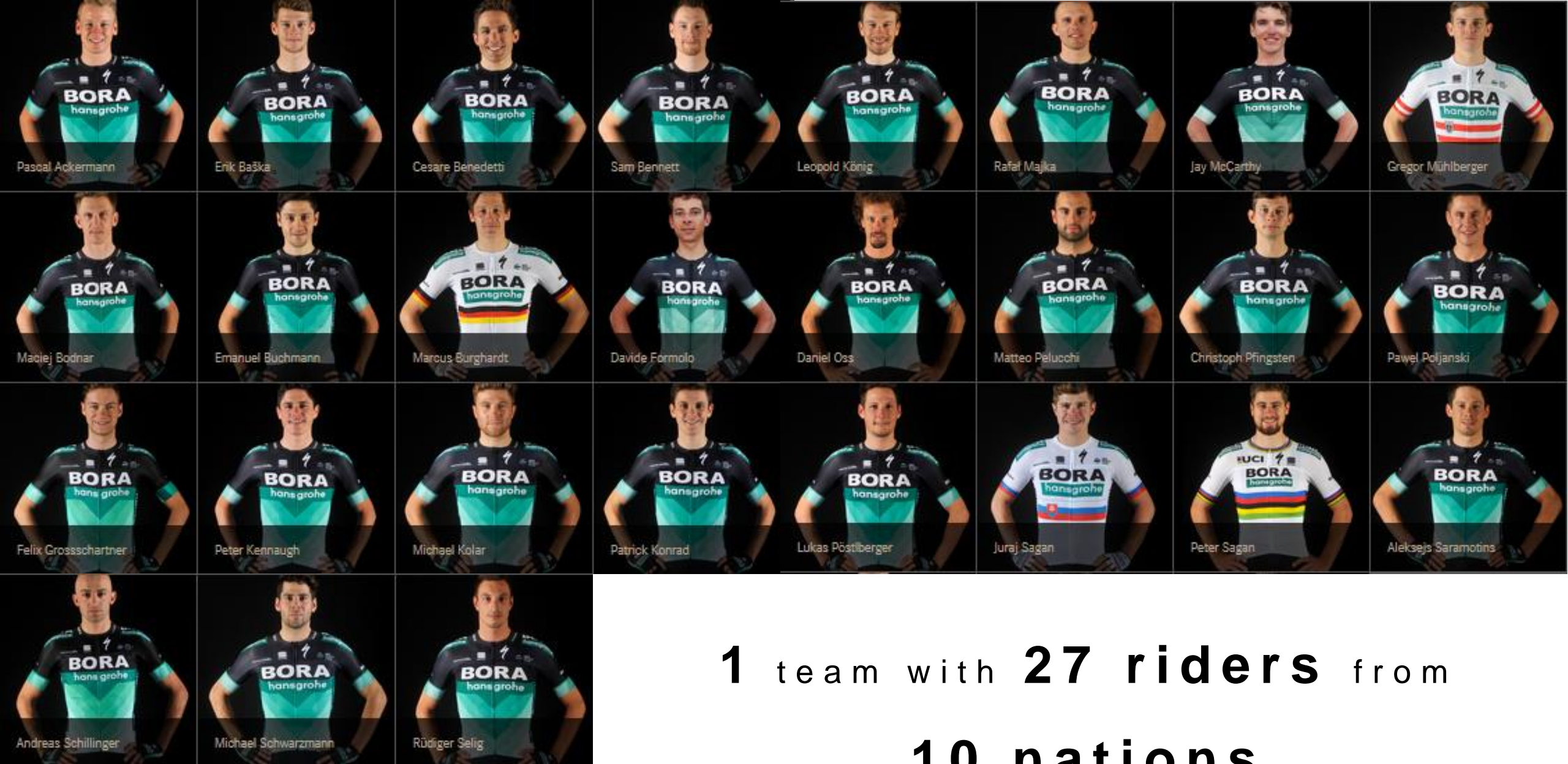


„What changed ? - How Team BORA-hansgrohe evaluates & monitors physiological responses to training and racing periods.“



Dan Lorang
Team coach Bora-hansgrohe





1 team with **27 riders** from
10 nations



27 physiologies
3 coaches

What do we want?

