Lessons from working in Olympic track cycling

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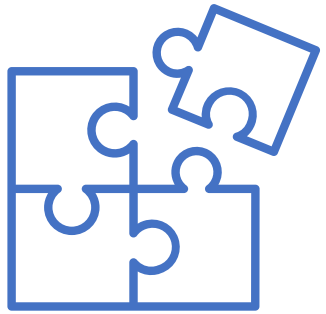
What this talk will focus on….

Training



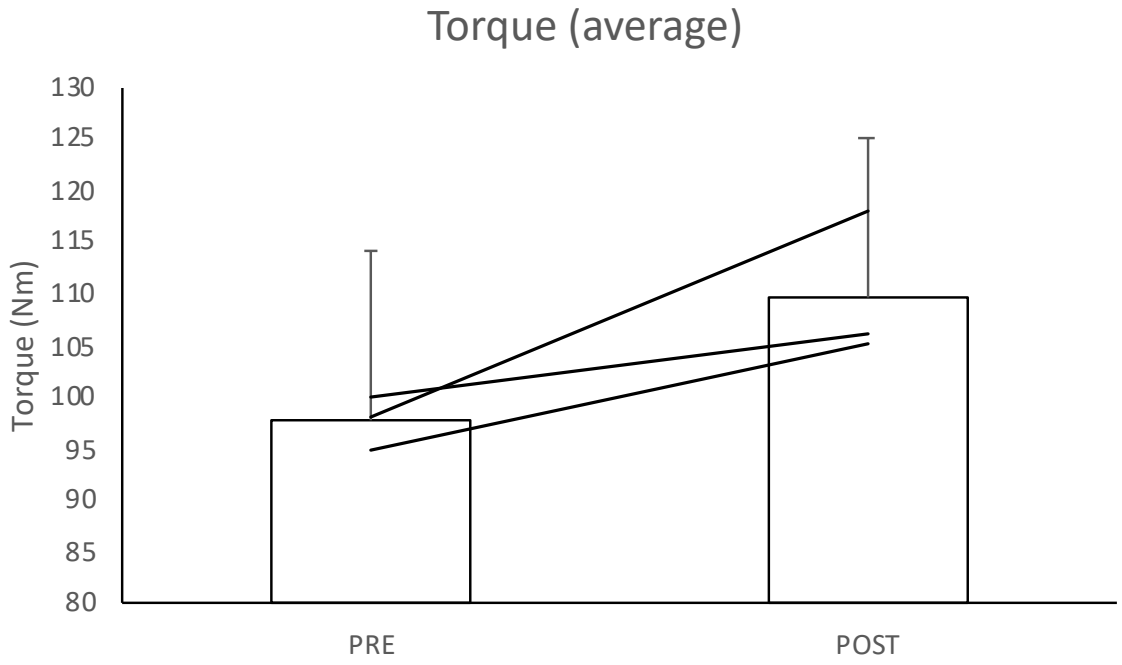
Innovation

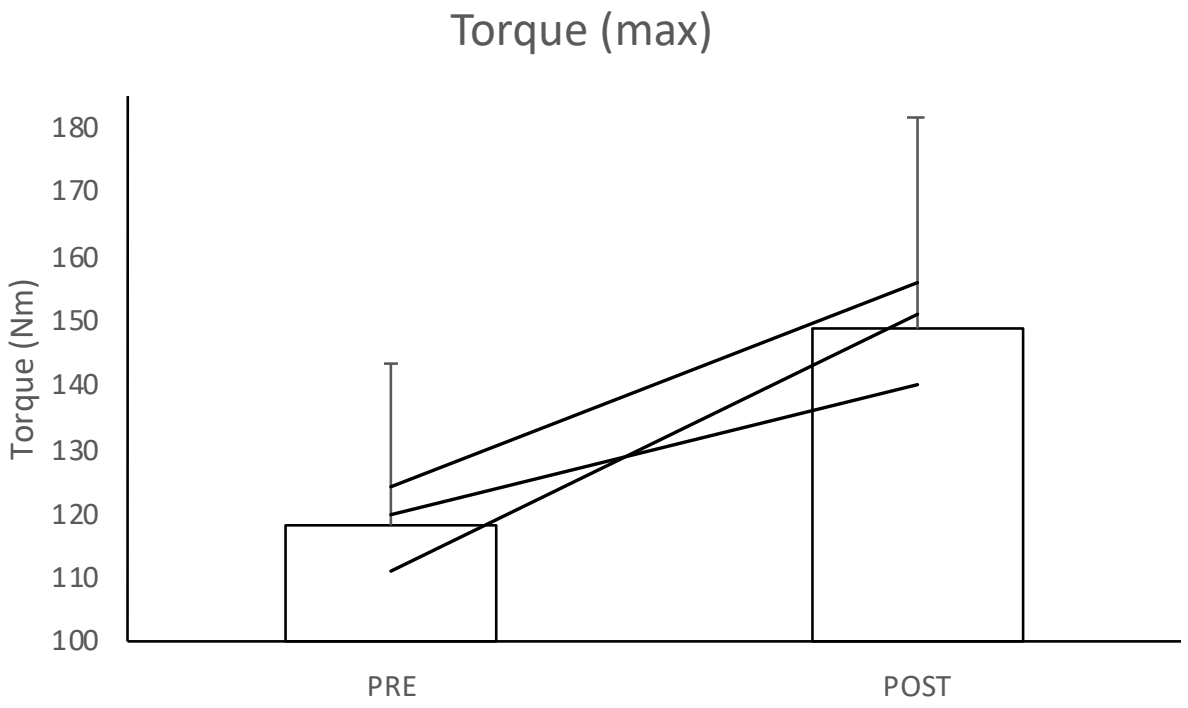
Training - Torque

Training – Torque Ergo

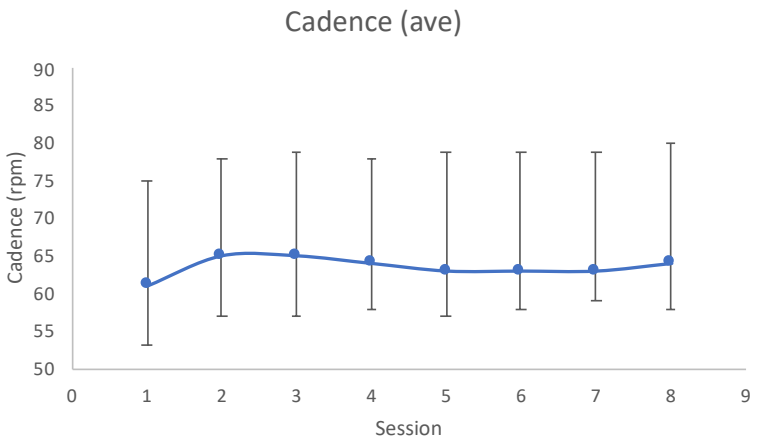
- 3-4 week joint discipline protocol
- 2 x per week high torque intervals – 3 sets of 4 x 8s MAX; 112s OFF
- Isotonic mode – resistance 70-80% (0-100%)

