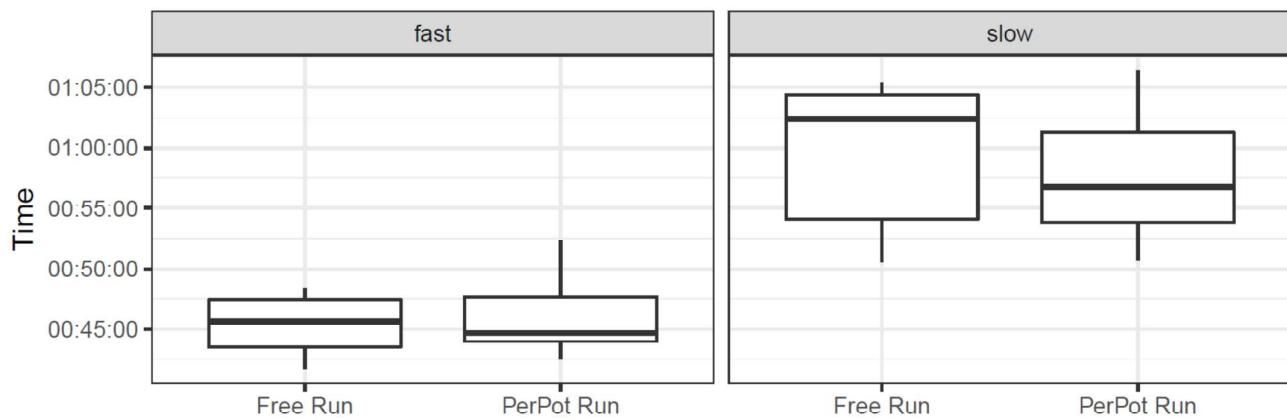


MMA: E-Coaching – 10 km – Recent Study

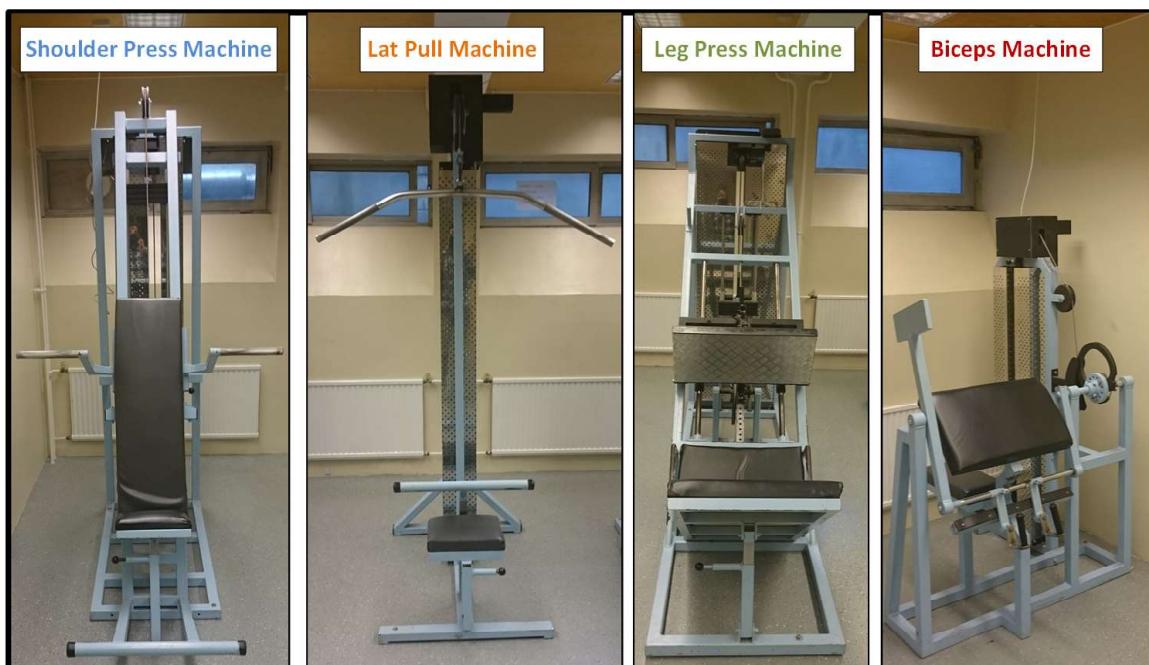
22 participants; 14 fast (less than 50 min for free run), 8 slow



Comparison of running times

Dobiasch, M., Baca, A., & Endler, S. (2018), *Recent Researches in Sports Science*. Savaria Univ. Press / Praesens, pp. 41-48.