- Aerobic / anaerobic threshold
- Peak power

- Aerobic power → VO₂max

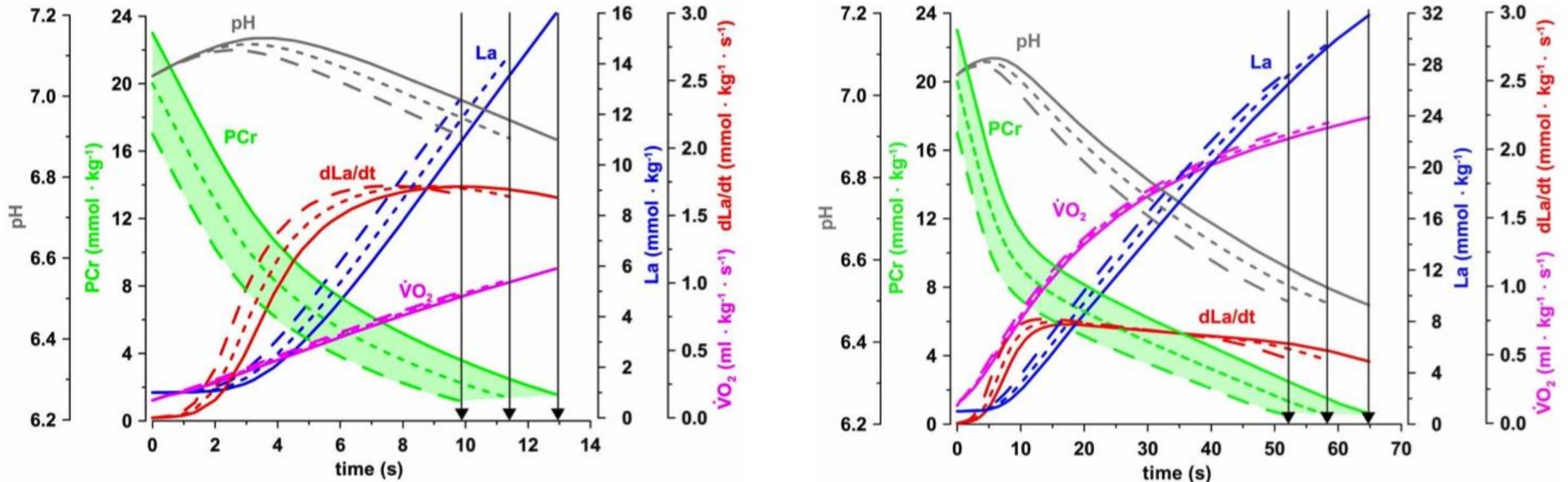
- Anaerobic power → V_lmax

- Metabolic profile



$$\frac{dLa/dt}{\max} = \frac{\max AELa - RLa}{t_{\text{exer}} - t_{\text{alac}}}$$

Simulation of energy metabolism during all-out exercise of about 10-s (top) and 60-s (bottom) duration. Concentration of phosphocreatine is varied by $\pm 15\%$ (shaded area). The arrows indicate the end of exercise. The data refer to wet muscle.



H.Heck; H. Schulz; U. Bartmus (2003). Diagnostics of anaerobic power and capacity. European Journal of Sports Science, vol. 3, issue 3

Performance testing 2017

- Performance lab tests in Dez 2016 (Vlamax / VO2max)
- Validation of individual powermeters with lactate minimum test

- Critical power testing 10/30 sec + 1/3/5/10/20 min.
- Lactate testing to control the training intensity
- Evaluation of race data



Problems 2017

- No real follow-up of the performances over the year
- Lack of performance in the second part of the season
- Decreasing sprint ability
- No real internal comparison between riders' performances
- Difficulty for deep analyses of the „mistakes“
- No clear measurement of physiological impact of training blocks

Goals for 2018

- More test data during the season
- Better insight in the athlete's physiology
- Comparing the riders (performances) to each others
- Comparing different coaching approaches

