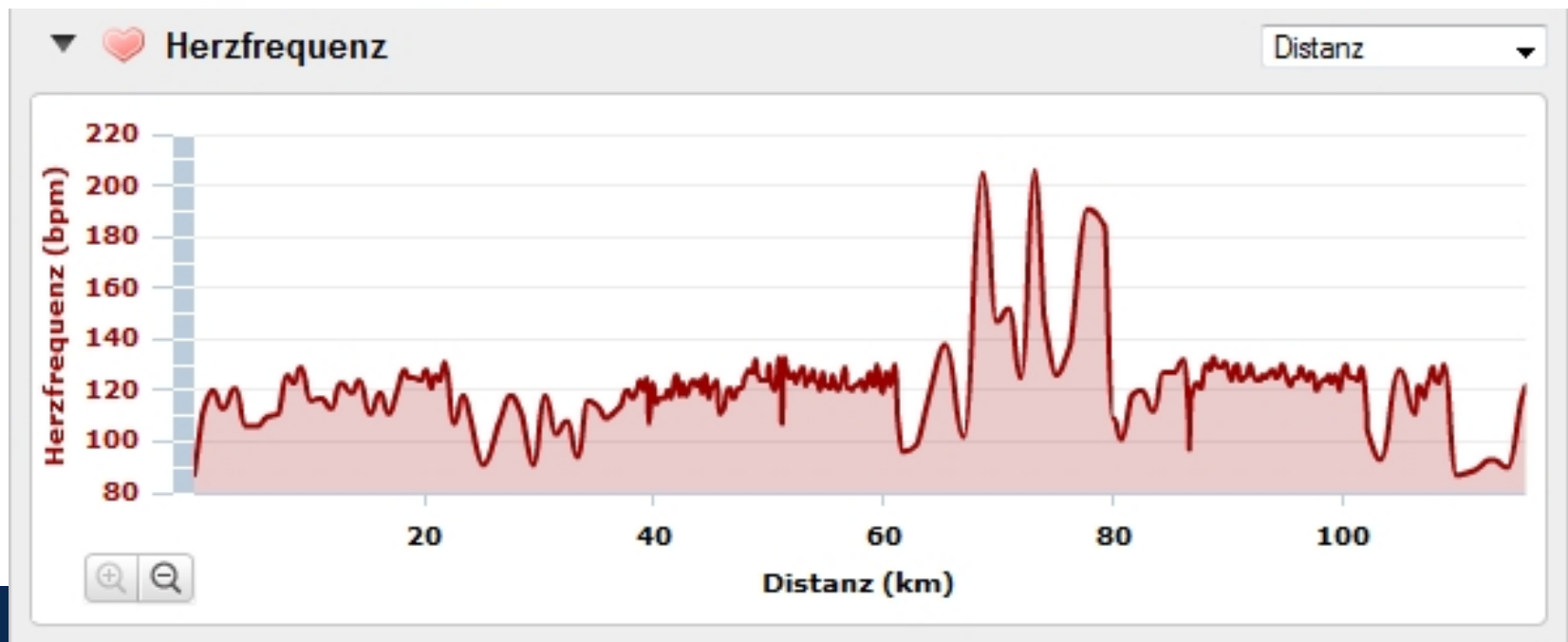
Dashboard Aktivitäten Courses Workouts Kalender Berichte Ziele Gesundheit