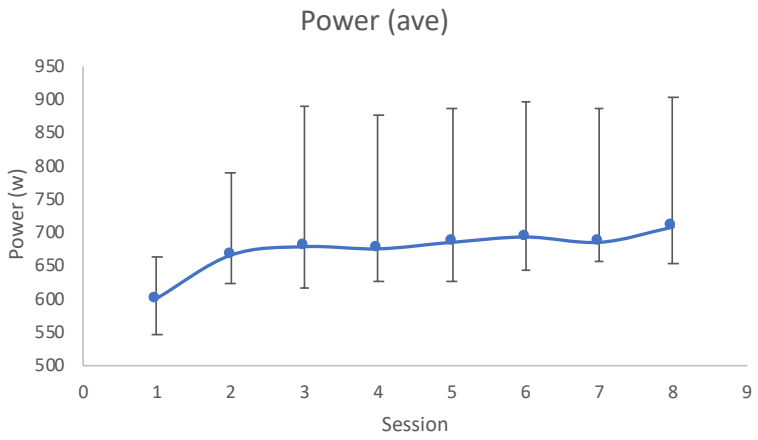
Group torque data

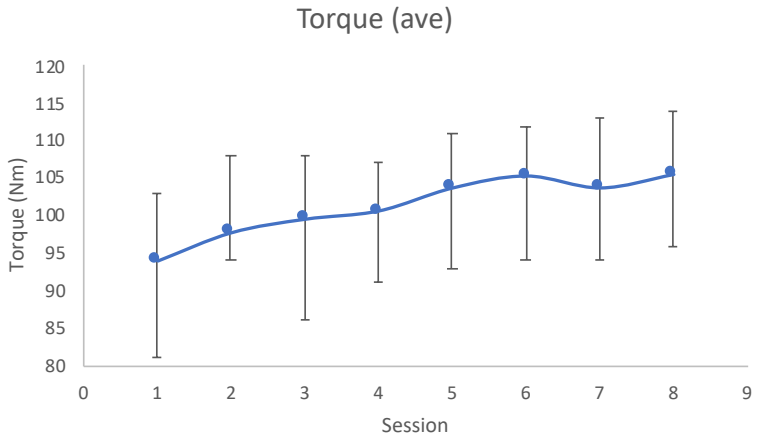


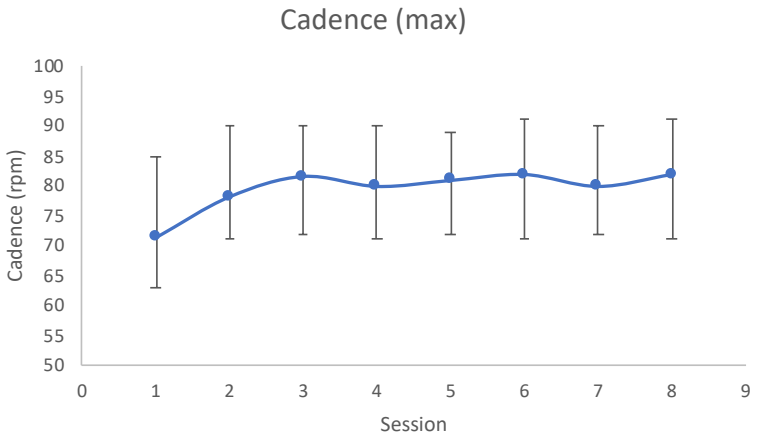


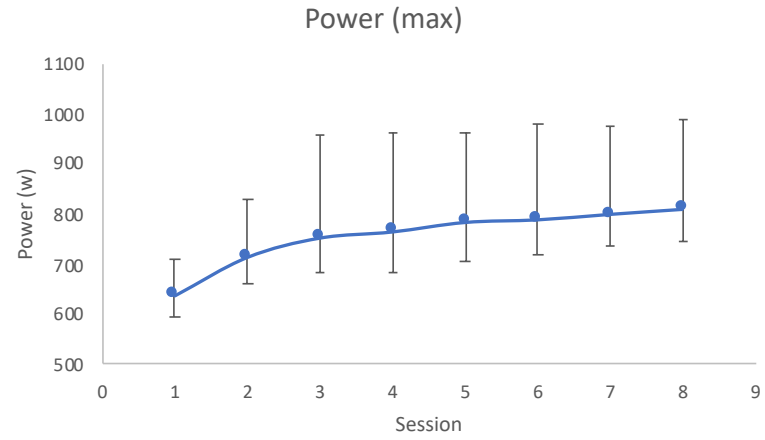
Individual session data

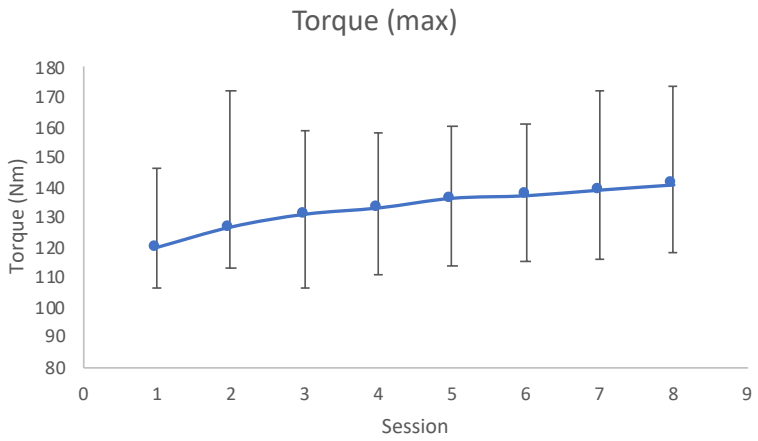






