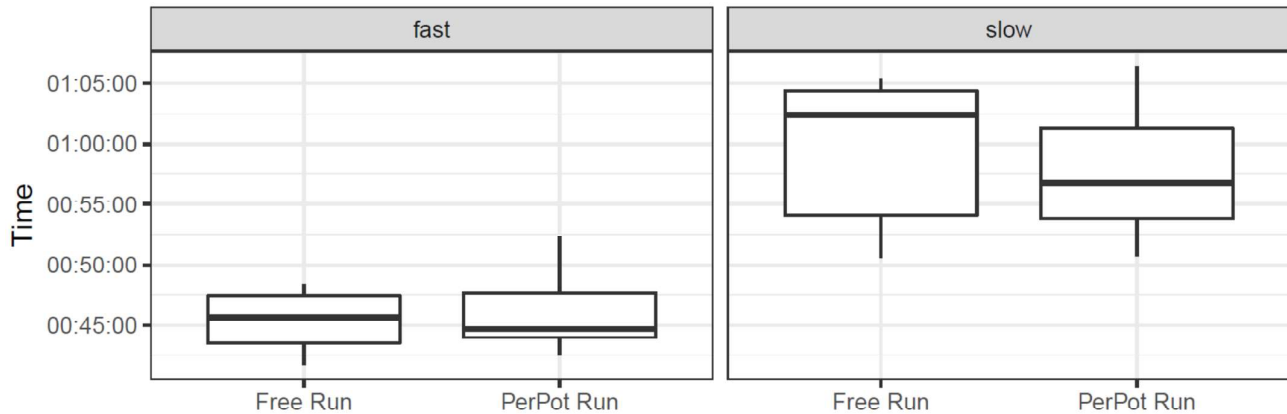


MMA: E-Coaching – 10 km – Recent Study

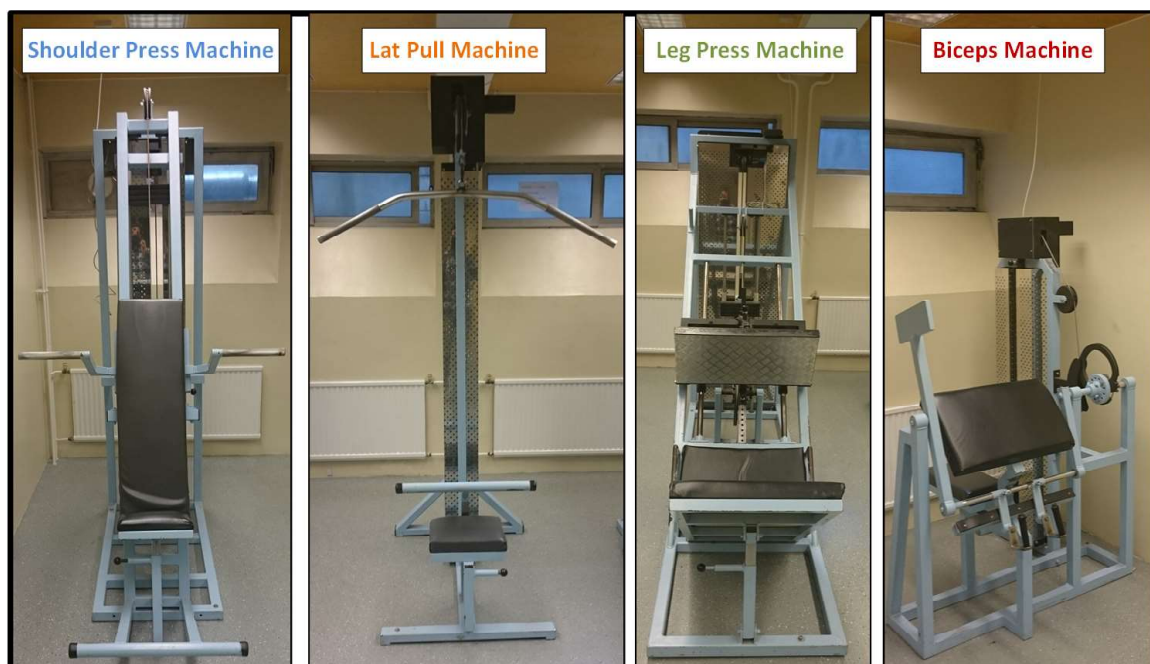
22 participants; 14 fast (less than 50 min for free run), 8 slow



