

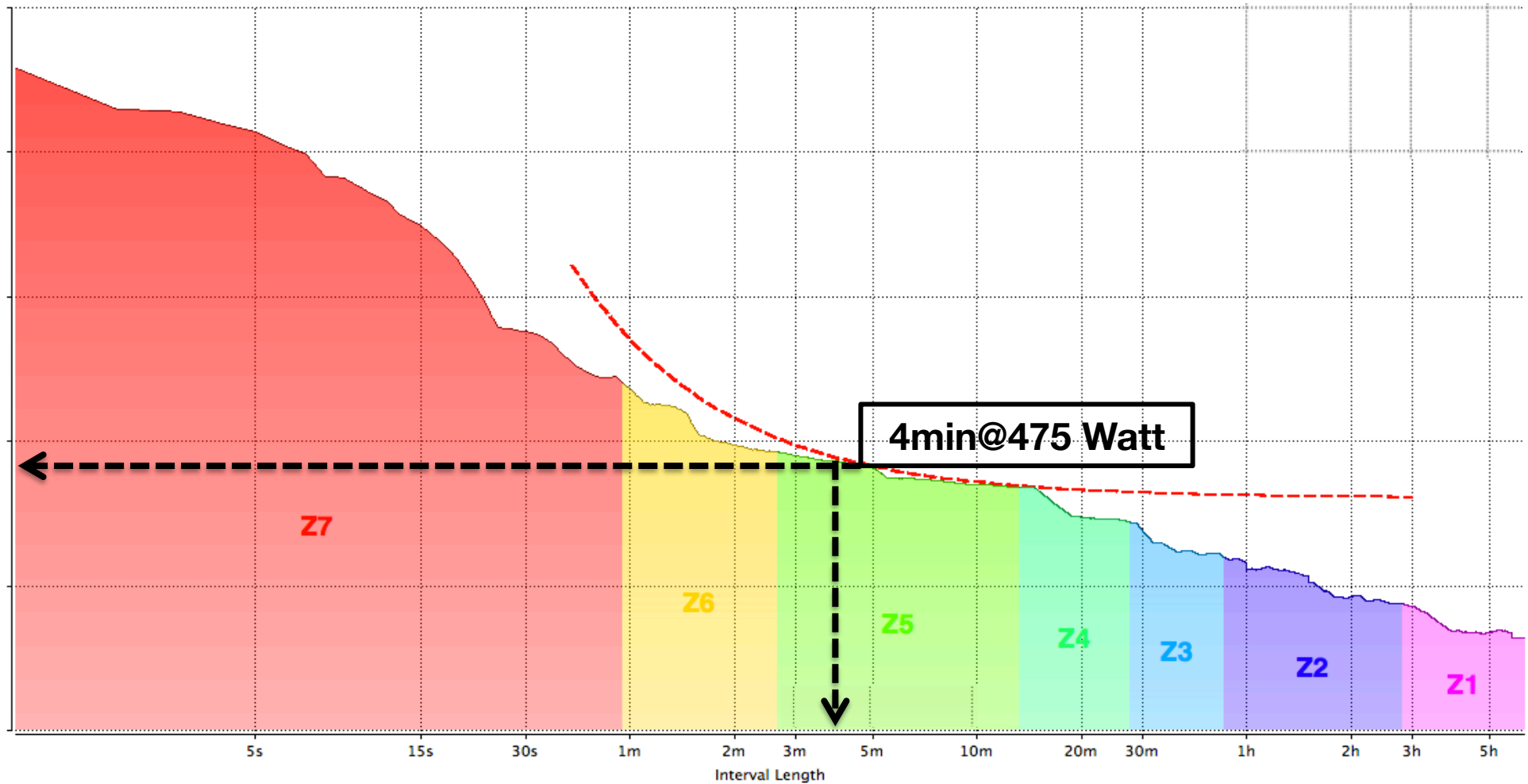
# THE METABOLIC ORIGIN OF POWER –

monitoring aerobic & anaerobic capacity in  
professional cyclists

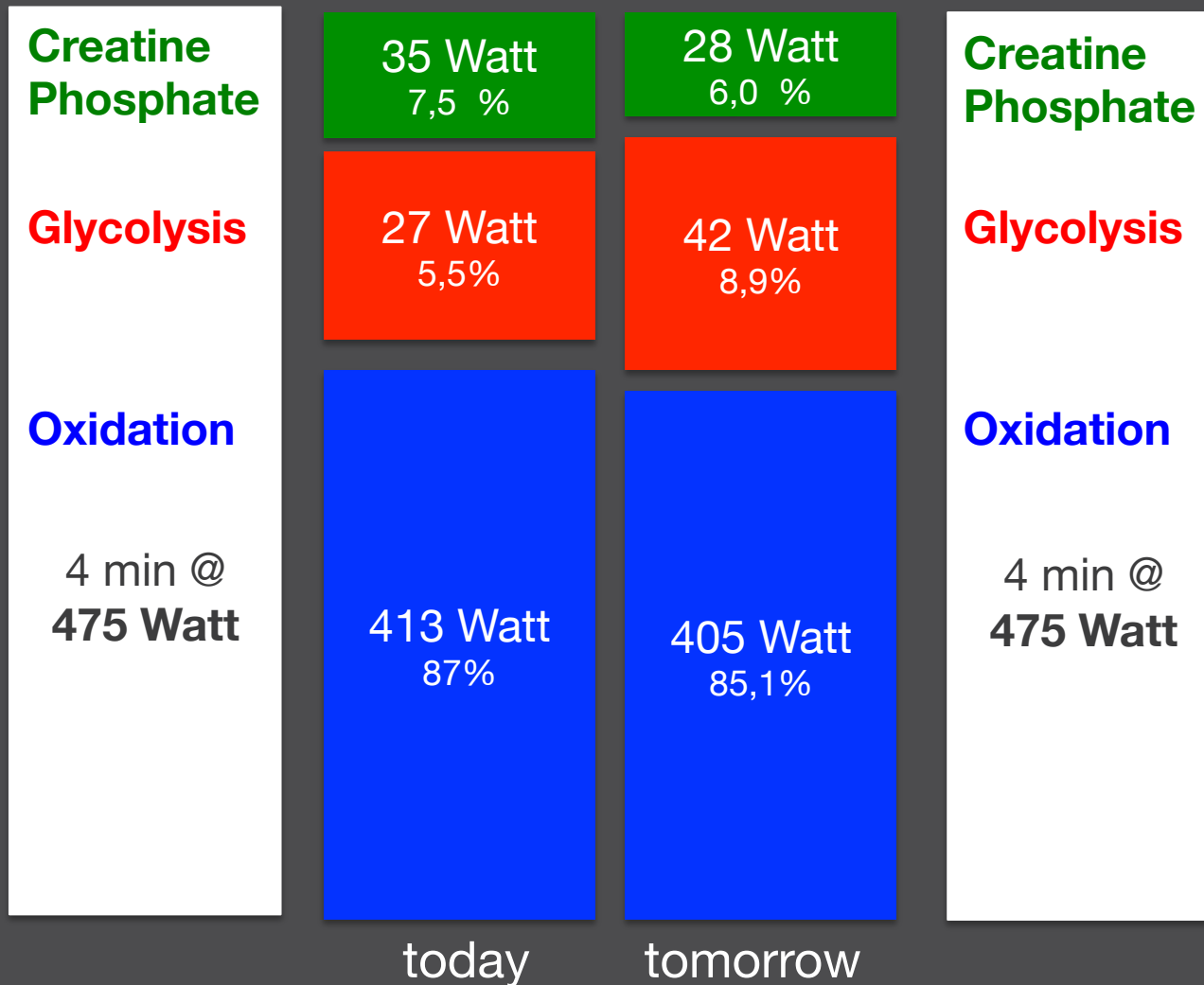
Sebastian Weber

# Critical Power & the Source of Energy

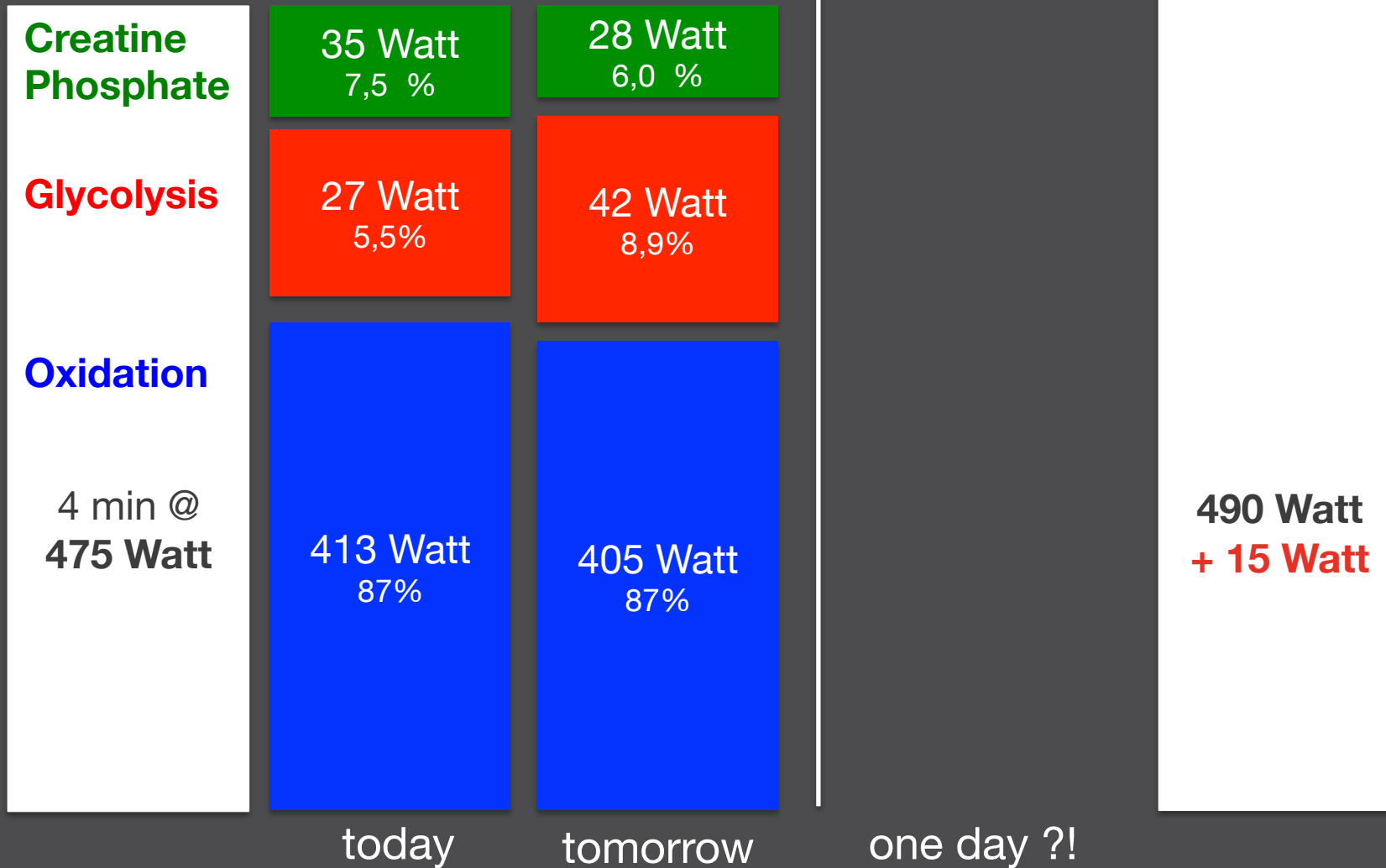