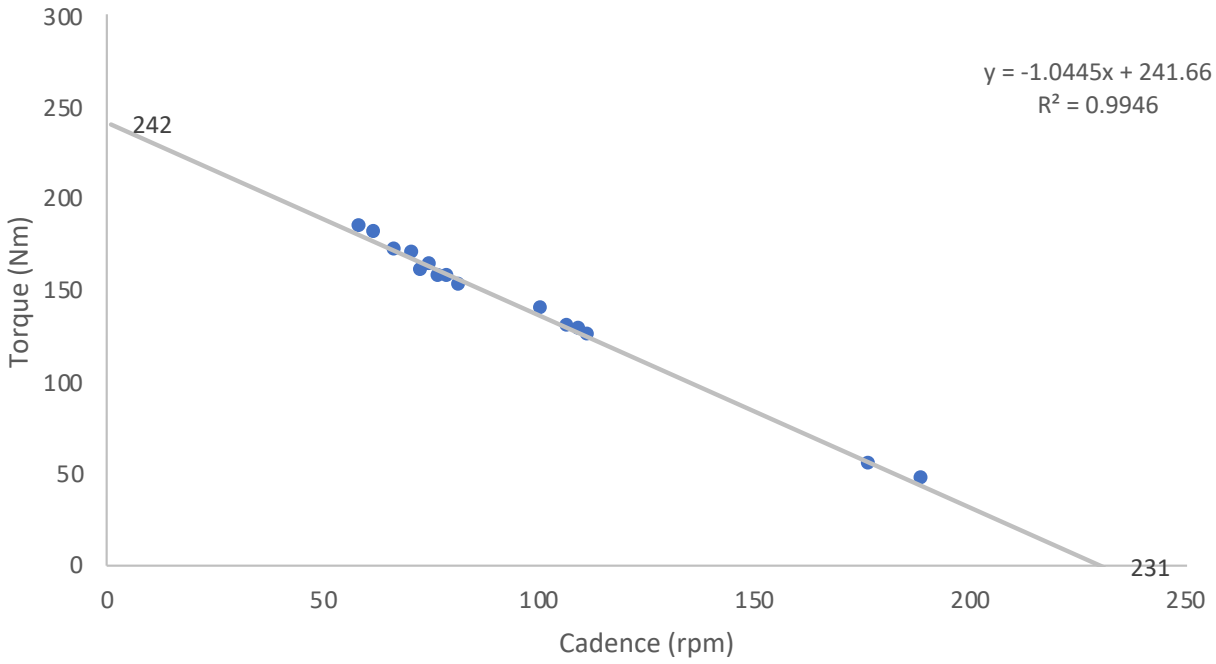


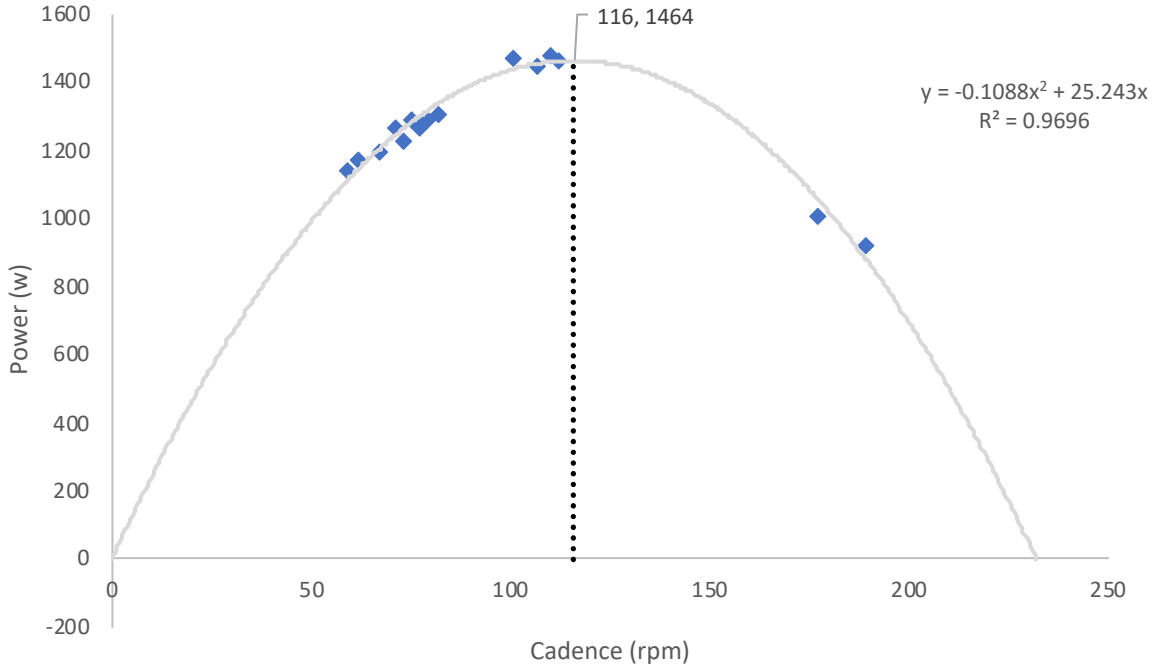




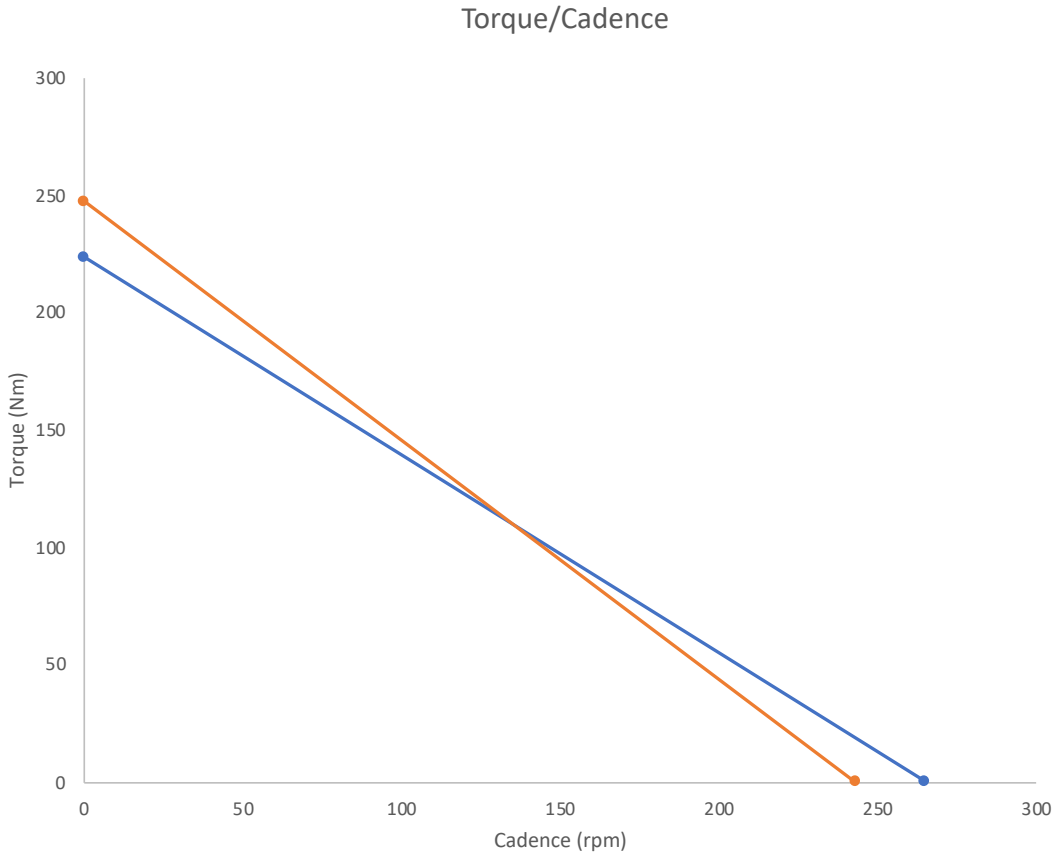
Sprint – Torque/velocity profiling

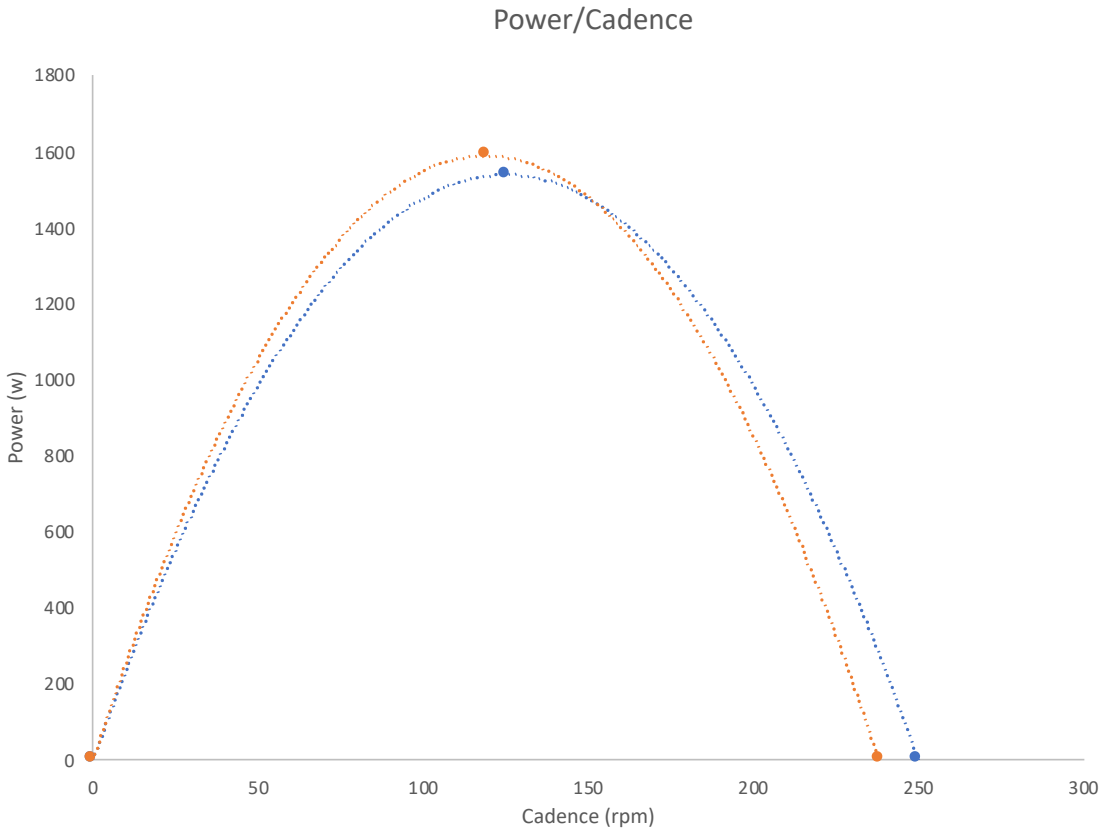
Breaking down power – What can we learn?