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

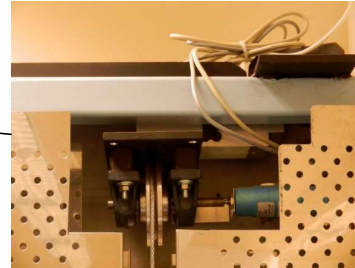




MMA: Leg press machine



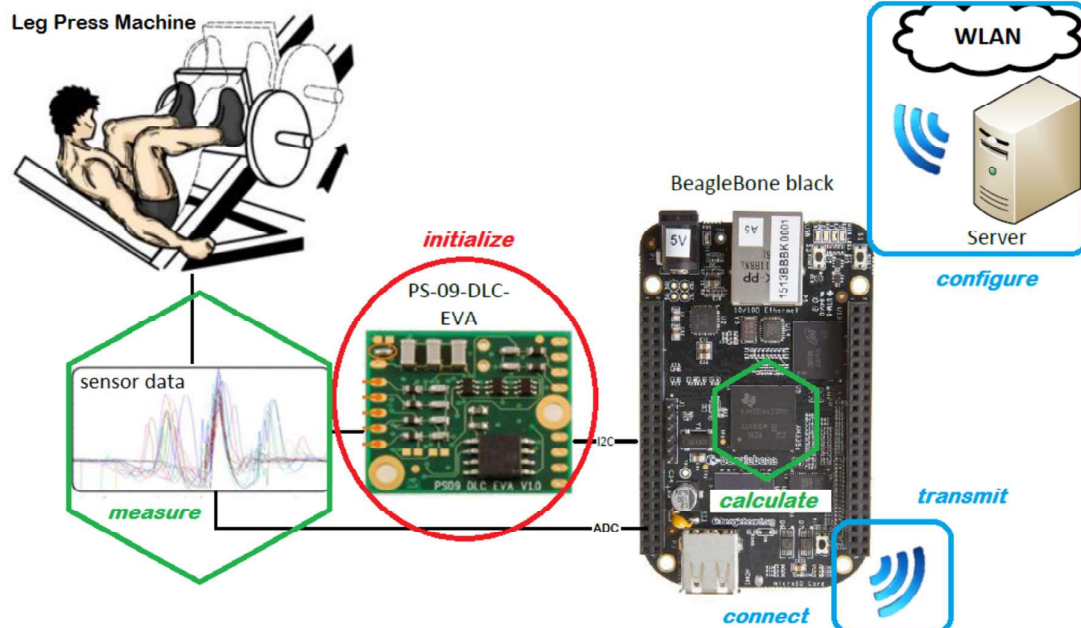
Sensor-equipped leg press machine



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	1	2	3	
	247 39.1 %	1 0.2 %	2 0.3 %	98.8 1.2 %
	2 0.3 %	105 16.6 %	2 0.3 %	96.3 3.7 %
	5 0.8 %	0 0 %	267 42.3 %	98.1 1.9 %
				Target Class
				1 2 3

Novatchkov & Baca,
Procedia Engineering, 2012

Confusion matrix of entire data set

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

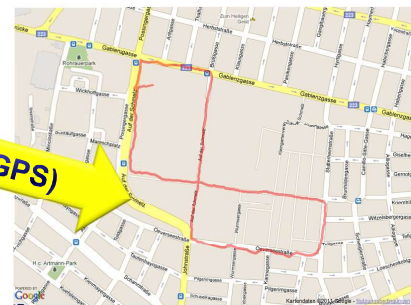
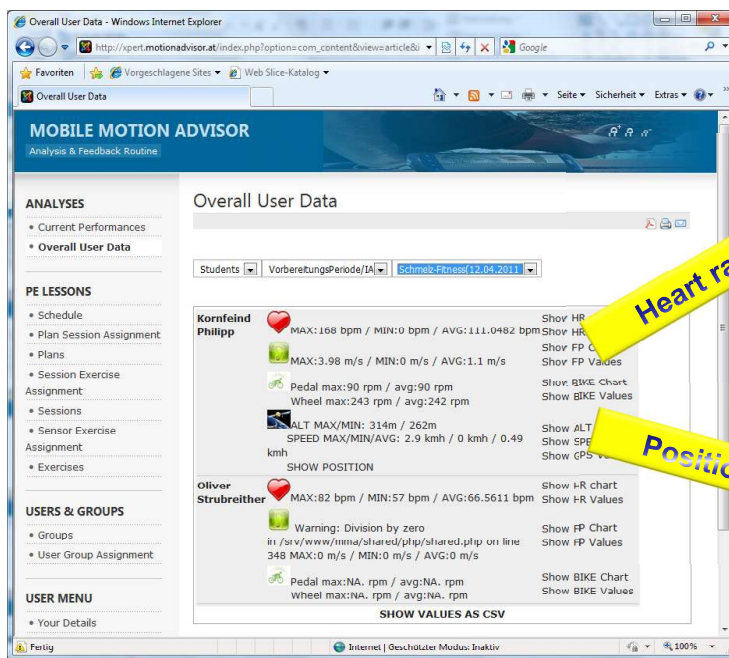
Confusion Matrix				
Output Class	1	2	3	
	245 38.8 %	2 0.3 %	4 0.6 %	97.6 2.4 %
	4 0.6 %	100 15.8 %	1 0.2 %	95.2 4.8 %
	1 0.2 %	7 1.1 %	267 42.3 %	97.1 2.9 %
				Target Class
				1 2 3