Critical Power Curve



# The Performance today, isn't the Performance tomorrow



# The Performance today, isn't the Performance tomorrow





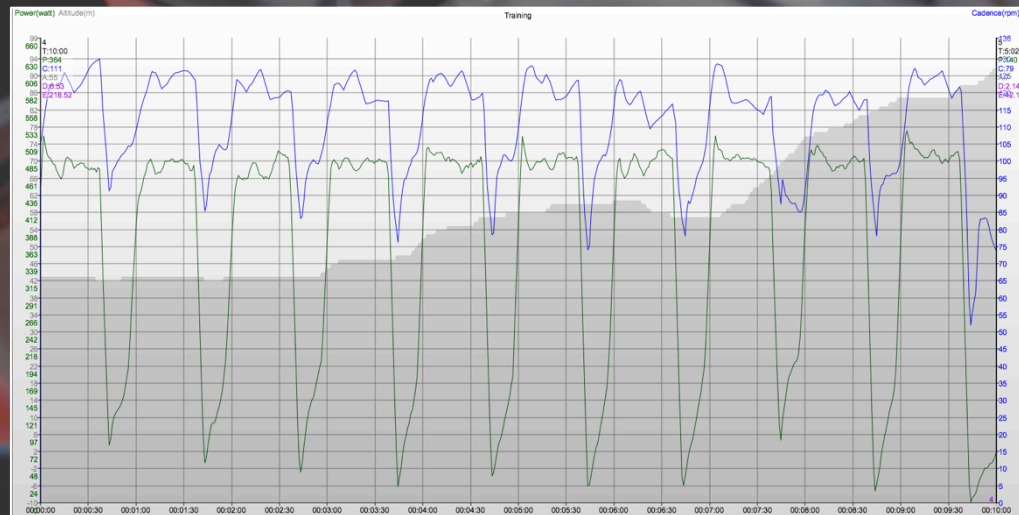
# A day of testing out on the climb



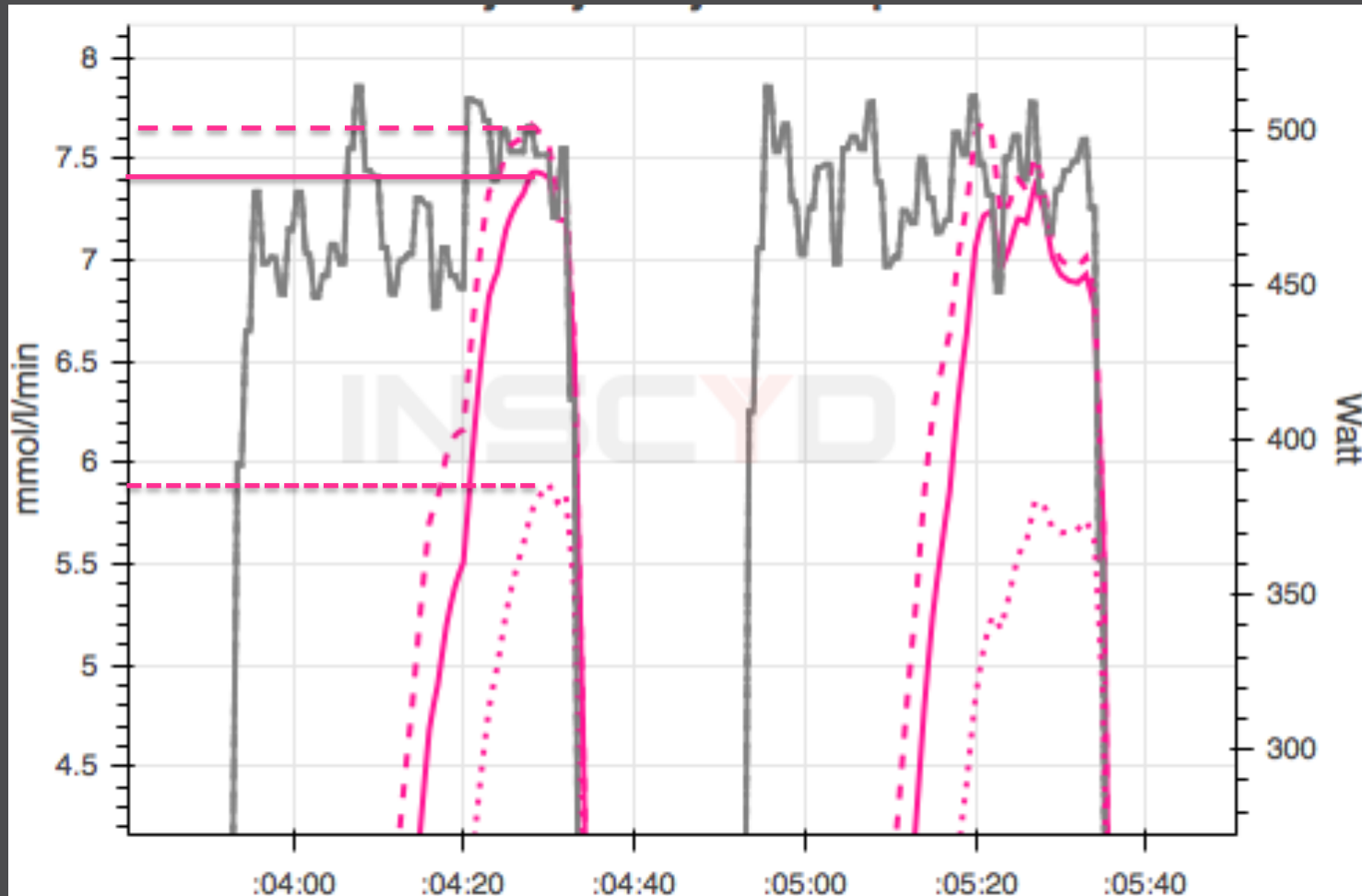
	Athlete 1	Athlete 2	Athlete 3
Weight	71 kg	73 kg	69 kg
4' Power	492 W	503 W	484 W
Power/Weight	6,93 W/kg	6,89 W/kg	7,01 W/kg
Lactate (rest)	1,1 mmol/l	1,2 mmol/l	1,5 mmol/l
Lactate (max)	6,4 mmol/l	13,2 mmol/l	8,6 mmol/l
	<i>"tired"</i>	<i>"not in shape"</i>	<i>"yeah, about right"</i>
$\Delta$ Lactate	5,3 mmol/l	12,0 mmol/l	7,1 mmol/l
VLa	1,33 mmol/l/min	3,0 mmol/l/min	1,78 mmol/l/min
Glycolytic Power	21,5 W	50,2 W	28,0 W
% total	4,4 %	10,0 %	5,8 %
	<i>"low glycolytic power"</i>	<i>"high glycolytic power"</i>	<i>"mediocre"</i>

Different Capacities = Different Training Stimulus ?!

