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Methods for assessment of exercise capacity in paracanoeing (application of exercise testing)

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4F
POLSKA
44


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11
55
4F
POLSKA

- Head Coach/Team Leader of Polish Paracanoe
    - Paralympic Games Rio
    - WCh, Ech, WC
    - National Paracanoe Clasifier
- Canoe Coach

- Exercise Physiologist IS-PIB (since 2012 r.)
- Coach Developer
- Academic Teacher

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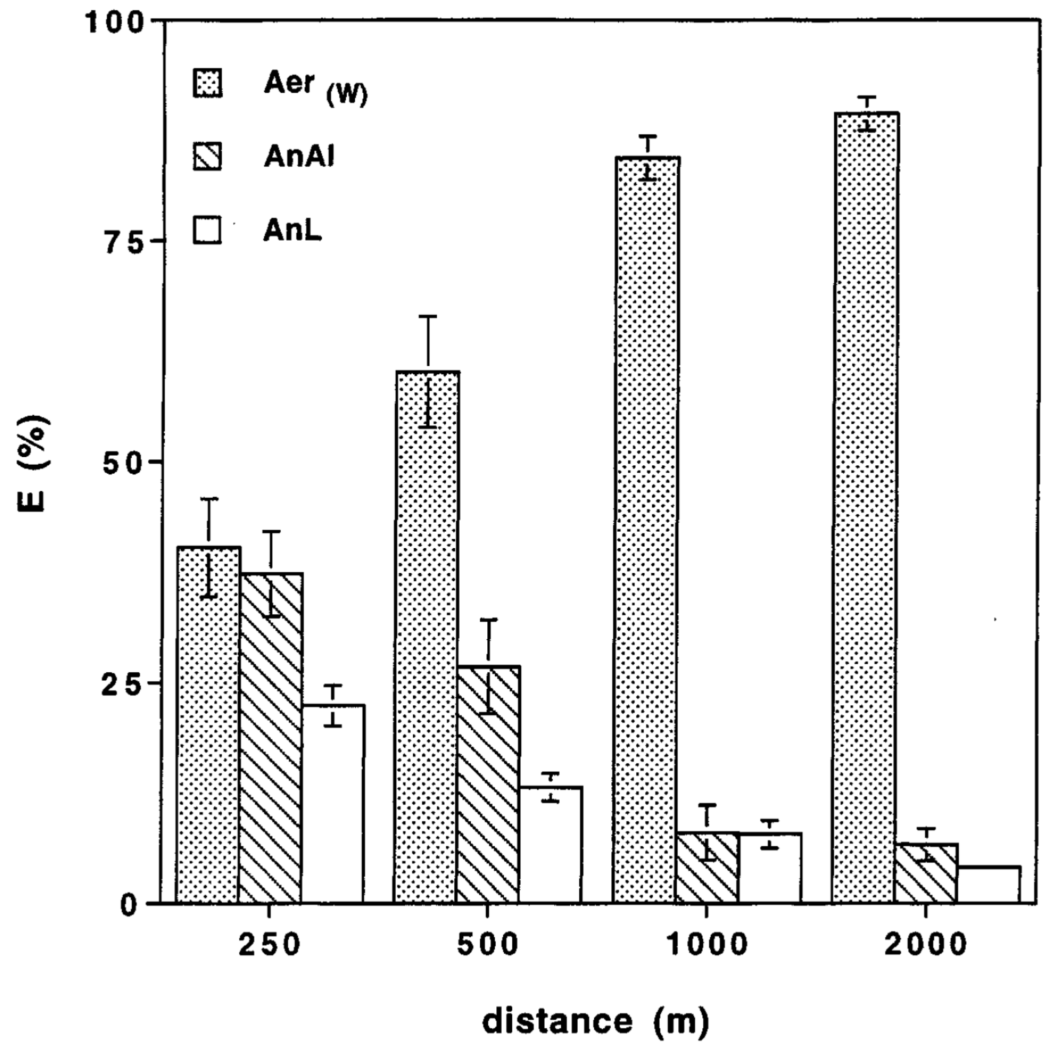
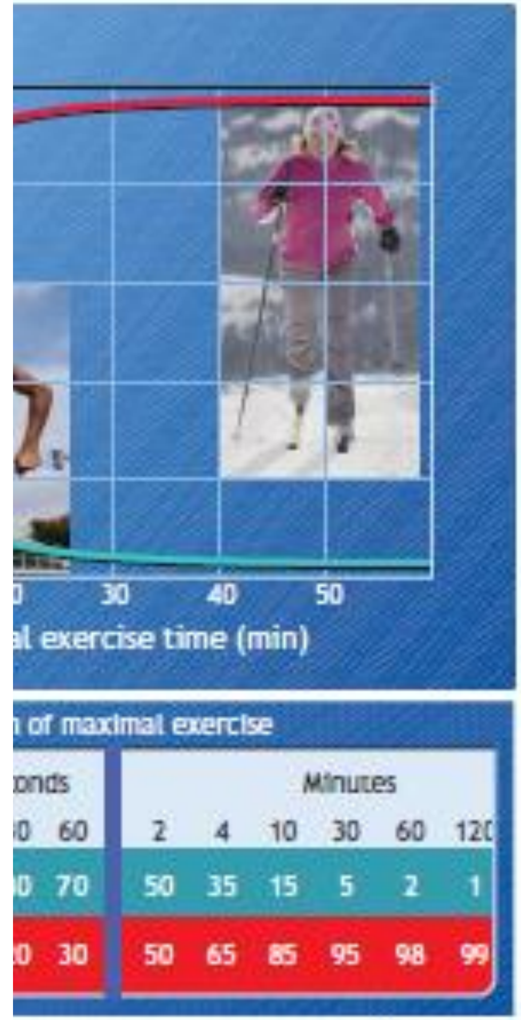


Fig. 3 Percentage contribution of the aerobic ($Aer_{(W)}$ *stippled bars*), anaerobic lactic (AnL, *white bars*) and anaerobic alactic (AnAl, *hatched bars*) energy sources to the overall metabolic power output (E, 100%) in the maximal trials. Data are means ± 1 SD



f aerobic and anaerobic energy metabolism during
rations; 2 minutes of maximal effort requires
erobic and anaerobic processes. At a world-class 4-
n supplies approximately 65% of the energy, with
bic processes. (Adapted from Åstrand, P.O.,
ogy. New York: McGraw-Hill Book Company,

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Paracanoers

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The aerobic performance test Procedure