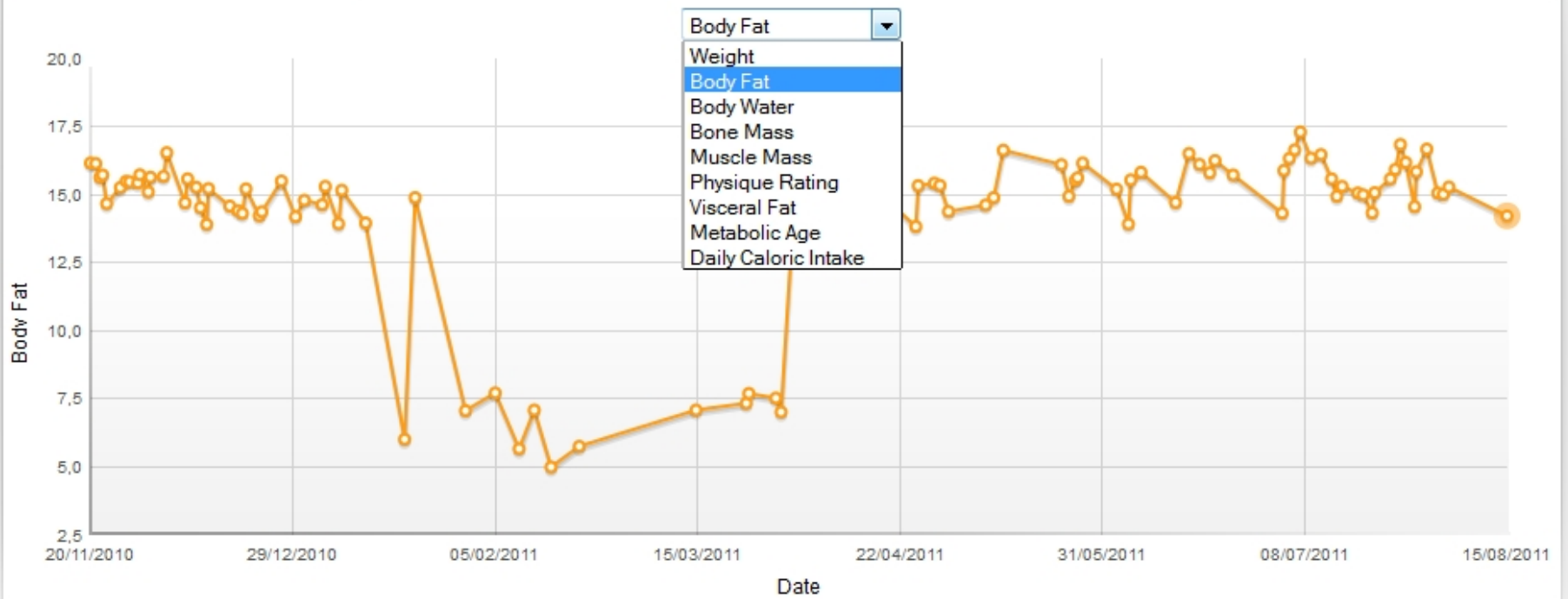
Tour Transalp Stage 4

[Zurück](#) [Weiter](#)

Mi, 29 Jun 2011 9:05 Mitteleuropäische Zeit von chassing
Aktivitätstyp: **Renncradfahren** | Ereignistyp: **Wettkampf** | Strecke: --







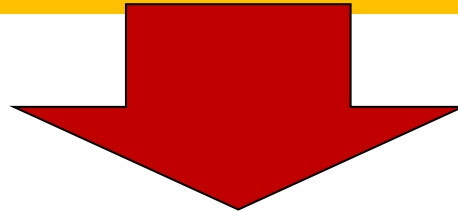
Measurement ✕

Mon, 15 Aug 2011

Weight	76,0 kg
Body Fat	14,2 %
Body Water	59,8 %
Bone Mass	3,2 kg
Muscle Mass	61,9 kg
Physique Rating	5
Visceral Fat	6
Metabolic Age	31 years
Daily Caloric Intake	3.318 C



- Improve training, give new motivation
- Use the natural topography for efficient training
- Receive individual recommendations on training



Rehabilitation:

- Cardio issues
- Adiposity

Prevention:

- Fitness
- Popular/Amateur Sports
- Company Health Programs
- Tourist Region Marketing
- ...

Pro-Training:

- Professional Athletes



Additional Aspects

➤ Aspects on Motivation

- New Aspects on how to motivate people to do efficient exercises
- Suggestion for company health programs (interesting for large companies)
- Concept for Integration in European Health Insurance Programs

➤ New Markets / Products

- Applications for electric bikes (pedelecs)
- Support for fitness devices and software solutions
- Realistic virtual training partner
- Training concepts for different use cases



Thank you for your attention!

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