Novatchkov & Baca,
JSSM, 2013

Confusion matrix of entire data set



Mobile Motion Advisor – School

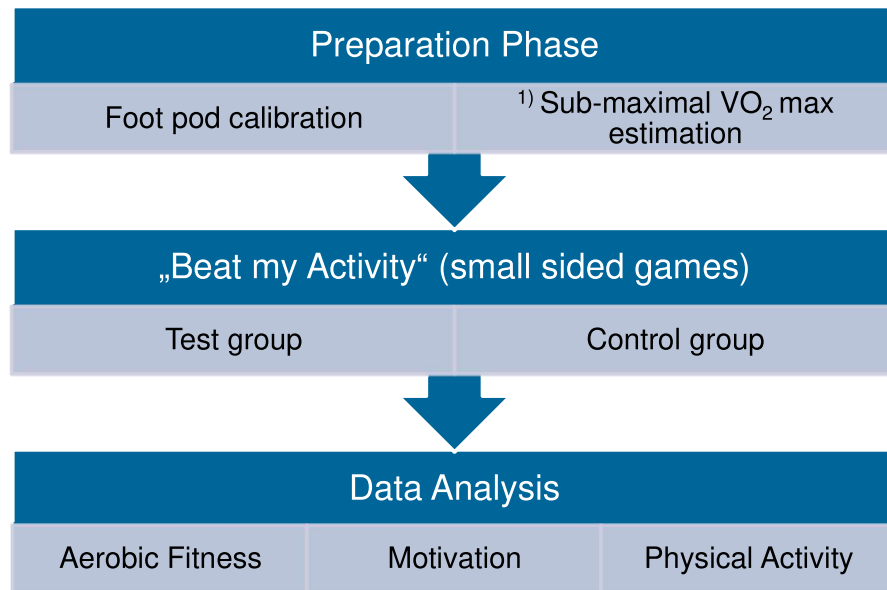


Mobile Motion Advisor – School





Study Design



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



Relative Activity Index

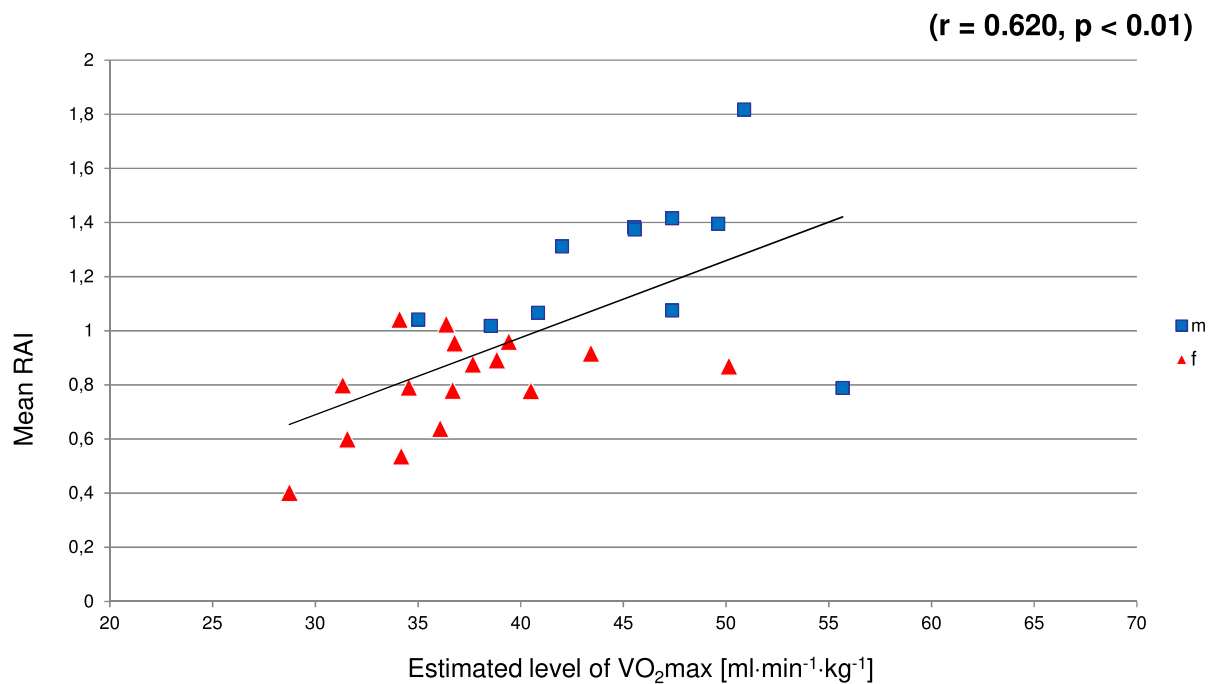
Rating the efforts of heterogenous individuals in games of various intensities