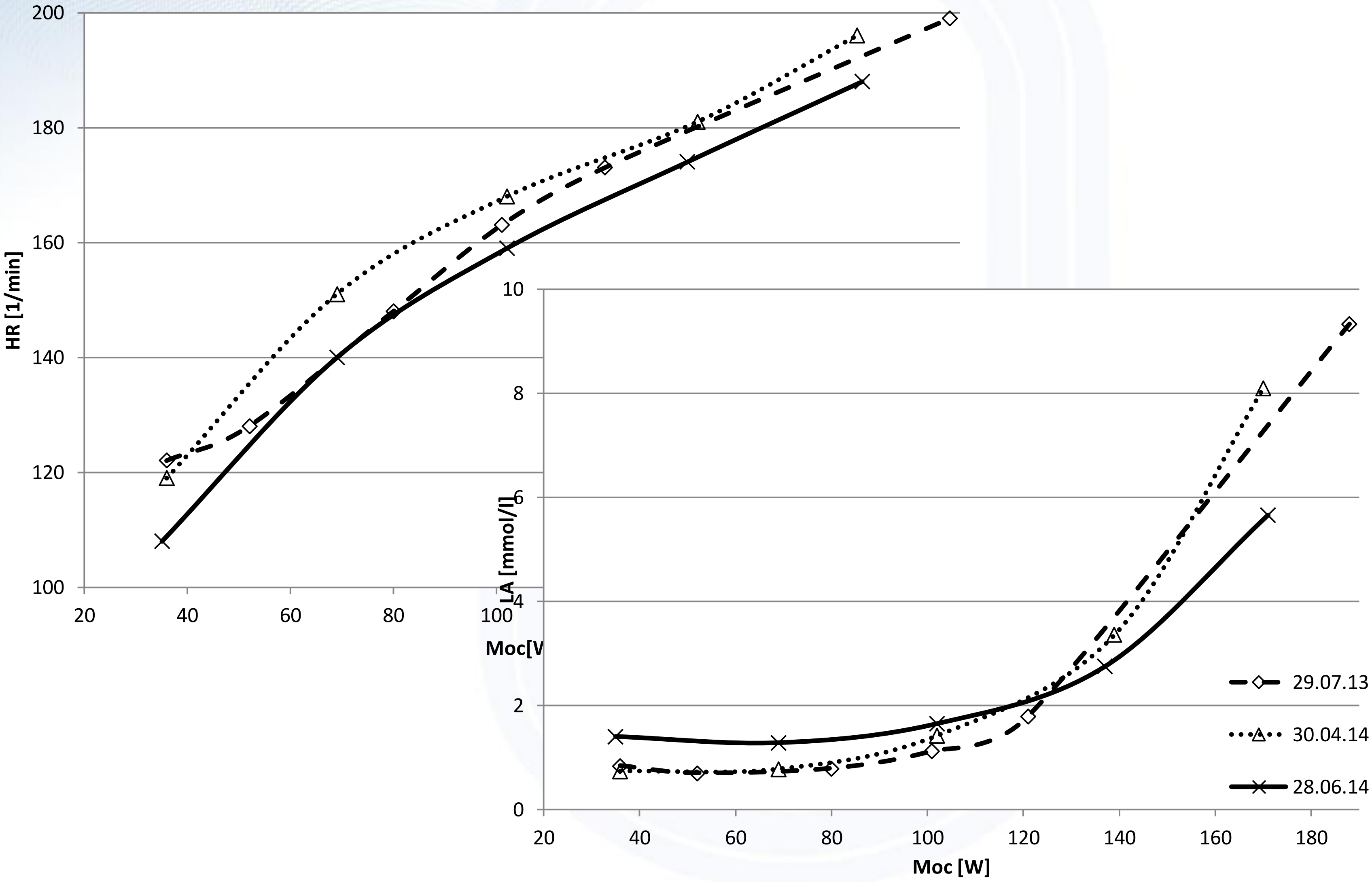
kayak/ca
hed for e

od lactate

test
old (AT)
(LT)

Test Protocol

Incremental Kayak/Canoe ergometer tests (5x4’)				
	Women		Men	
	4th stage W/kg			
	beginners	advanced	beginners	advanced
VL1		0.5		
VL2,VL3				0.75
KL1	0.5	0.8	0.5	1.1
KL2			1.3	1.7
KL3		0.95	1.5	1.7


200
180
160
140
120
100
HR [1/min]
20
40
60
80
100
Moc[W
10
8
6
4
2
0
LA [mmol/l]
20
40
60
80
100
120
140
160
180
Moc [W]
29.07.13
30.04.14
28.06.14

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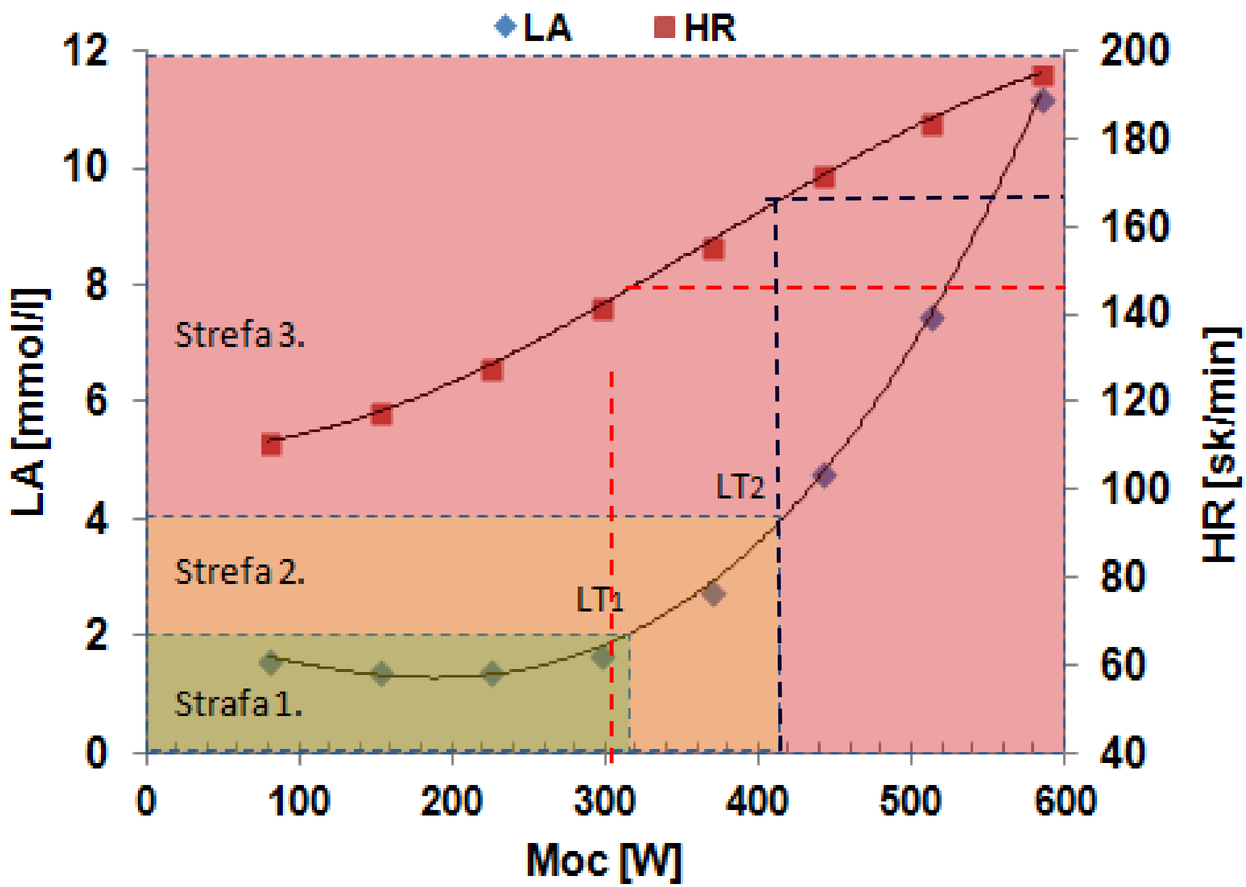

	BLa [mmol/l]	Power [W]	HR [sk/min]
LT1	2,0	320	147
LT2	4,0	418	168

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Anaerobic performance test Wingate

- 30 s arm crank ergometry test (all out)
- Measure anaerobic capacity of the athletes
- Main resu
  - Peak an
  - Total Wo

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Test Protocol

Arm Crank Ergometer Wingate Test (30’’)		
	Women	Men
Sitting position	4 % of body mass	5 % of body mass
Standing position	5 % of body mass	6.2 % of body mass

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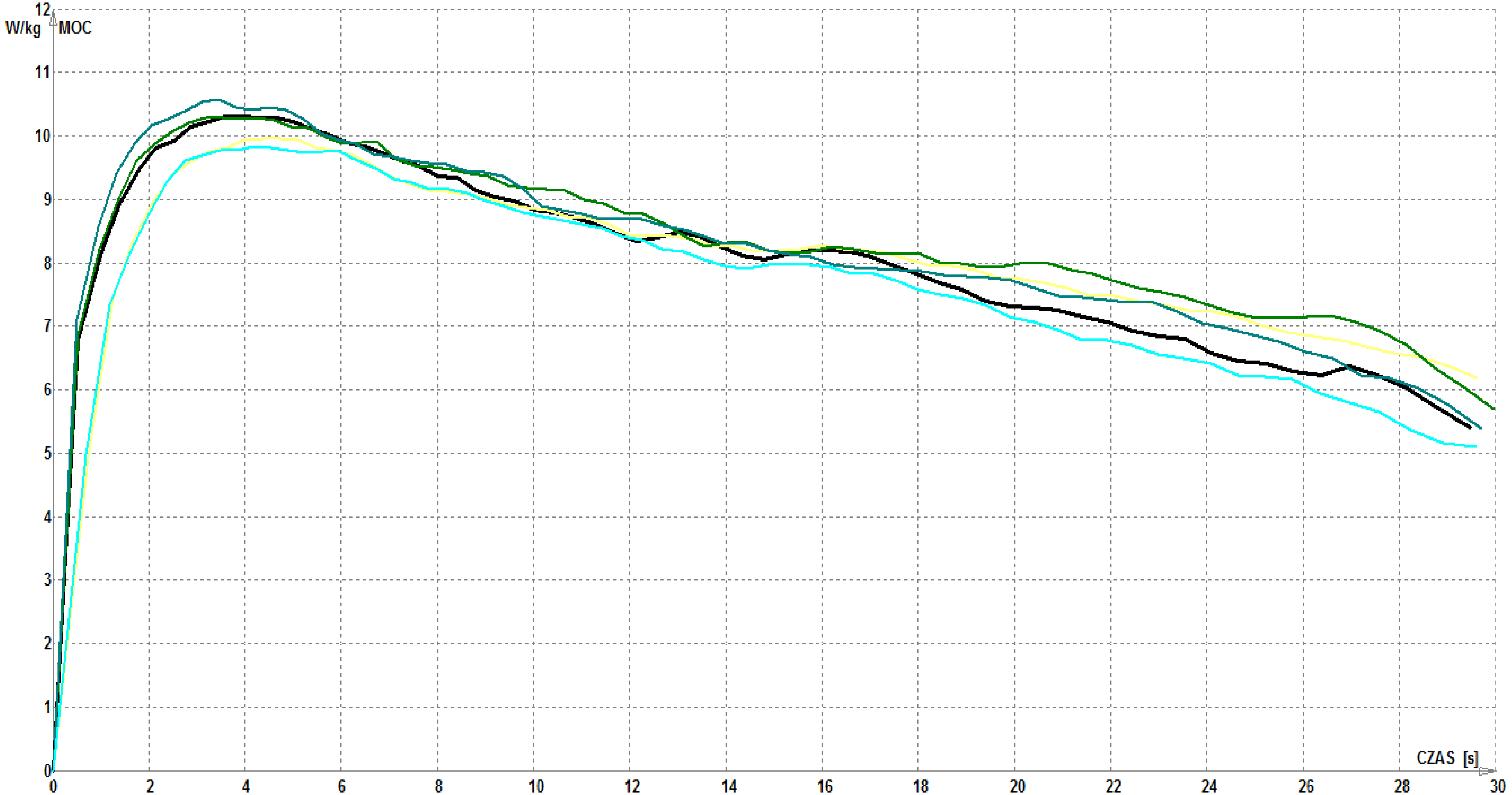