MMA: Weight training machines



MMA: Leg press machine

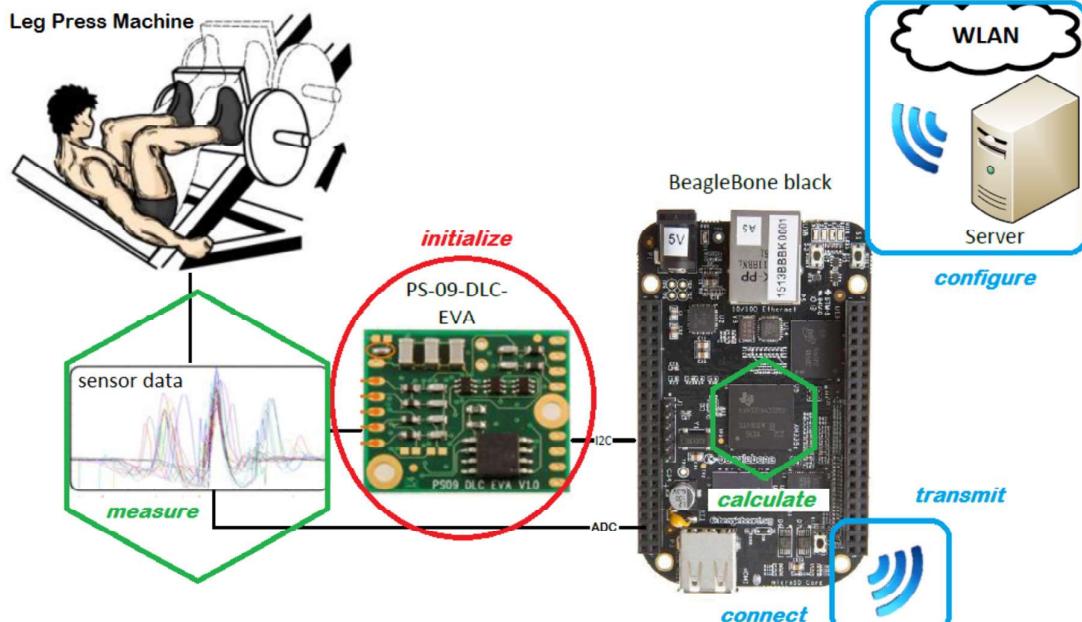


Sensor-equipped leg press machine



Attached force (load cell) and way (rotary encoder) sensors

MMA: Leg press machine



MMA – Weight training machine: Classification by SVM

- Features based on time and velocity dependent characteristics
- 3 classes:

well-performed execution

improper/
inconstant
flexion phase

improper/
inconstant
extension phase

		Confusion Matrix				
		Output Class		Target Class		
		1	2	3	4	
		247 39.1 %	1 0.2 %	2 0.3 %	98.8 1.2 %	
	1	2 0.3 %	105 16.6 %	2 0.3 %	96.3 3.7 %	
	2	5 0.8 %	0 0 %	267 42.3 %	98.1 1.9 %	
	3	97.2 2.8 %	99.1 0.9 %	98.5 1.5 %	98.1 1.9 %	
		1	2	3	4	