- Tool: **INSCYD**



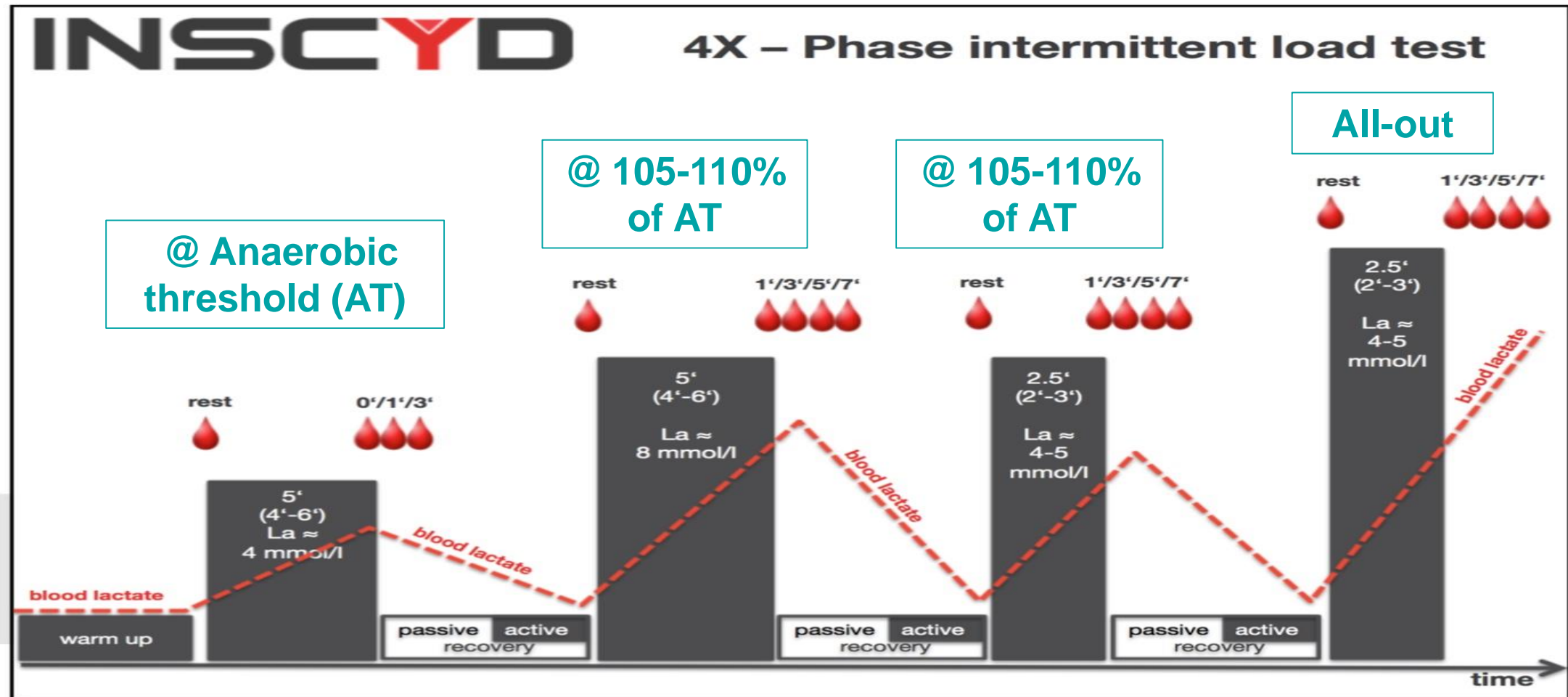
Performance testing 2018

- Performance tests in Dez 2017 (Vlamax / VO2max)
- Validation of individual powermeters with lactate minimum test

- Field test for VO2max and Vlamax in every training camp
- Lactate testing to control the training intensity
- Evaluation of race data



Test procedure / INSCYD protocol



Test procedure / Bora-hansgrohe

Day 1 (second day in a training block)