Relative values

	Men			Women		
	Work [J/kg]	Power [W/kg]	AT4 Power	Work [J/kg]	Power [W/kg]	AT4 Power
KL1	**165**	**7,06**	**1,20**	**125**	**4,96**	**0,97**
KL2	179	6,82	1,30			
KL3	**231**	**9,86**	**1,86**			0,93
VL2	150	6,15	0,78			0,53
VL3	183	8,29	0,82			

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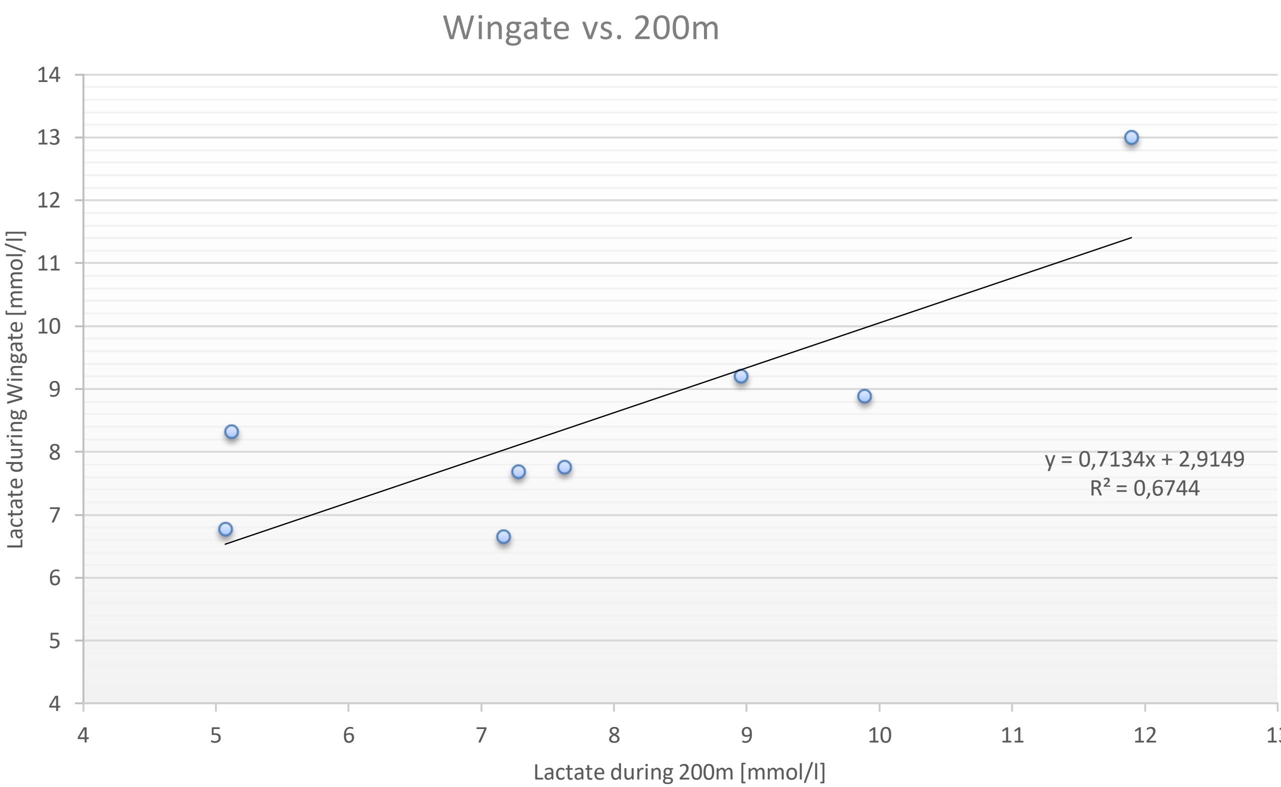