Confusion matrix of entire data set

Novatchkov & Baca,
Procedia Engineering, 2012

MMA – Weight training machine: Classification by MLP

- Features based on time and velocity dependent characteristics
- 3 classes:

well-performed
execution

improper/
inconstant
flexion phase

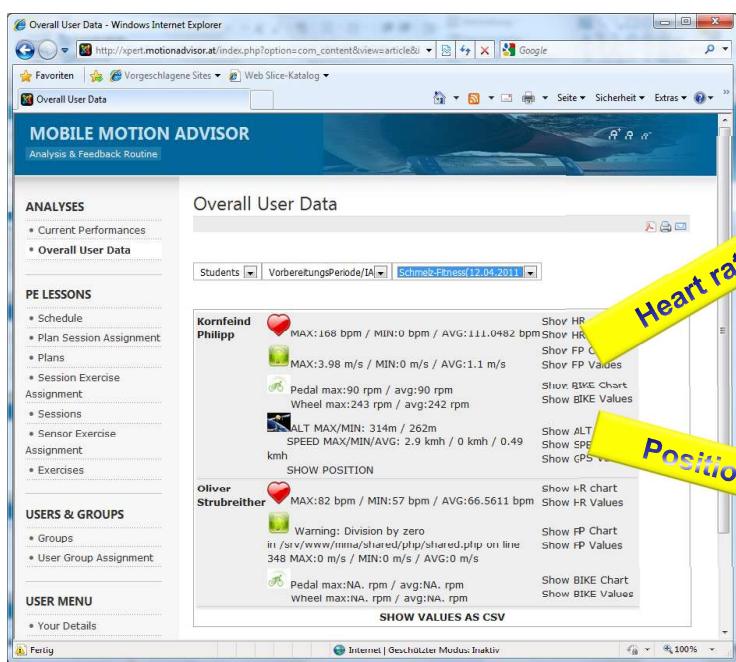
improper/
inconstant
extension phase

		Confusion Matrix				
		Output Class		Target Class		
		1	2	3	4	
		245 38.8 %	2 0.3 %	4 0.6 %	97.6 2.4 %	
	1	4 0.6 %	100 15.8 %	1 0.2 %	95.2 4.8 %	
	2	1 0.2 %	7 1.1 %	267 42.3 %	97.1 2.9 %	
	3	98.0 2.0 %	91.7 8.3 %	98.2 1.8 %	97.0 3.0 %	
		1	2	3	4	

Confusion matrix of entire data set

Novatchkov & Baca,
JSSM, 2013

Mobile Motion Advisor – School



Overall User Data

Kornfeind Philipp

- MAX: 168 bpm / MIN: 0 bpm / AVG: 111.0482 bpm
- Shov HR
- Shov FP C
- Shov FP Values
- Pedal max: 90 rpm / avg: 90 rpm
- Wheel max: 243 rpm / avg: 242 rpm
- Shov BIKE Chart
- Shov BIKE Values
- ALT MAX/MIN: 314m / 262m
- SPEED MAX/MIN/AVG: 2.9 kmh / 0 kmh / 0.49 kmh
- Show POSITION
- Show I-R chart
- Show HR Values
- Warning: Division by zero
- 348 MAX: 0 m/s / MIN: 0 m/s / AVG: 0 m/s
- Pedal max: NA. rpm / avg: NA. rpm
- wheel max: NA. rpm / avg: NA. rpm
- Show IP Chart
- Show FP Values
- Show BIKE Chart
- Show BIKE Values

Oliver Strubreither

- MAX: 82 bpm / MIN: 57 bpm / AVG: 66.5611 bpm
- Shov HR
- Shov FP C
- Shov FP Values
- Pedal max: NA. rpm / avg: NA. rpm
- wheel max: NA. rpm / avg: NA. rpm
- Show POSITION
- Show I-R chart
- Show HR Values
- Warning: Division by zero
- 348 MAX: 0 m/s / MIN: 0 m/s / AVG: 0 m/s
- Pedal max: NA. rpm / avg: NA. rpm
- wheel max: NA. rpm / avg: NA. rpm
- Show IP Chart
- Show FP Values
- Show BIKE Chart
- Show BIKE Values

Heart rate (HF)