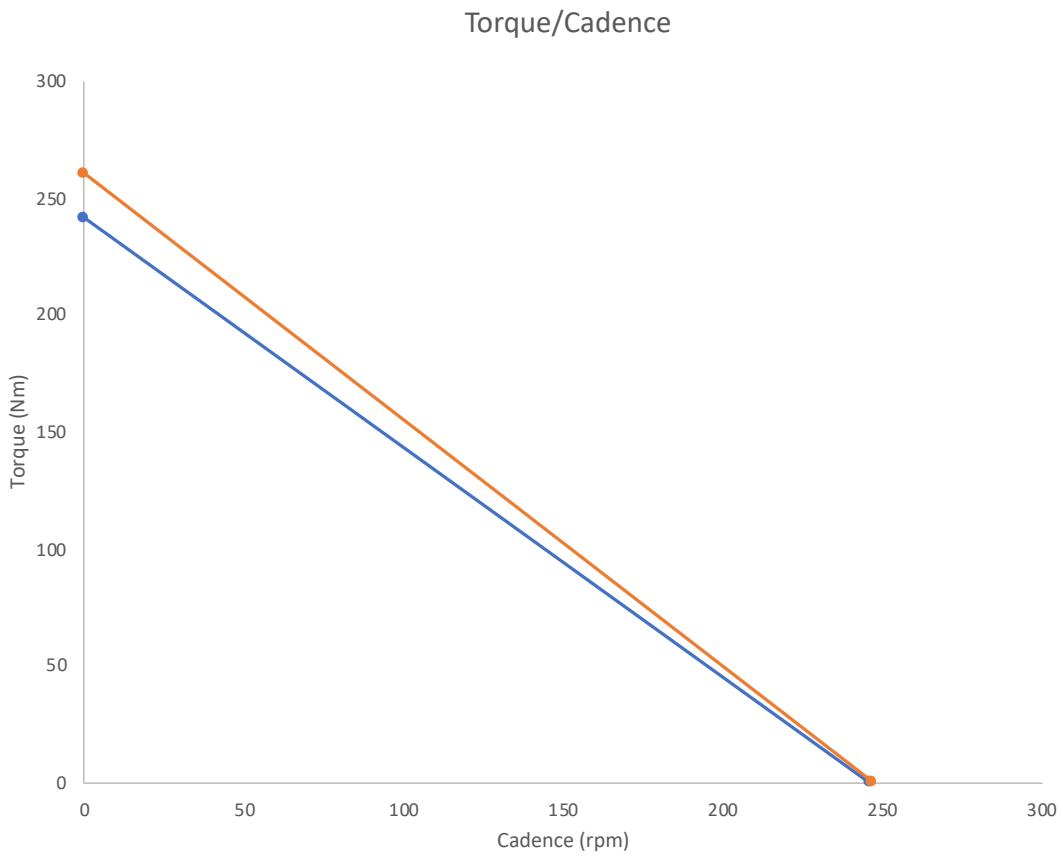


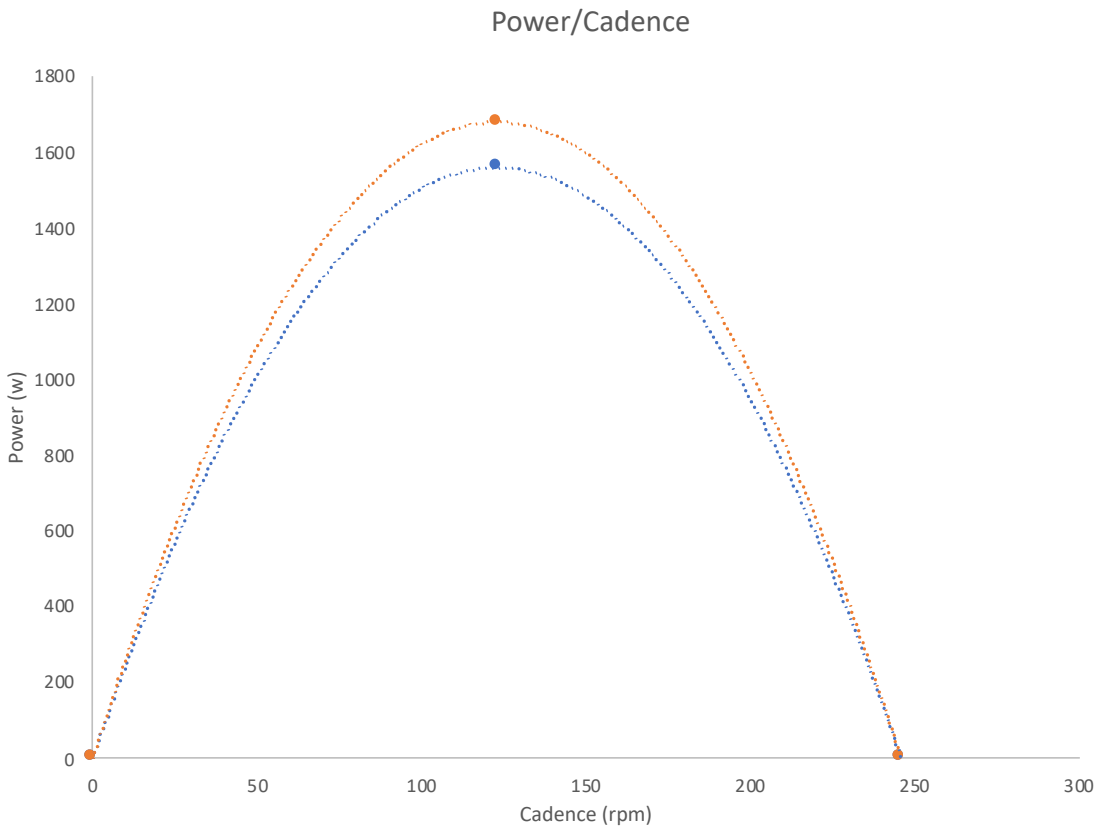
Similar maximal power – different composition