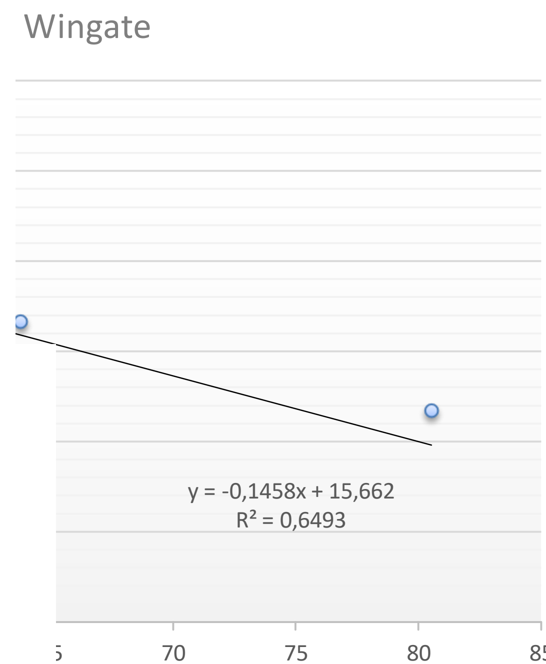

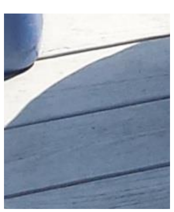

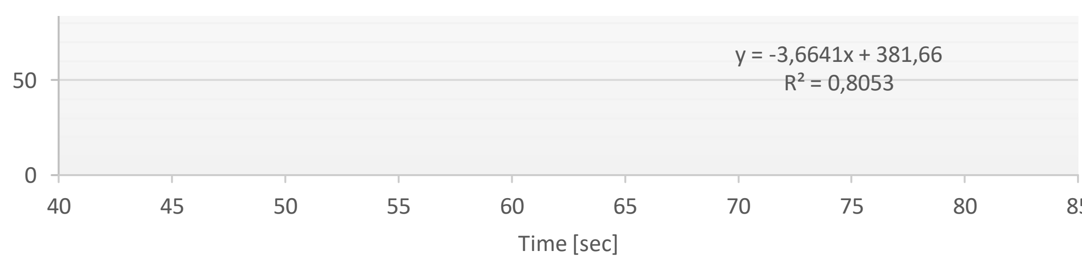

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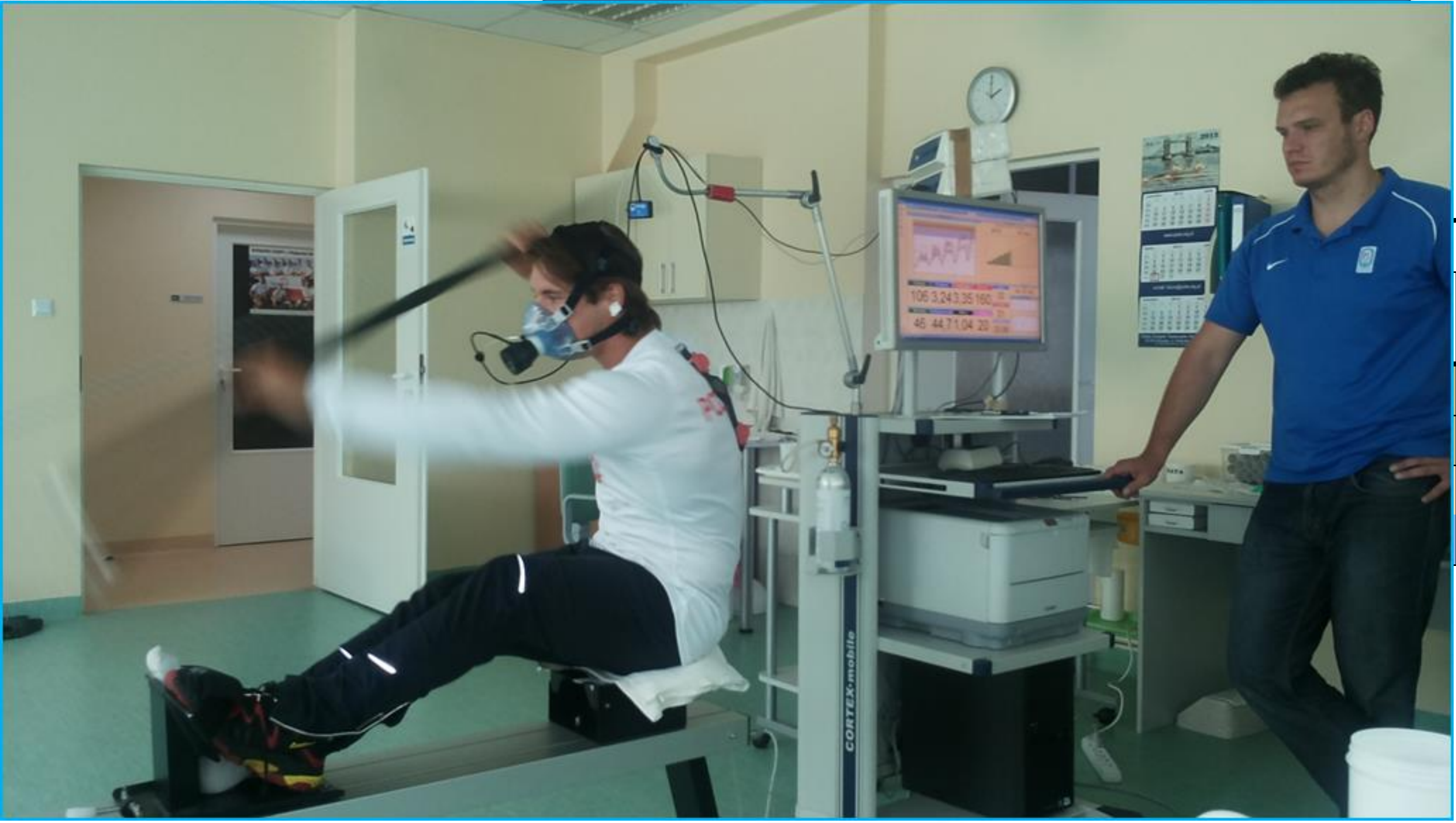
VO_2 max



Additional test

Biomechanical paddling profiles

Biochemical tests

Training evaluation

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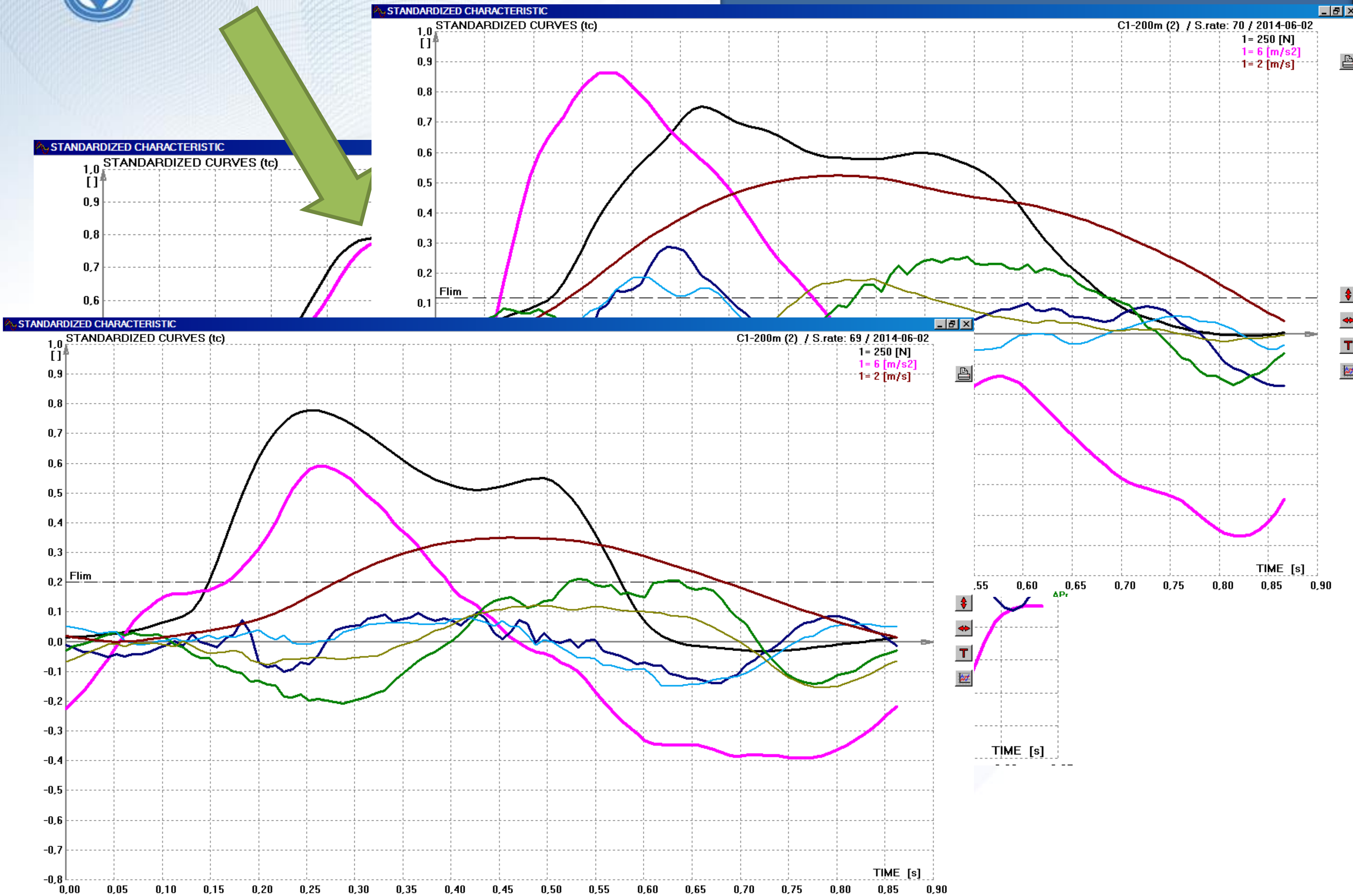
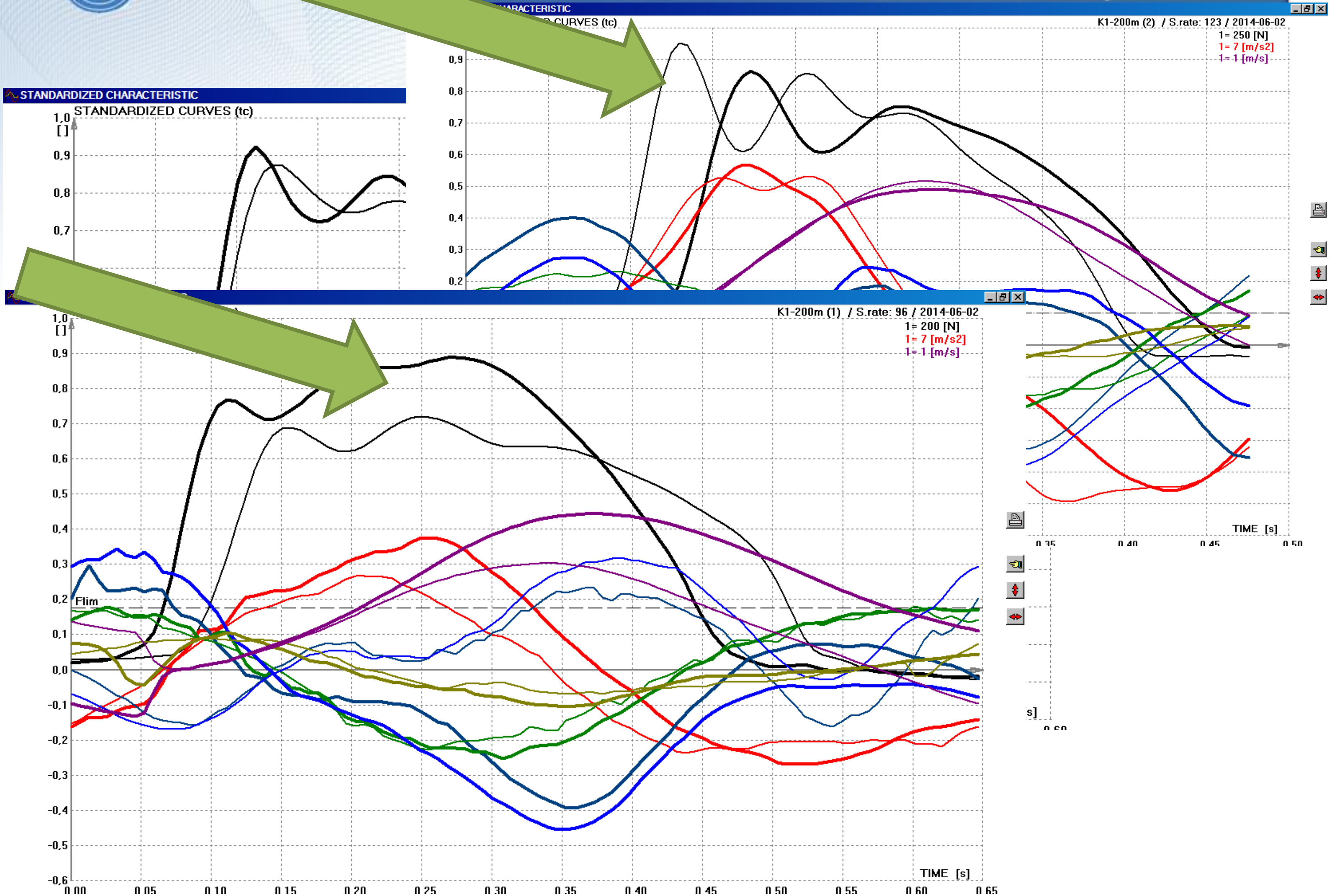
Profiles of