- 20 min. warm-up
- 5x1 min. @AT with 2 min. recovery
- 10 min. easy

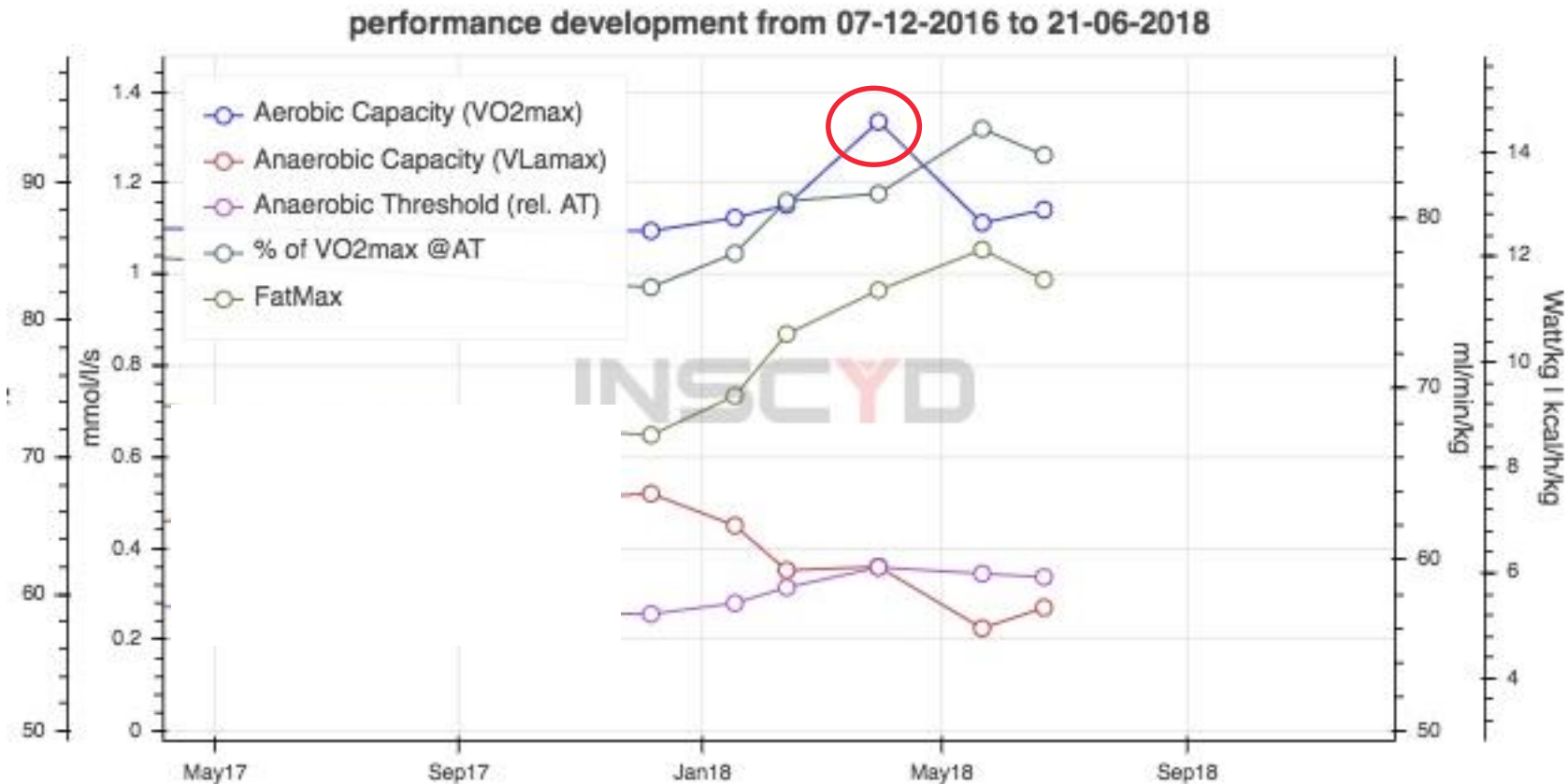
- 8 min. @ 105-108 % AT
- 10 min. recovery
- 1x4 min. a@ 110-115% AT
- 10-15 min. recovery
- 1x3 min. all-out or @ 115-120% AT

Day 2 (after a rest day)