**Interval Training Session: 40/20**  
**10x 40" on@480W / 20" off**

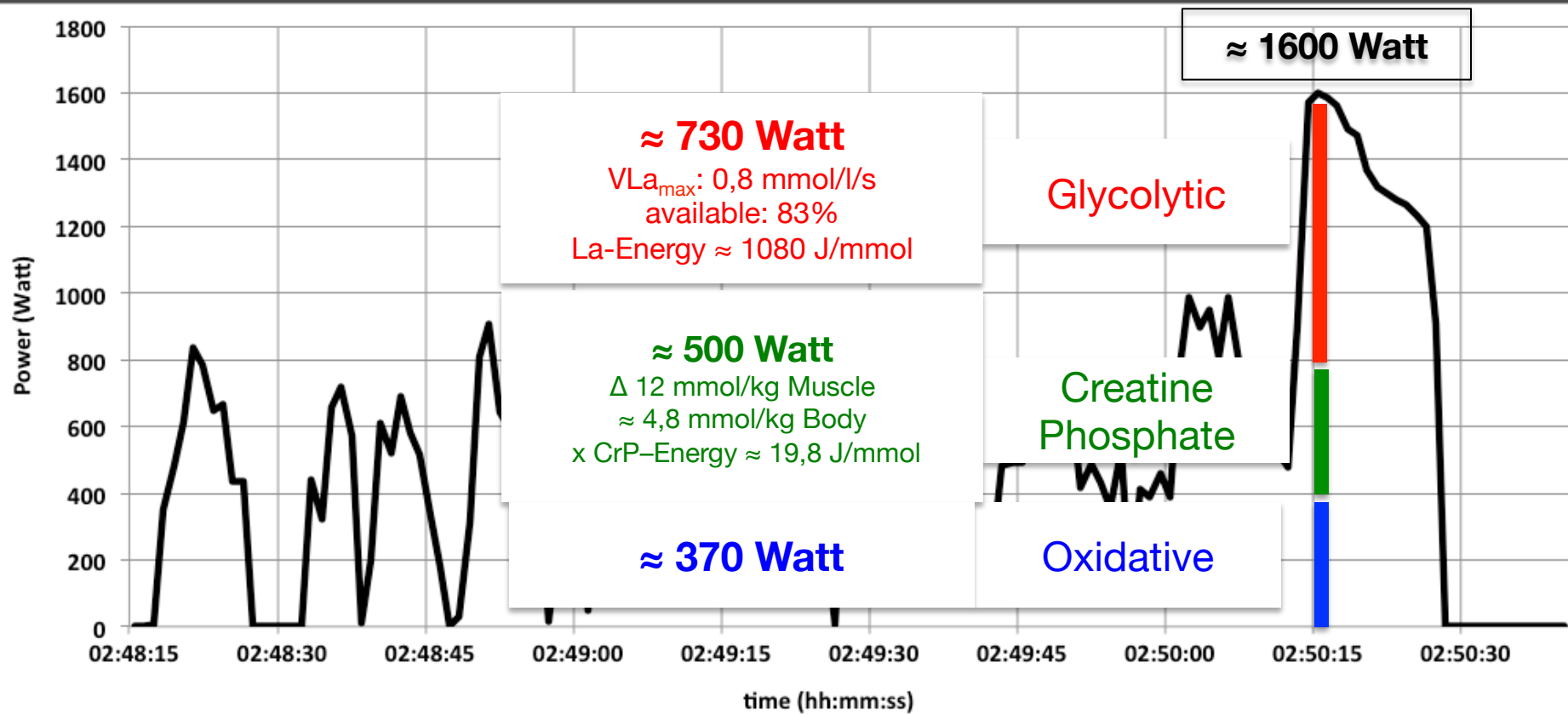


# Different Capacities vs Interval Training



Athlete 1 – low glycolytic      ·····  
Athlete 2 – high glycolytic      - - - -  
Athlete 3 – medio glycolytic      ———