Profiles of paddling in



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Supervision of the training

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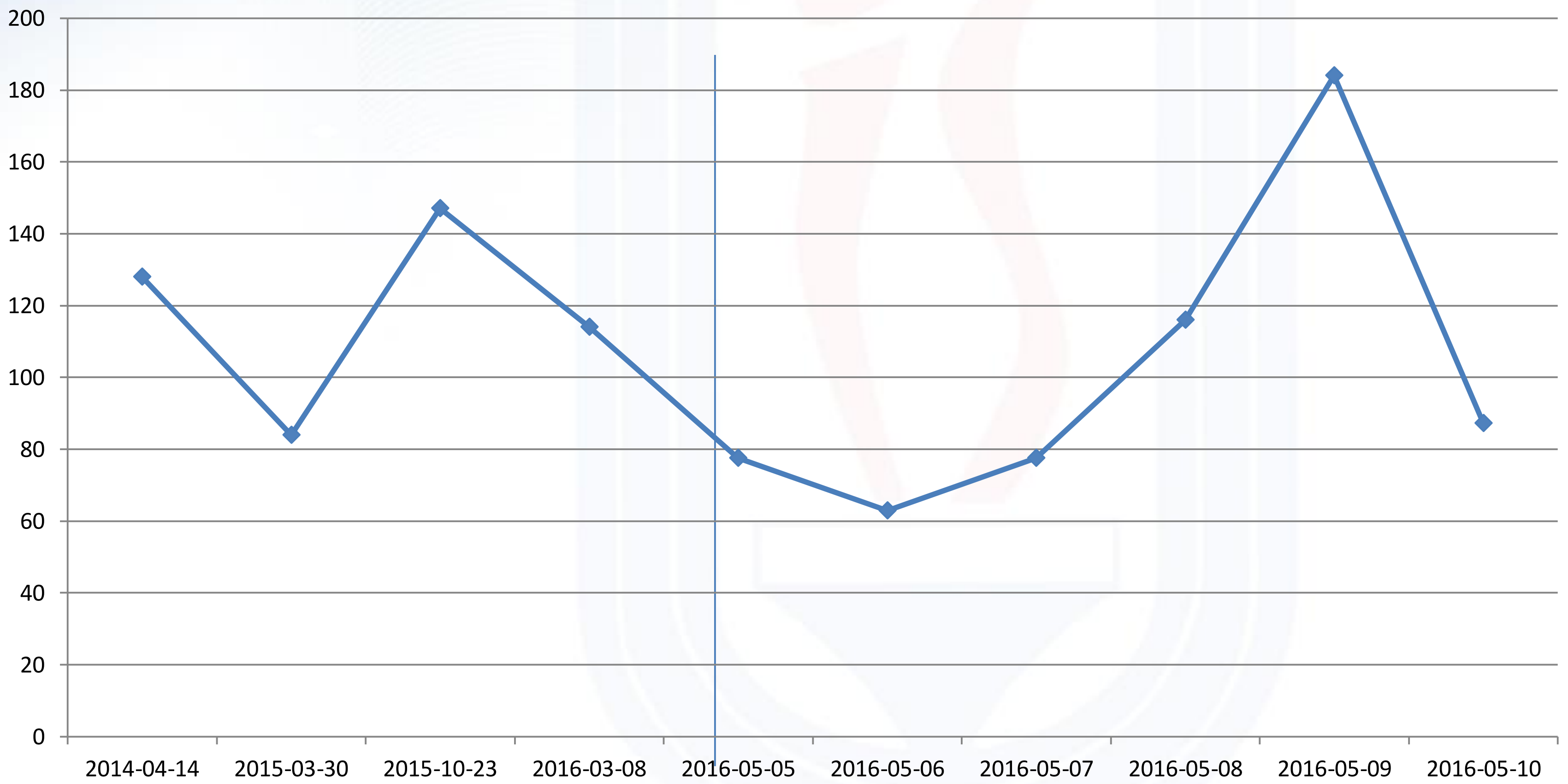
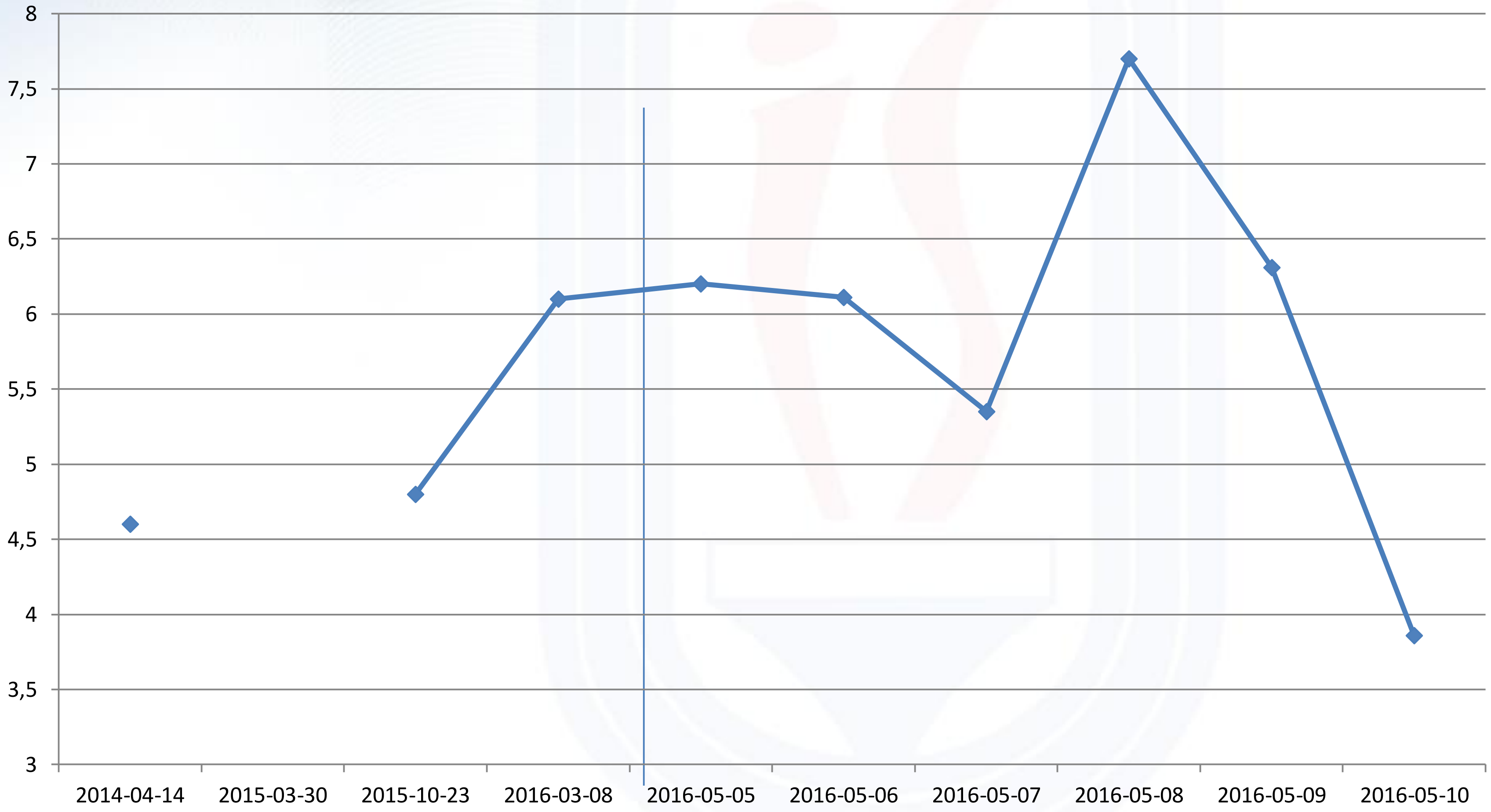
Biochemical tests