Direction and efficacy of training

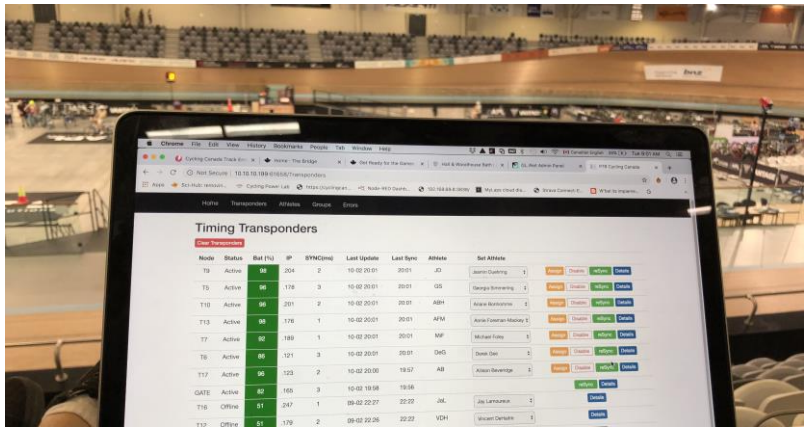


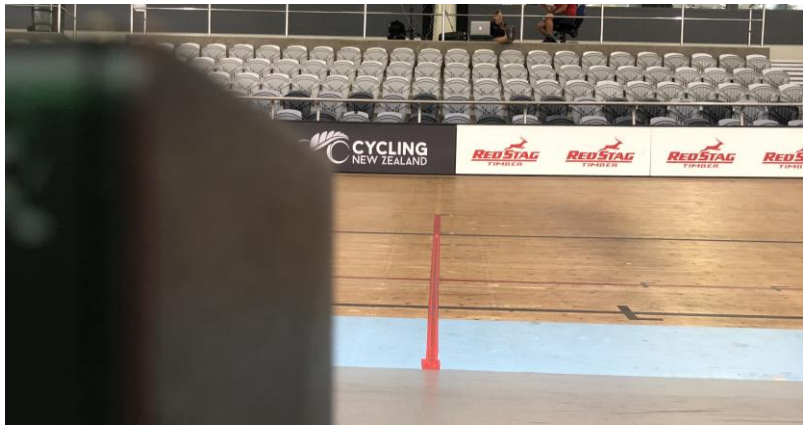


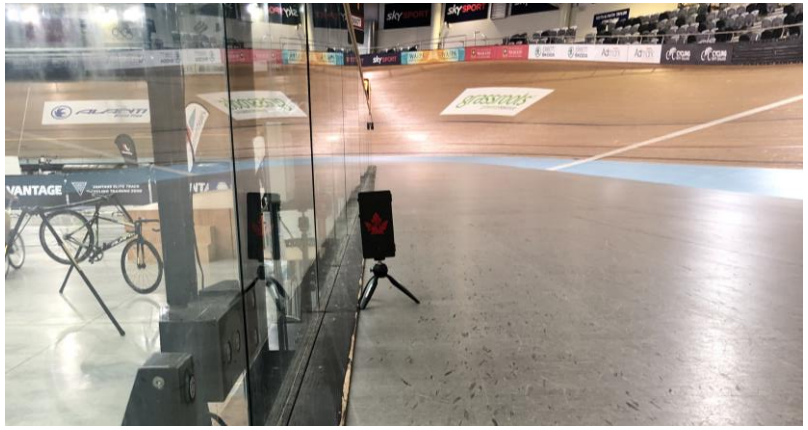
On the road

- 15’ Z0/1 – Easy warm-up
- 2 x 6” Warm up sprints @ 80% effort
  - 1x moderate gear (53x16) from rolling start (80rpm)
  - 1 x small gear (39x28) from rolling start (~40rpm) - **SEATED**
- 10’ Z0/1 – easy riding
- 6 x 6” maximal sprints; 5’ recovery between sprints
  - 1 x small gear (39x28) from rolling start (~40rpm) - **SEATED**
  - 2 x moderate gear (53x15/16) from rolling start (80rpm)
  - 2 x big gear (53x11) slow rolling start (~30-40rpm)
  - 1 x small gear (39x23) from rolling start (~40rpm) **SEATED**