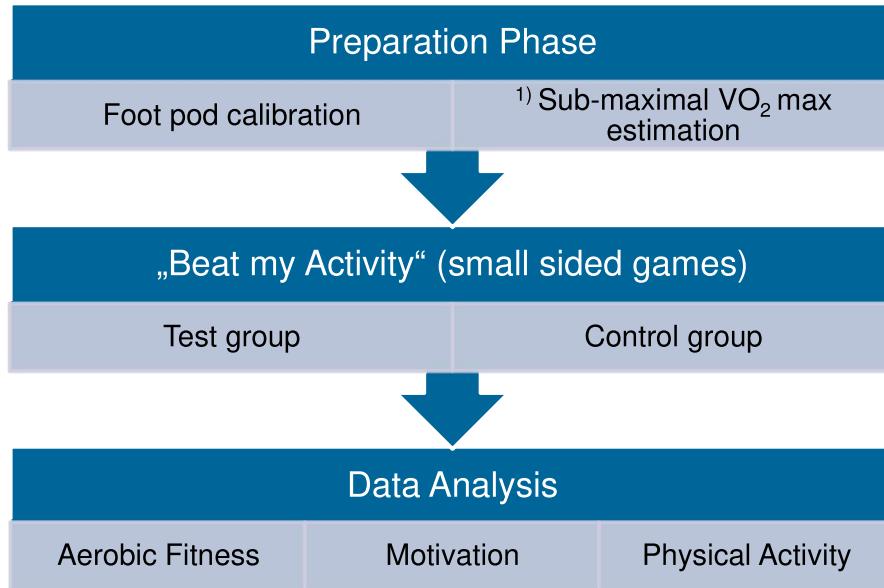
Position (GPS)



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Study Design



¹⁾George, J.D. et al., Med Sci Sports Exerc., 25 (3), 1993

Relative Activity Index

Rating the efforts of heterogenous individuals in games of various intensities

$$RAI_i = \frac{steps_i \cdot t_i^{-1}}{\sum(steps_j \cdot t_j^{-1}) / n}$$

RAI_i

t_j

$steps_j$

n

relative activity index of student i

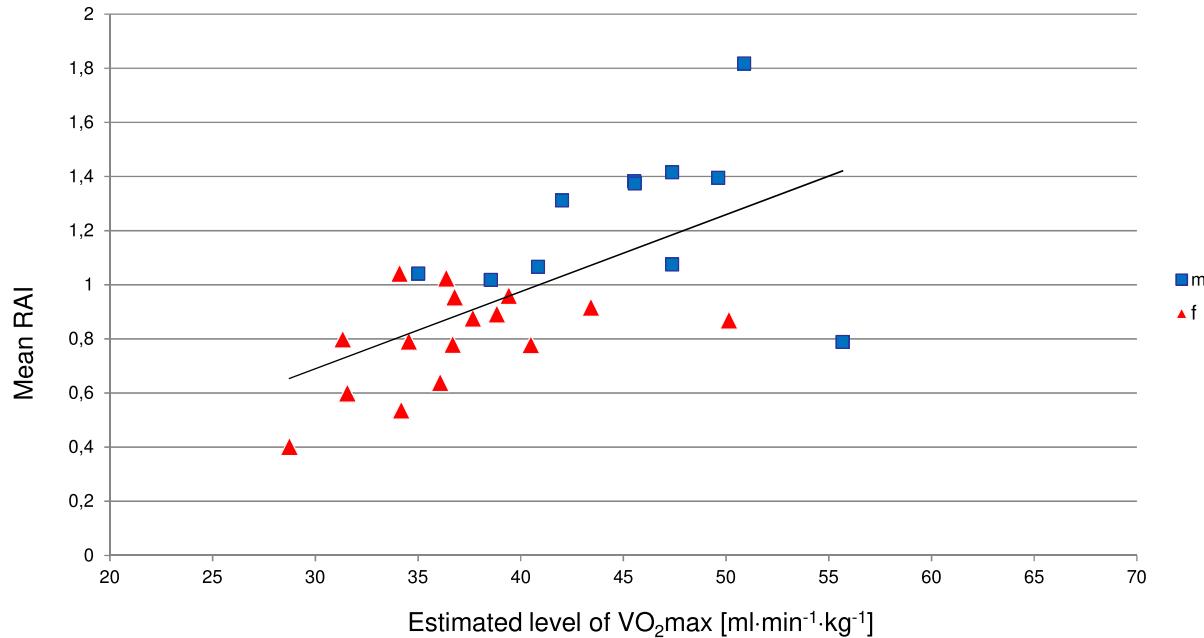
duration of ongoing activity of student j