- Glucose
- Creatine kinase
- Urea

Creatine kinase

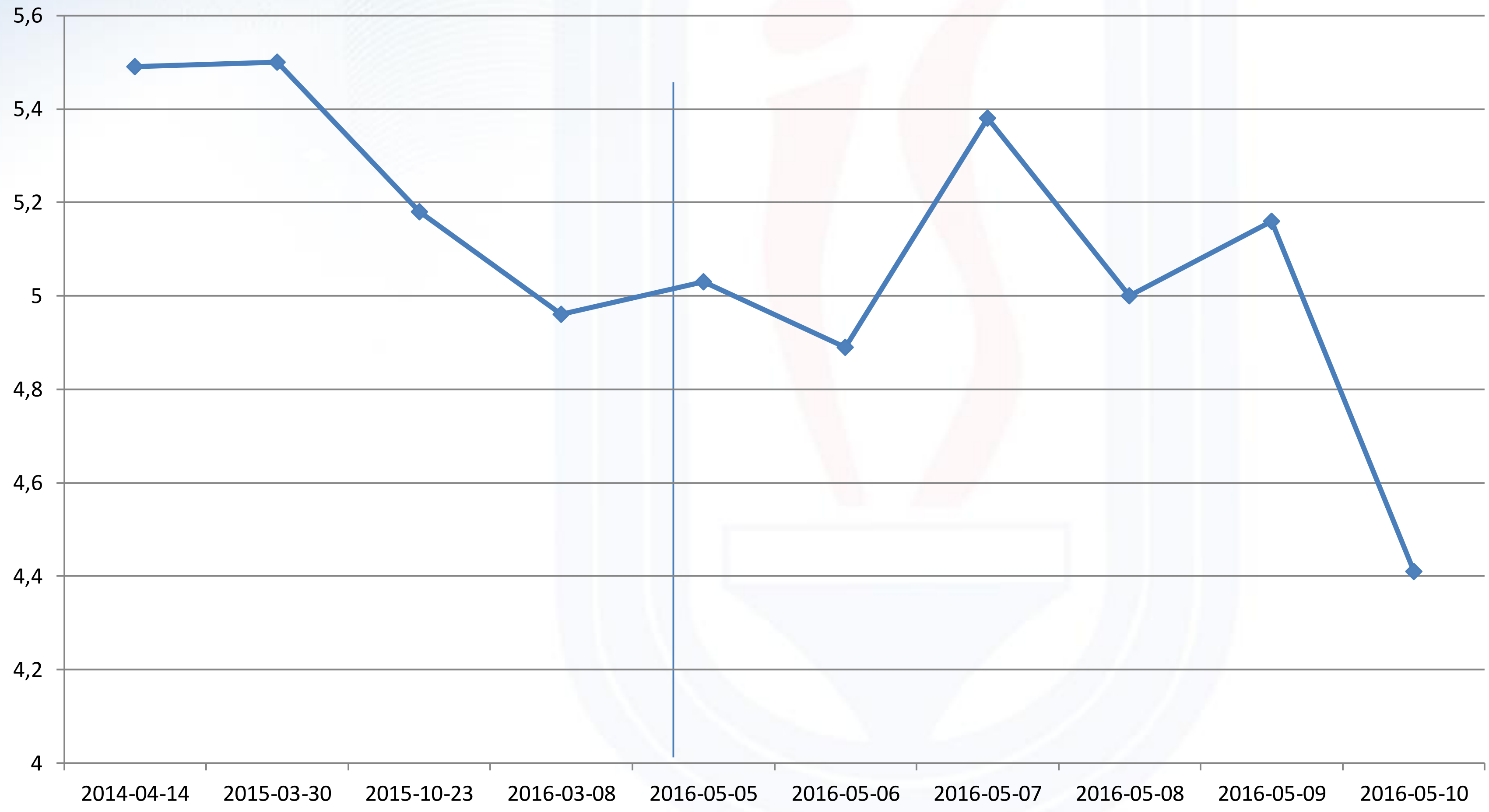


Urea



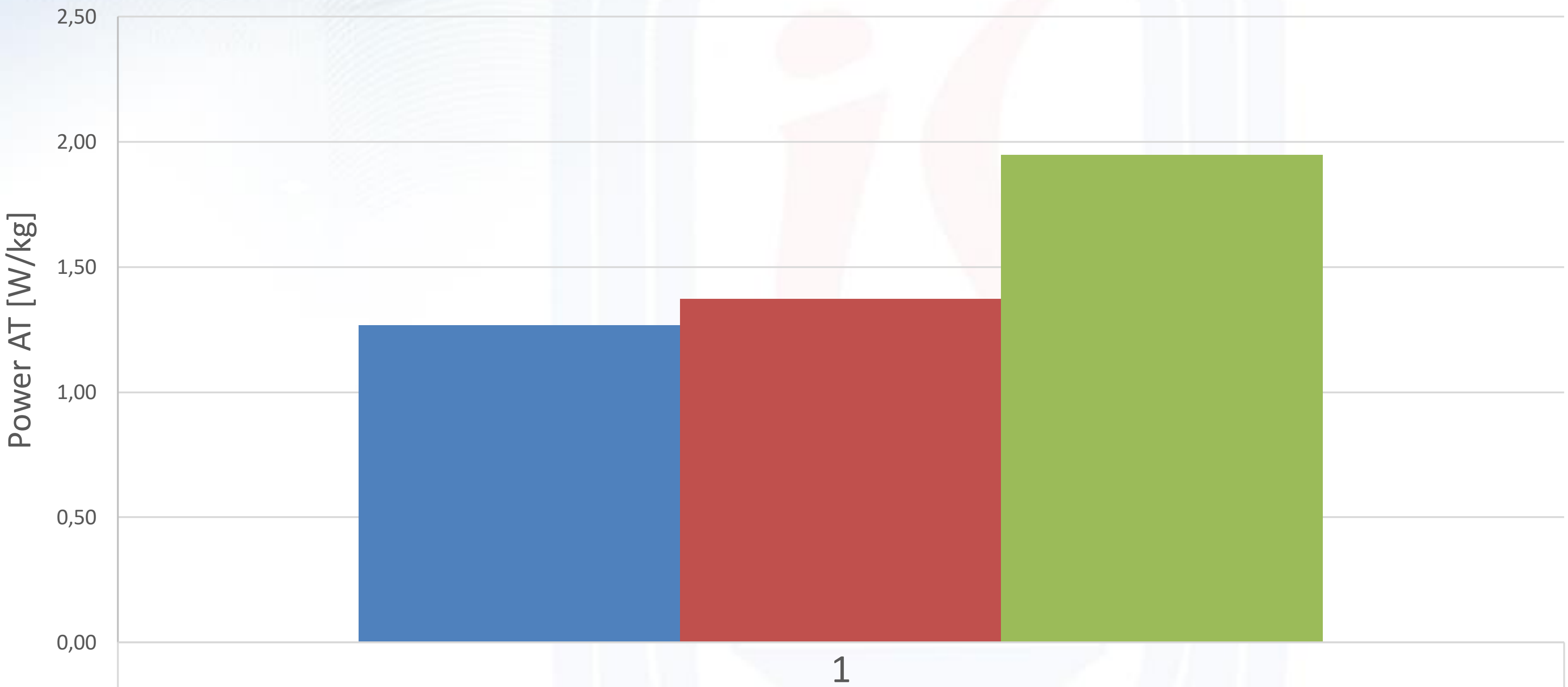
8
7,5
7
6,5
6
5,5
5
4,5
4
3,5
3
2014-04-14
2015-03-30
2015-10-23
2016-03-08
2016-05-05
2016-05-06
2016-05-07
2016-05-08
2016-05-09
2016-05-10