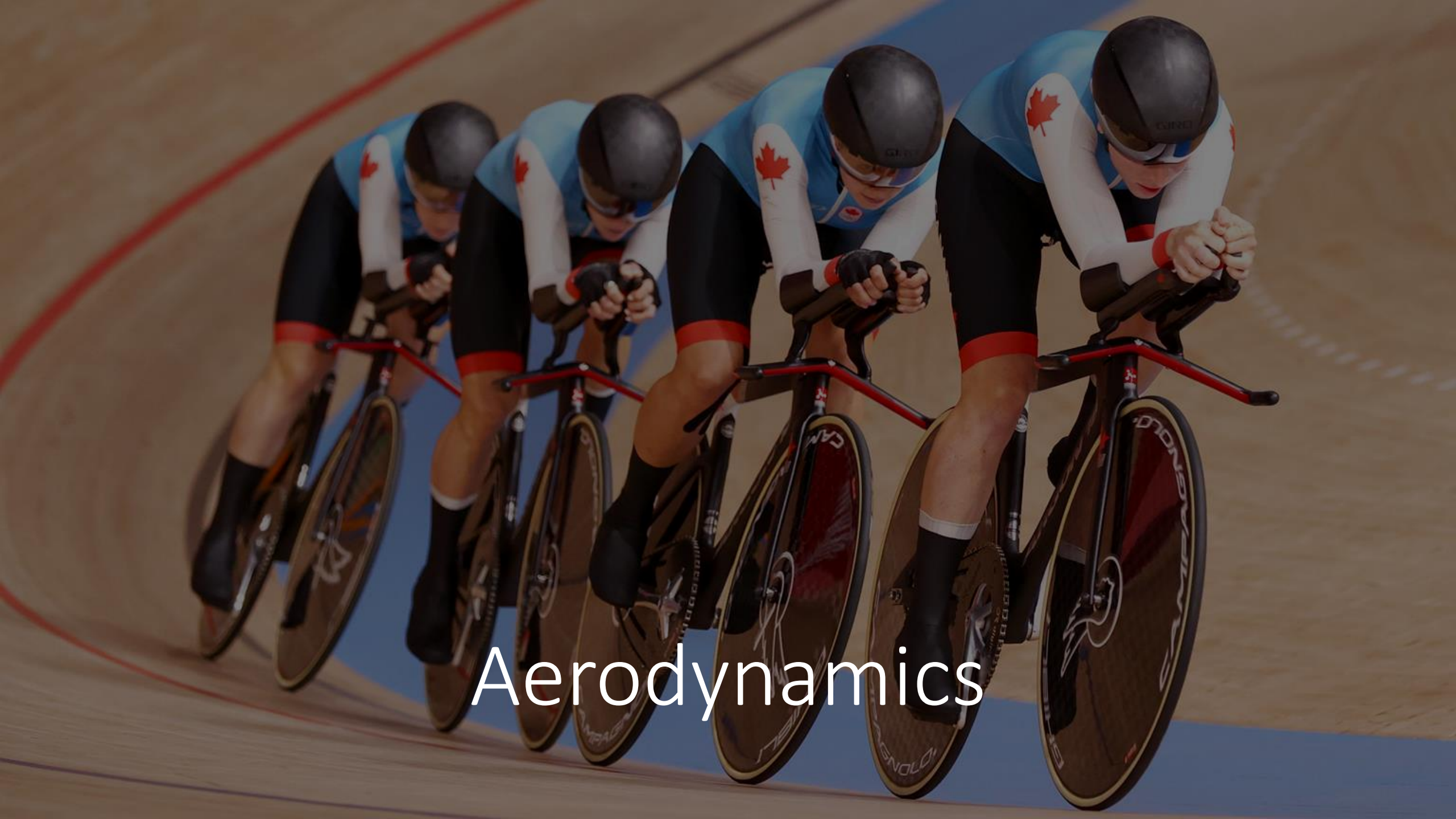
Innovation





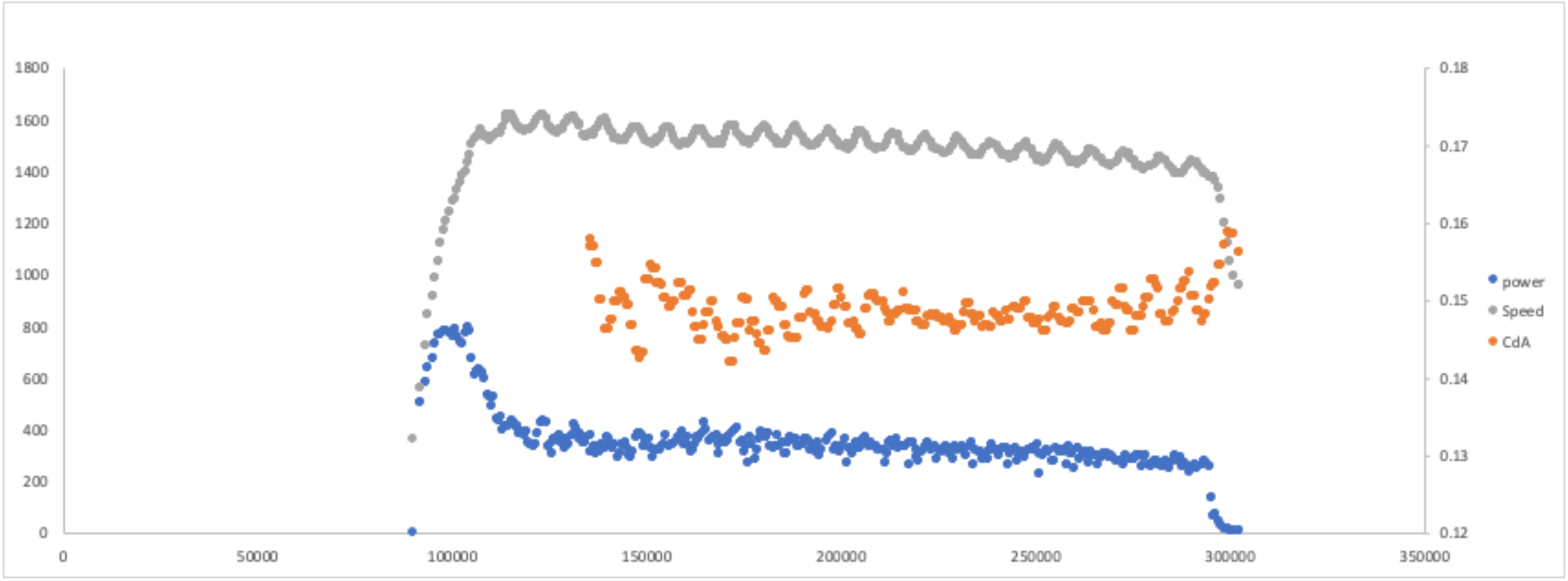


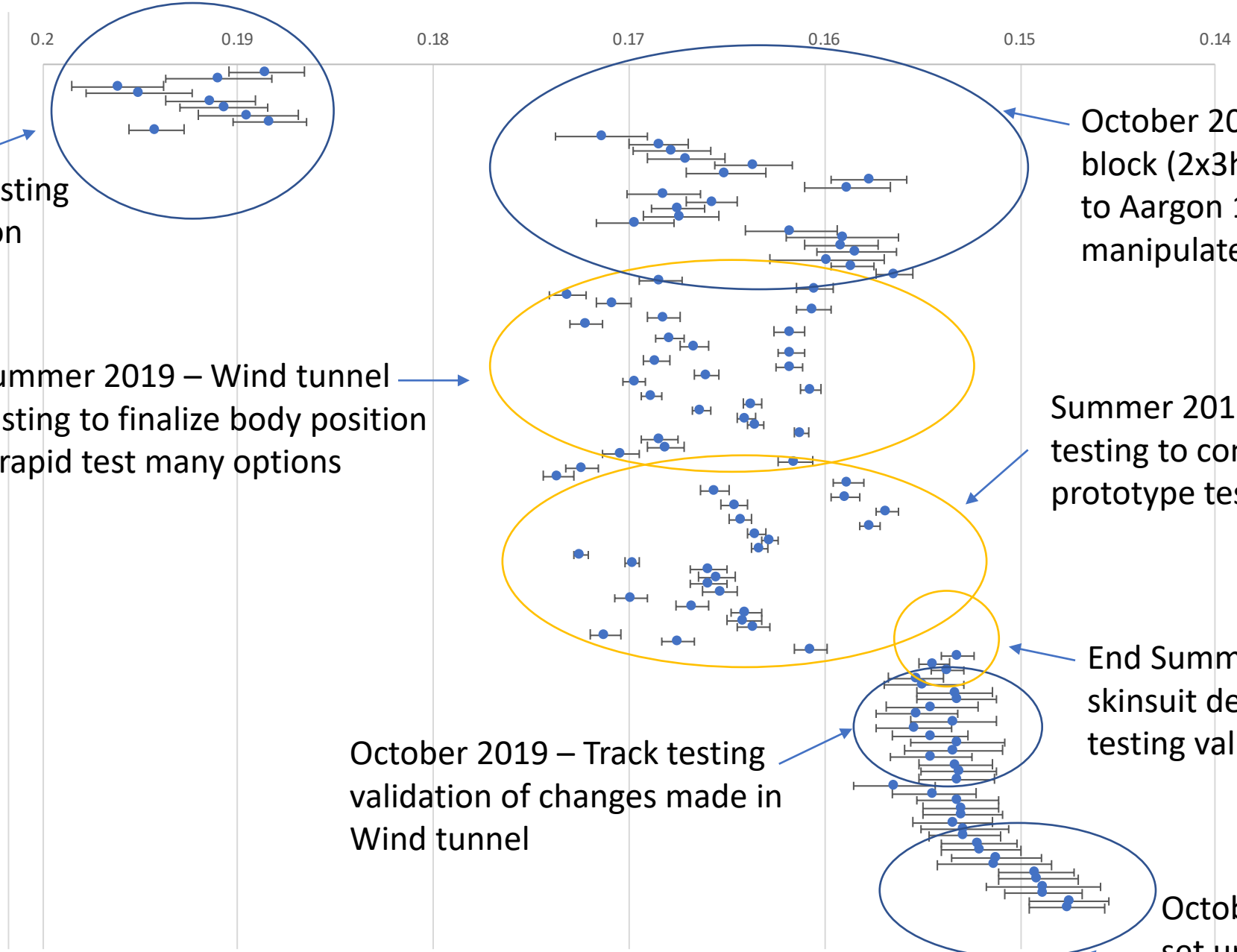
Mobile timing system – data collection and feedback when it matters



Aerodynamics

Real time sensor data





May 2018 – Last testing prior to intervention

October 2018 – First testing block (2x3h sessions) – Switch to Aargon 18 bikes - start to manipulate front end

Summer 2019 – Wind tunnel testing to finalize body position – rapid test many options