number of steps during ongoing activity of student j

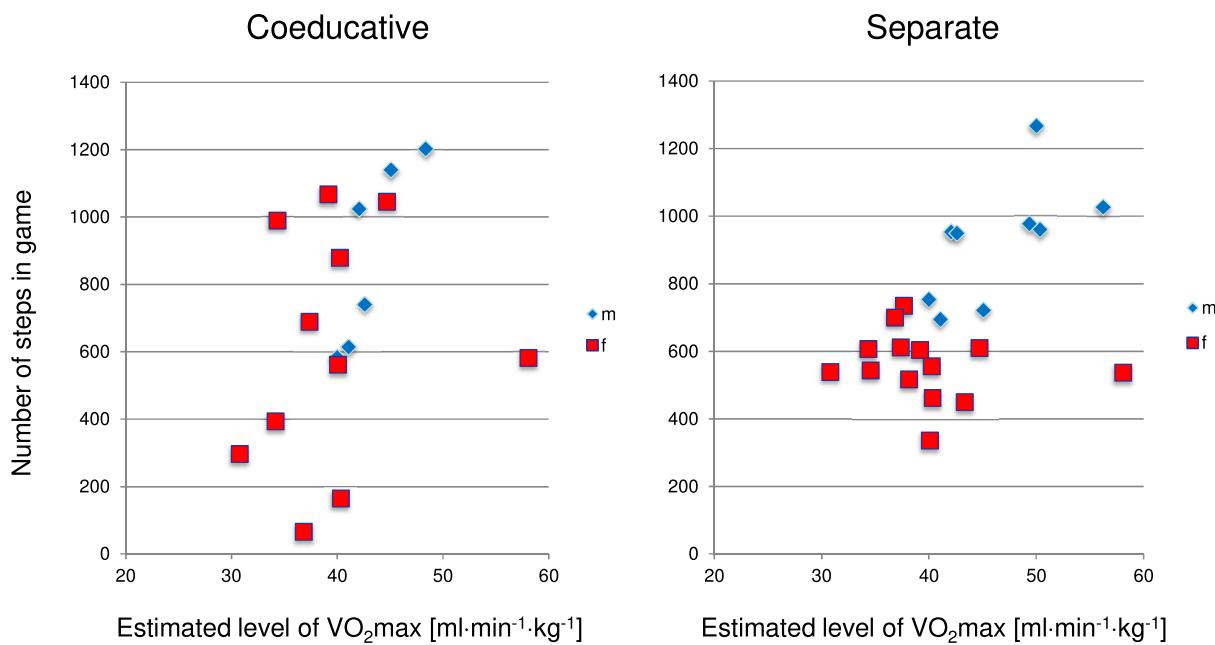
number of students

Means of RAI over one semester

($r = 0.620, p < 0.01$)



Example of two “Beat my Activity” sessions



SMS-28 Test (Sport Motivation Scale)

Results summarized in three factors:

amotivation / extrinsic motivation / intrinsic motivation

Analysis of variance (repeated measures): no significant difference ($p<0.05$) in state of motivation

Control group (N=17): amotivation slightly elevated, extrinsic and intrinsic motivation dropped.

Intervention group (N=12): amotivation slightly dropped, slight elevation of intrinsic and extrinsic motivation

Mobile Motion Advisor – University Sport – Te(a)chIn



Applicability of system in University Sport Primary goal was to motivate university students and staff for more physical activities by using state of the art innovative technologies.

<https://teachinsport.eu/>



Co-funded by the
Erasmus+ Programme
of the European Union