Glucose



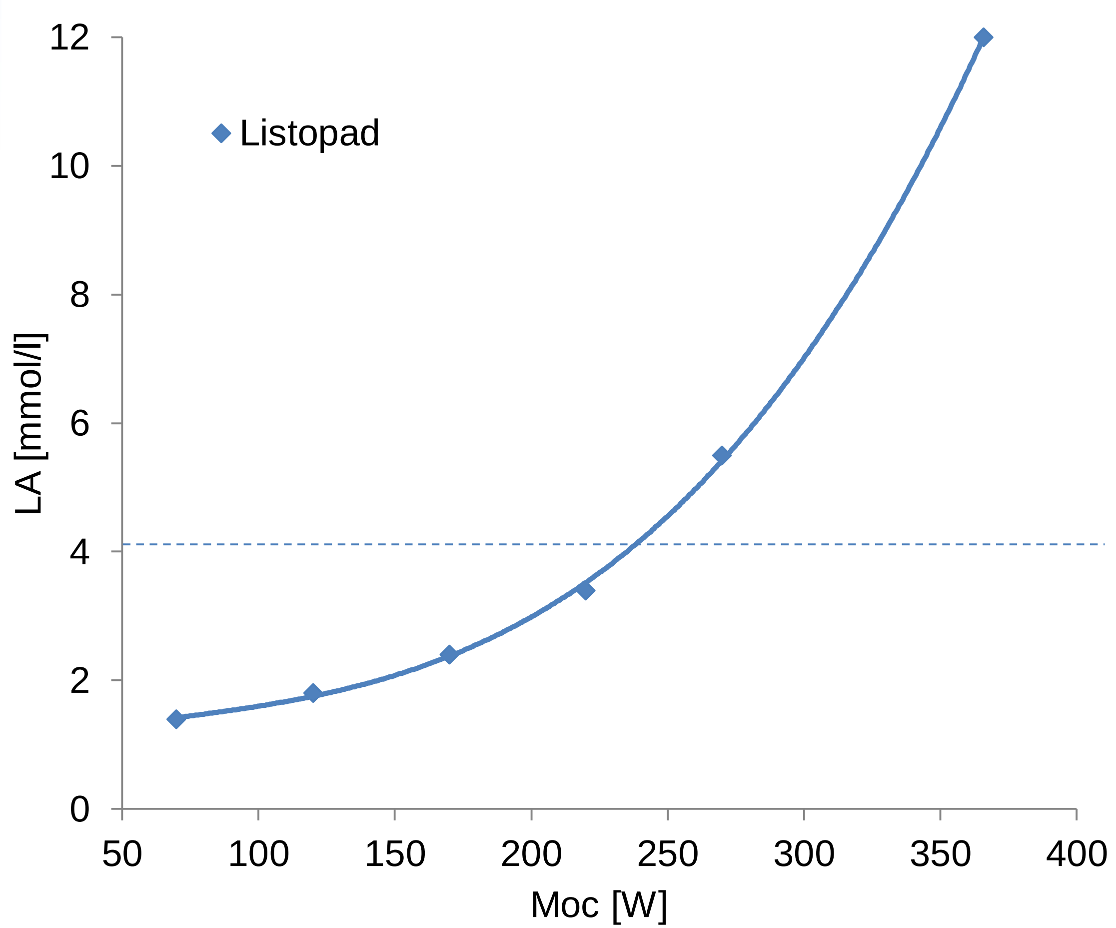
5,6
5,4
5,2
5
4,8
4,6
4,4
4,2
4
2014-04-14
2015-03-30
2015-10-23
2016-03-08
2016-05-05
2016-05-06
2016-05-07
2016-05-08
2016-05-09
2016-05-10