# Energy supply for Sprinting



# Glycolytic Capacity vs. Sprint Power

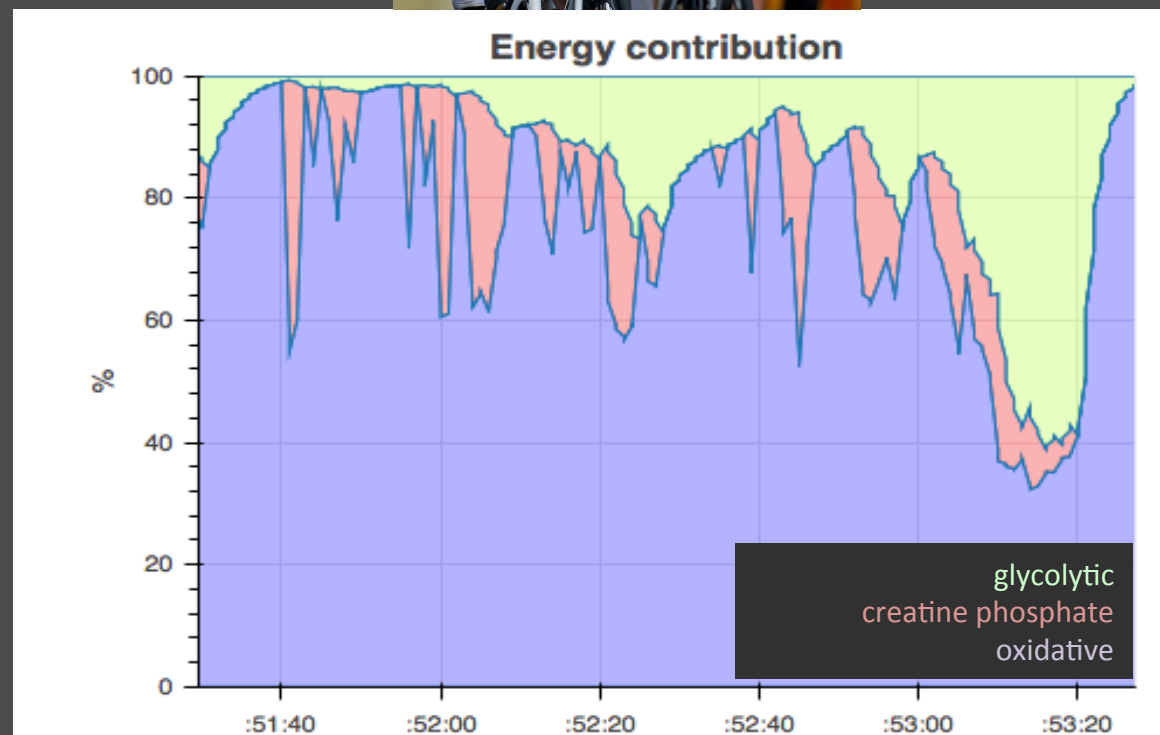
## Example Athlete:

- body mass  $\approx$  80 kg
- $VO_{2max} \approx$  77 ml/min/kg

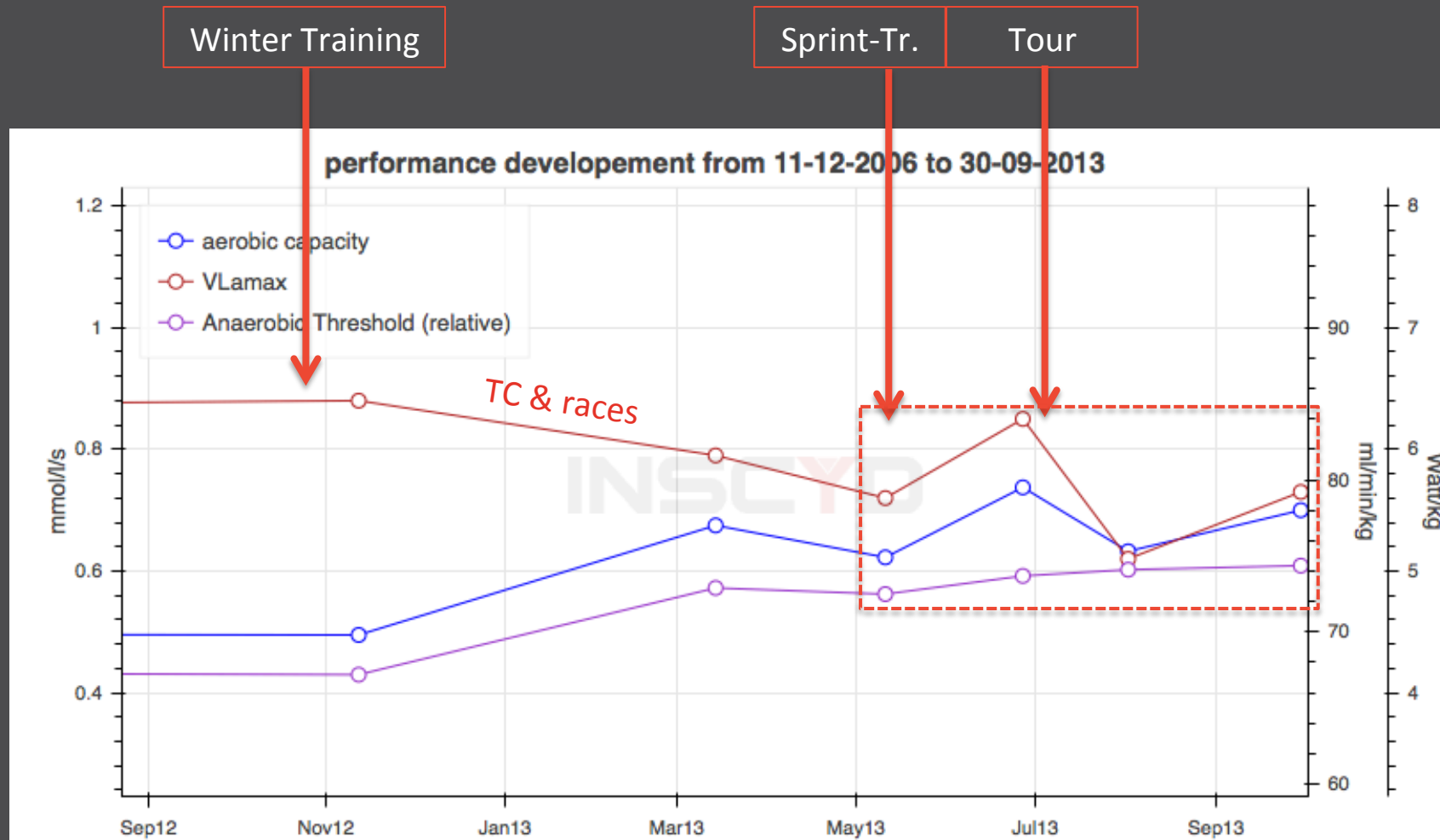
Glycolytic Capacity	$vLa_{max}$	Glycolytic Power	Possible Sprint power
High	0,9 mmol/l/s	1015 W	1695 W
Medium	0,5 mmol/l/s	564 W	1244 W
Low	0,3 mmol/l/s	338 W	1018 W