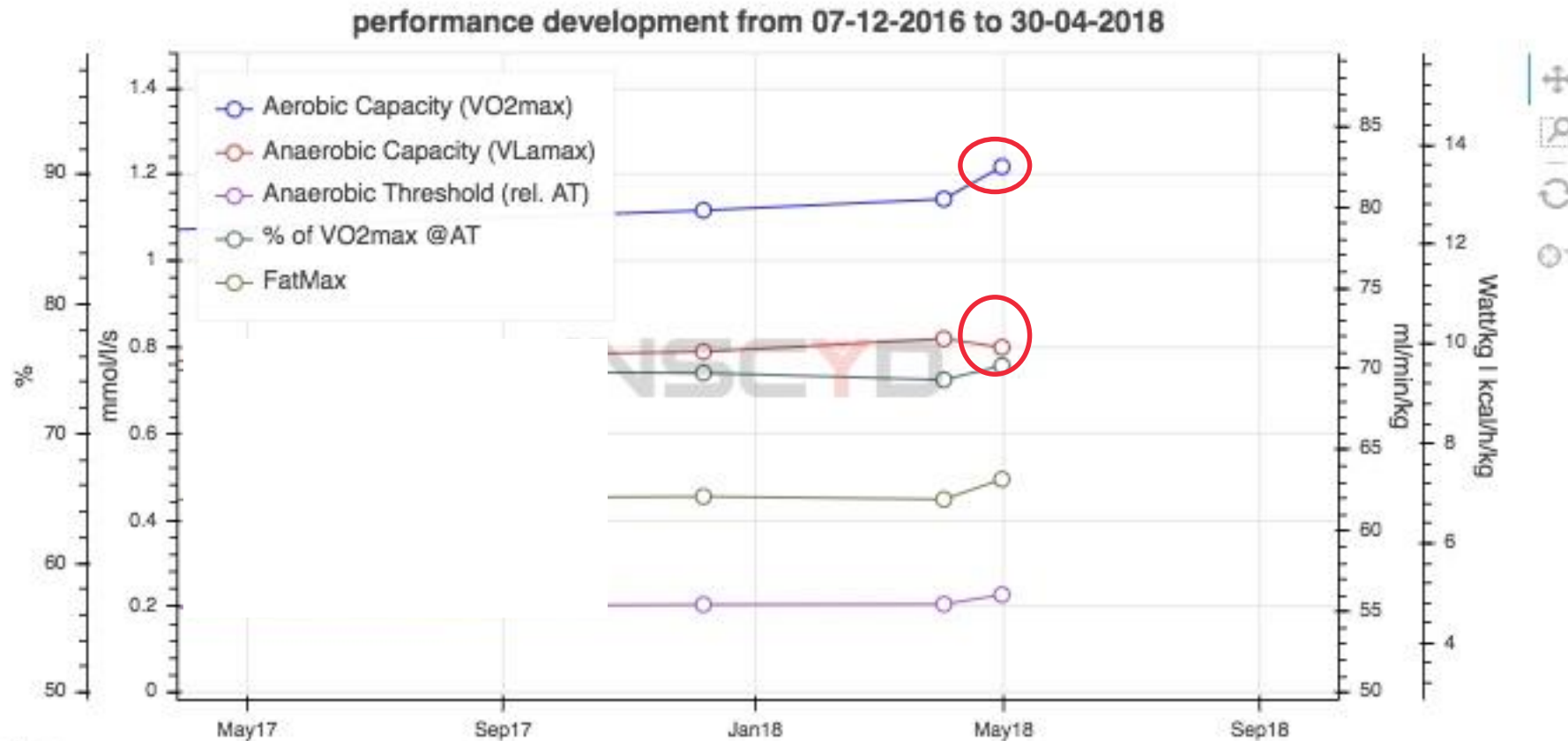
- 30 min. warm-up
- 6 sec 80% sprint
- 10 min. recovery
- 6 sec 90% sprint
- 10 min. recovery

- 15 sec all-out sprint

Changes in VO2max and VLamax (rider 1)



Changes in VO2max and VLamax (rider 2)



Future 2019 / still in the road

- Increase the density of testing
- Implement testing in the race preparation session
- Physiological outcomes from Grand Tours
- Physiological outcomes from High altitude
- Physiological outcomes from training methods



Second year of the UCI WorldTour Team **Bora-hansgrohe**



And this is only the beginning