Practical use of the tests



	1
KL1	1,27
KL2	1,37
KL3	1,95

Evaluation of the training



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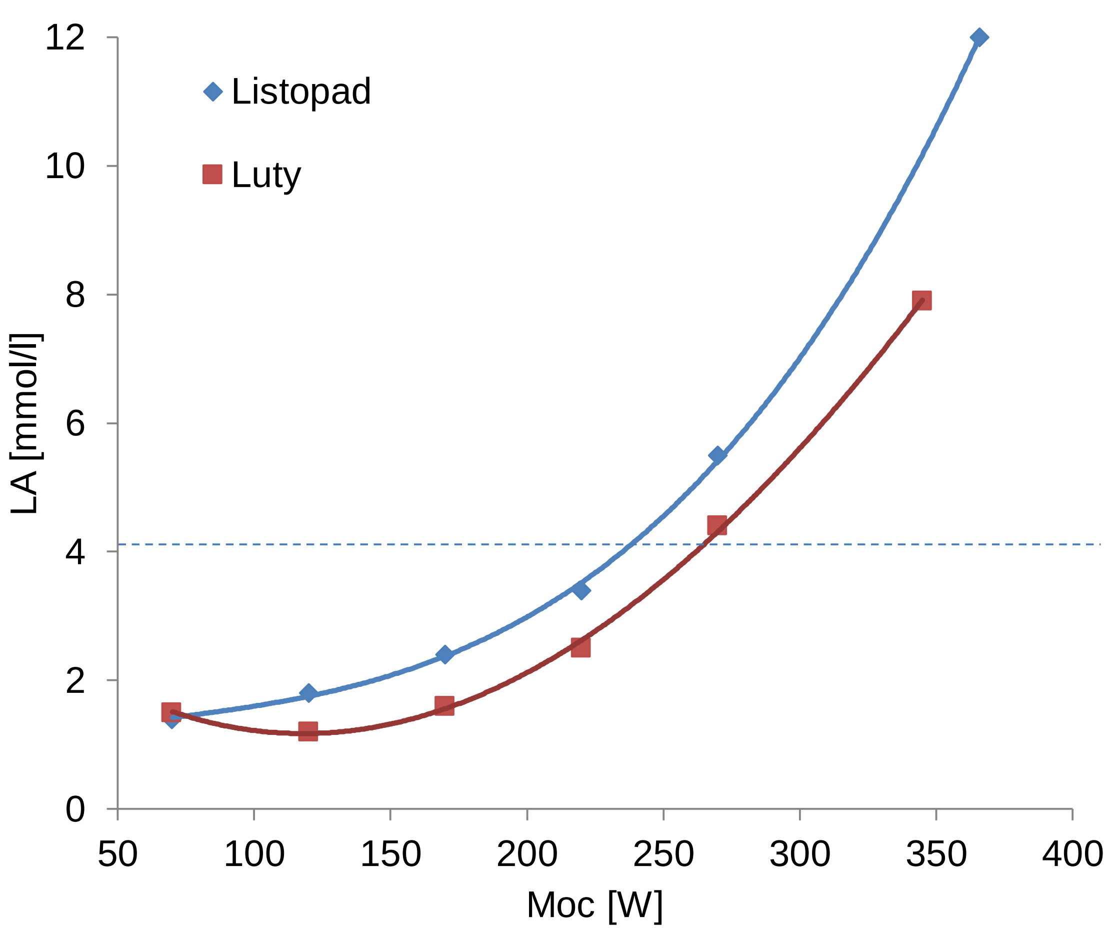
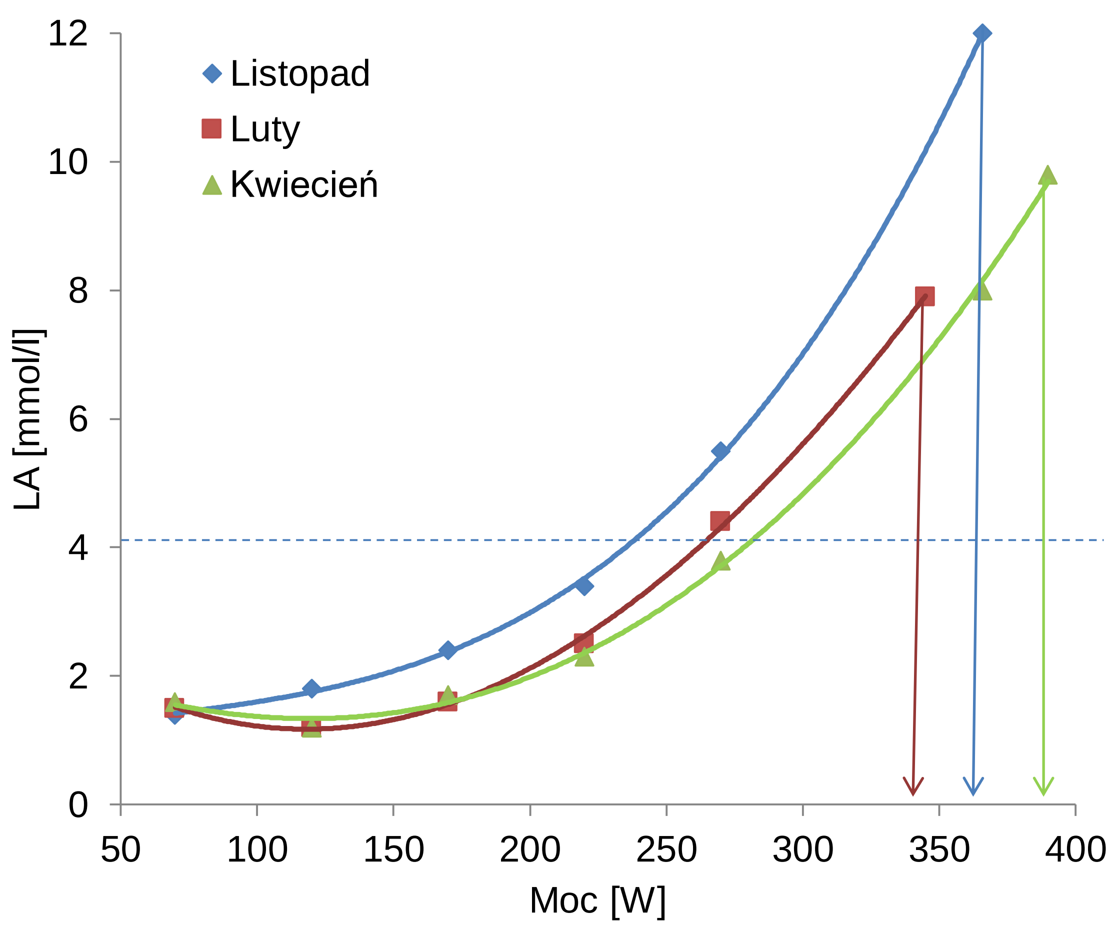
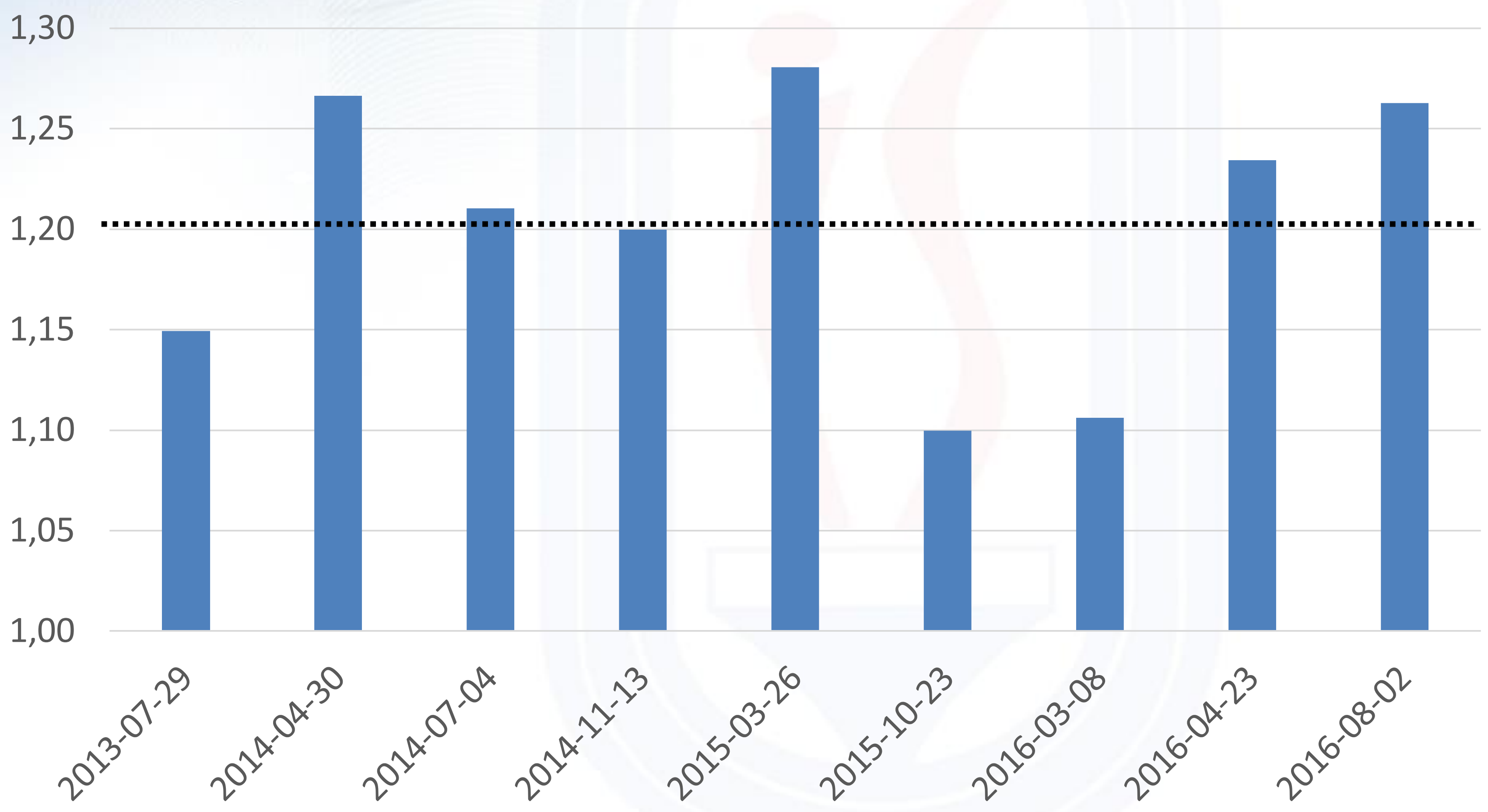
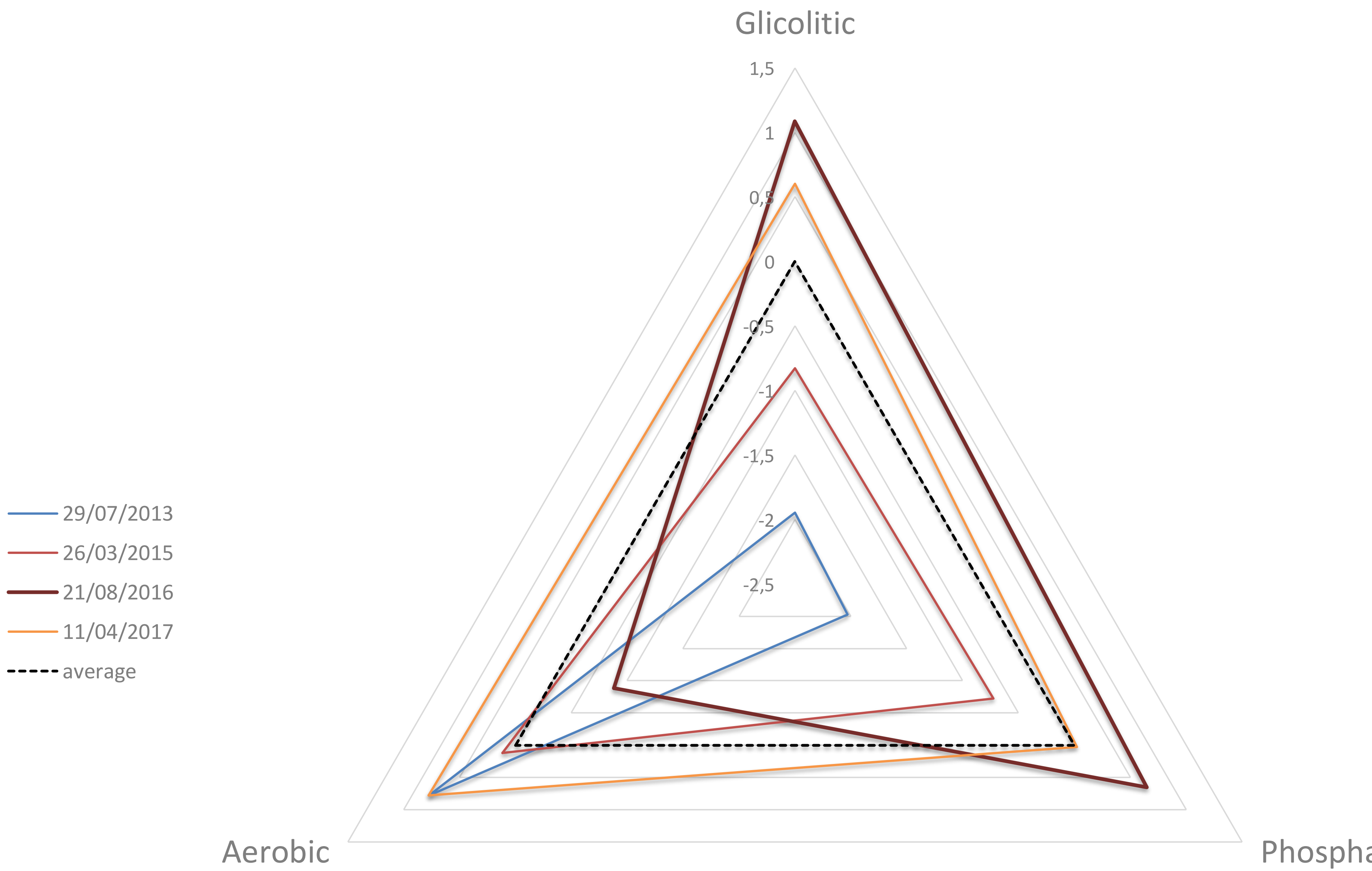




Listopad
Luty
Kwiecień
LA [mmol/l]
Moc [W]
0
2
4
6
8
10
12
50
100
150
200
250
300
350
400



1,30
1,25
1,20
1,15
1,10
1,05
1,00
2013-07-29
2014-04-30
2014-07-04
2014-11-13
2015-03-26
2015-10-23
2016-03-08
2016-04-23
2016-08-02



Glicolitic
1,5
1
0,5
0
-0,5
-1
-1,5
-2
-2,5
Aerobic
Phospha
29/07/2013
26/03/2015
21/08/2016
11/04/2017
average

Conclusions

- The anaerobic and aerobic tests protocols were established
- Tests for paracanoers were validated and the reference values for each athlete were created

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DZIĘKUJĘ ZA UWAGĘ

Thank you

Tack

Arigato Gozaimas

Obrigado

Merci

Grazie

Köszönöm

Takk

Gracias

Dank u wel