Summer 2019 – Wind tunnel testing to conduct skinsuit prototype testing

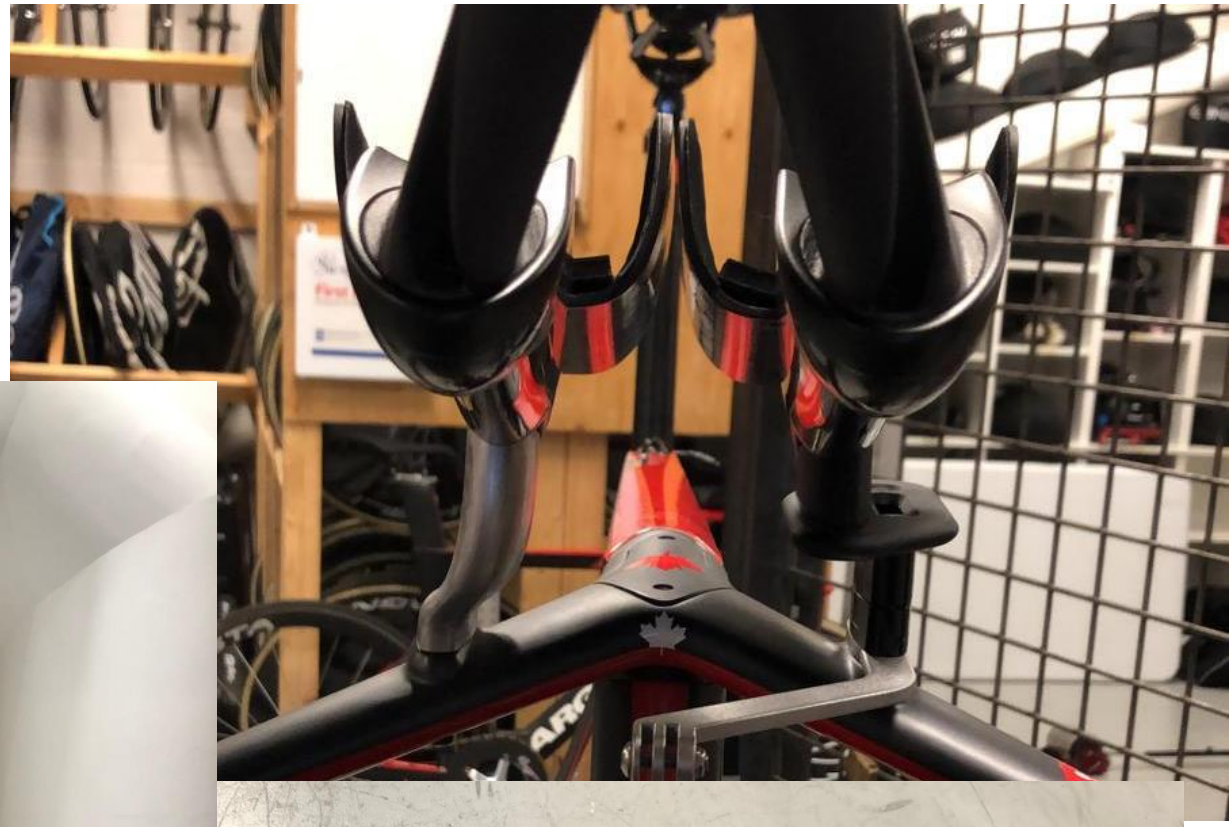
End Summer 2019 – Final skinsuit design wind tunnel testing validation