# Energetics of World Class Sprinting



# Tracking Glycolytic & Aerobic Capacity



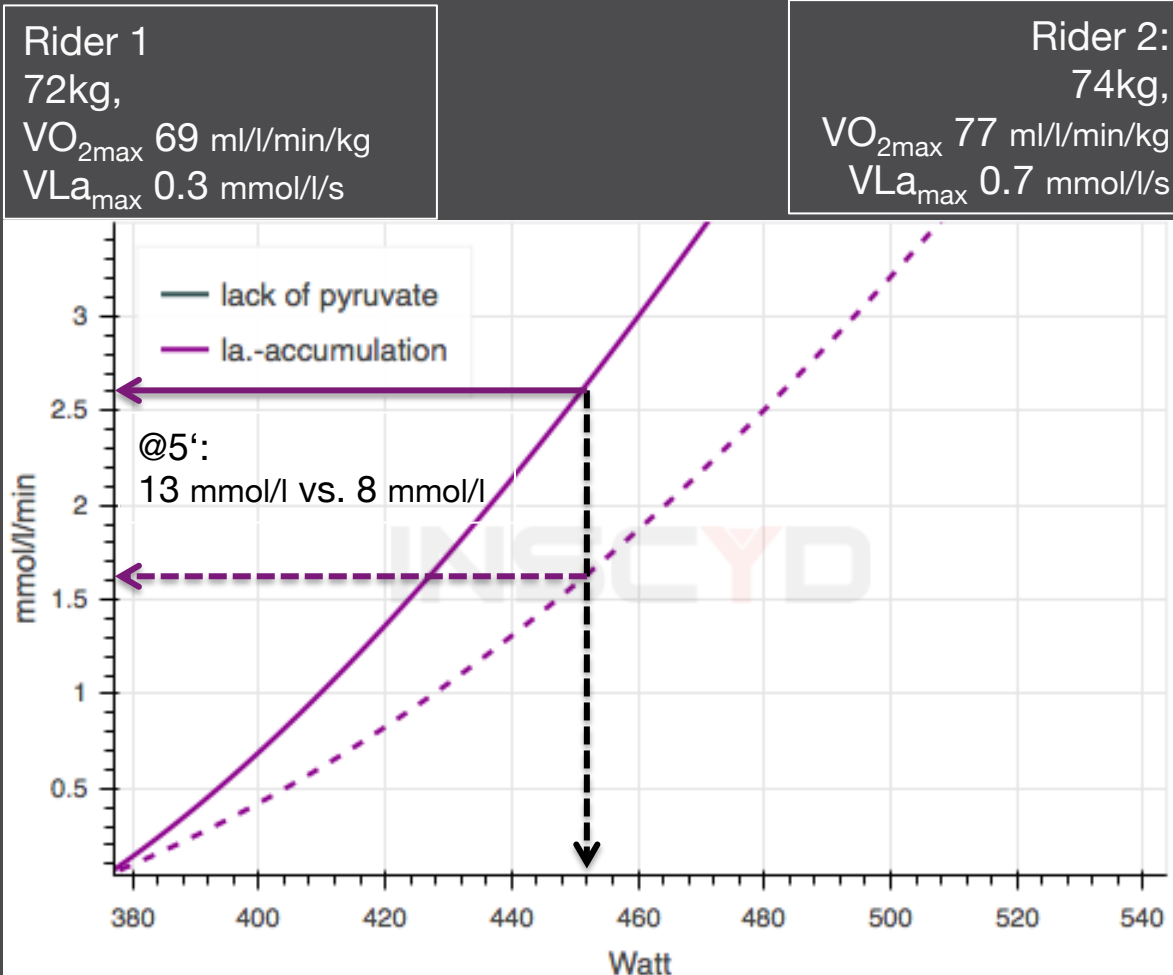
# Glycolytic & Aerobic Capacity in short & intense Efforts