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

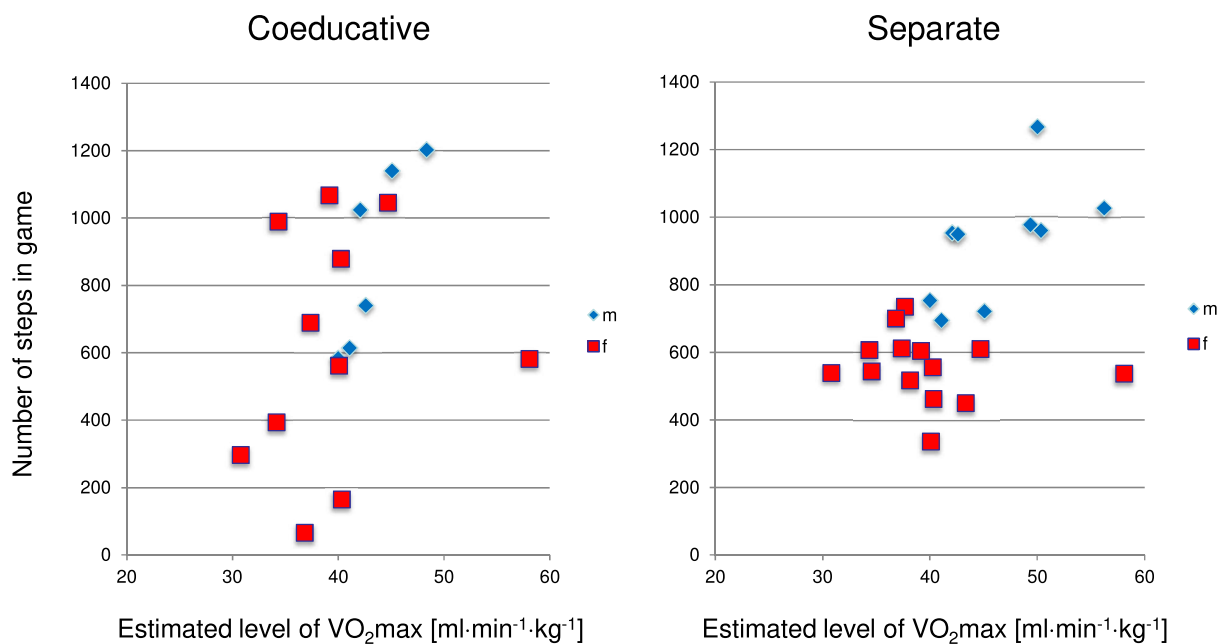
RAI_i relative activity index of student i
 t_j duration of ongoing activity of student j
 $steps_j$ number of steps during ongoing activity of student j
 n number of students



Means of RAI over one semester



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/>



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