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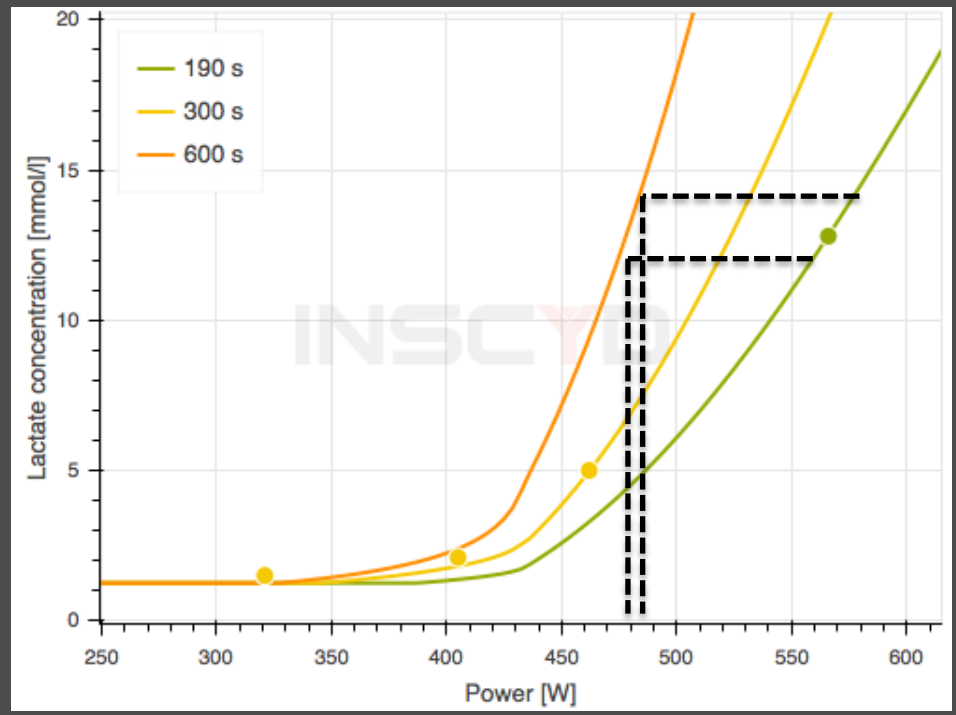
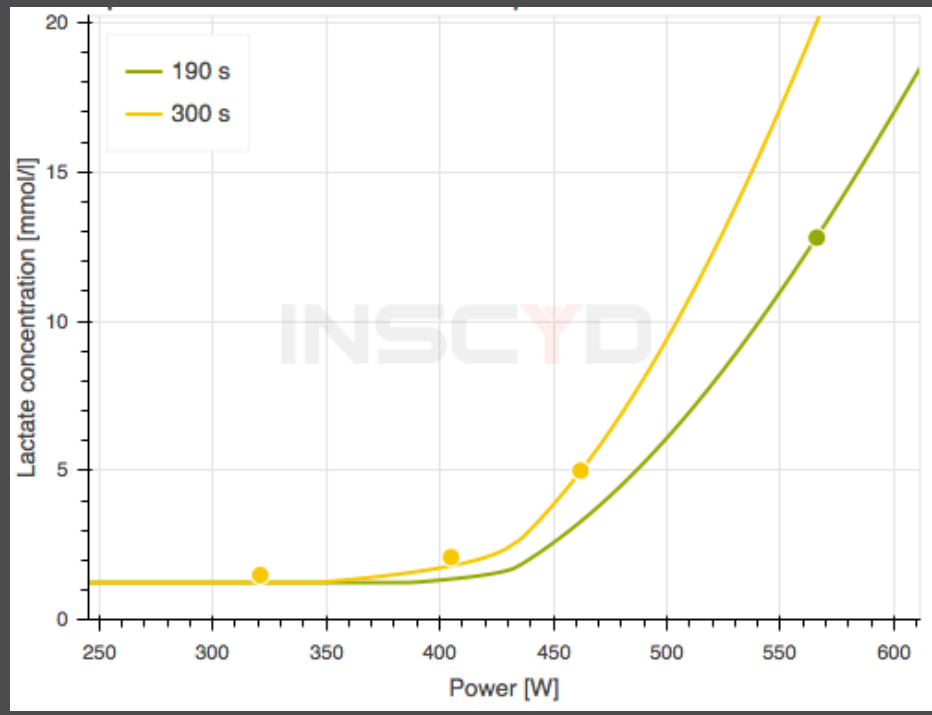




# High Intensity Efforts: influence of Aerobic & glycolytic capacity



# Using Lactate Accumulation to Monitor Riders Performance



# Thank You !

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