October 2019 – Track testing validation of changes made in Wind tunnel

October 2020 – Final Olympic set up including custom front end option and mounts

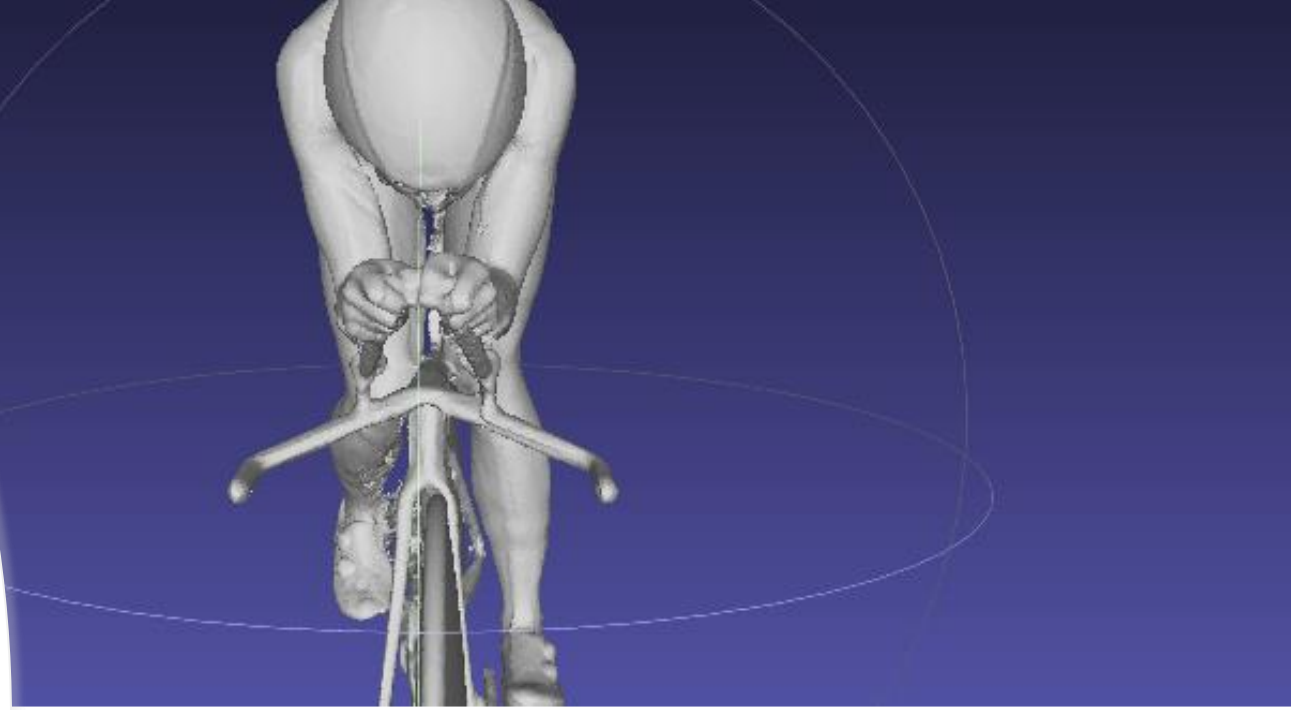
Front end development

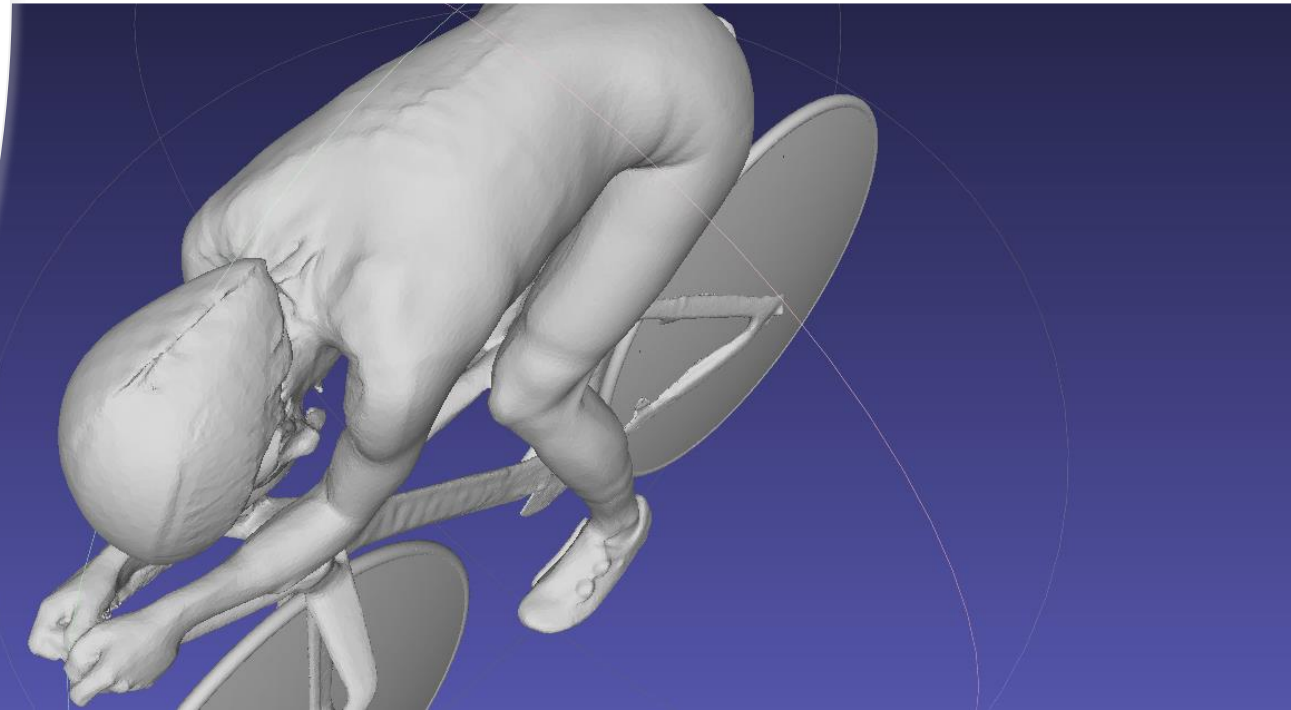
- Baseline testing stock/easy change hardware and initial optimization (both track and wind tunnel)
- Use system which would allow for rapid testing of different positions within UCI/biomechanical limits (pads, stack, for/aft extensions, angle, toe)
- Produce custom 3D printed mounting options once optimal position found for each rider (University partnership)
- Aerodynamic gains found through body positioning and hardware optimization



CFD modeling

- Partnership – University Waterloo
- Using 3D scans and CFD to investigate manipulations to position variables – Stack height, width & saddle height virtually using 3D scans collected with consumer electronics
- Methods to be published in near future



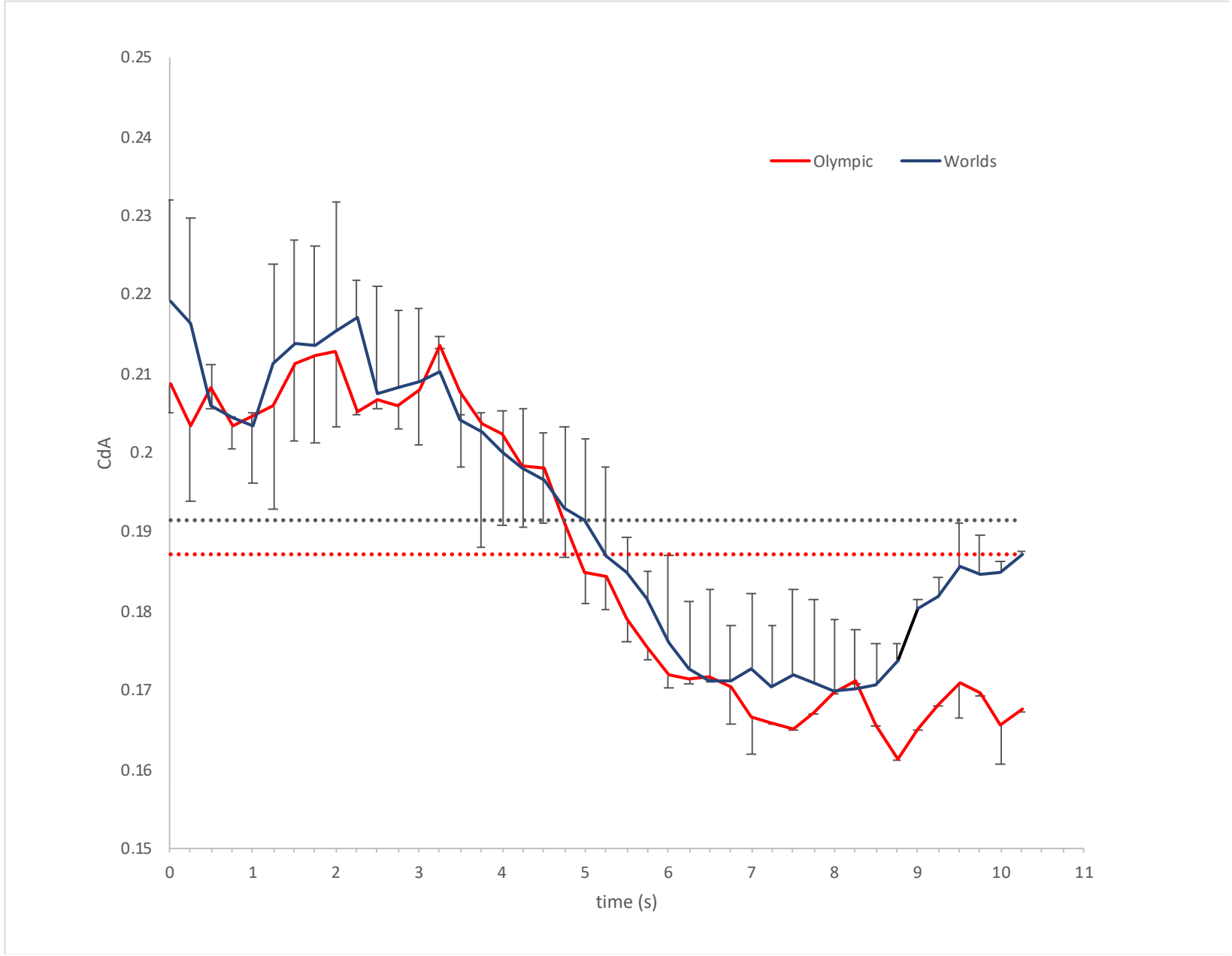


Clothing Development and Validation – In the field

Protocol

- 4 x 200m Flying – Full race set up
  - Same gear
  - Same strategy
  - 45min between efforts

- Run 1 & 4 in current best set up
- Run 2 & 3 in Olympic prototype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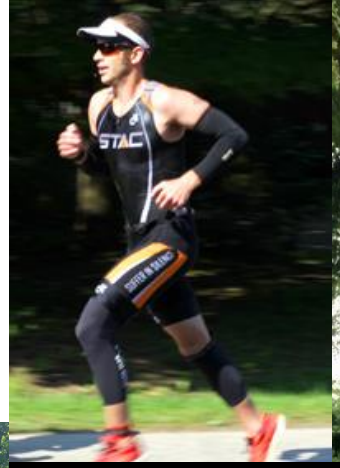
Thanks to:



TEAM DSM

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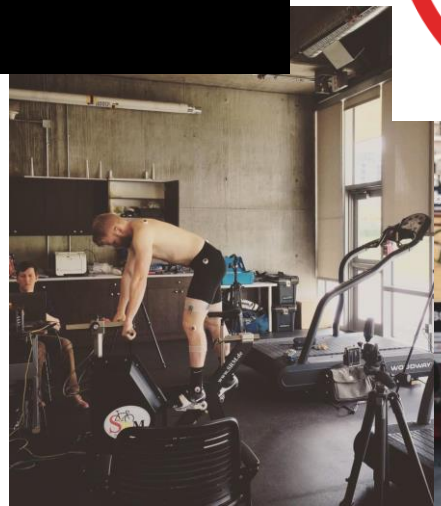

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Questions?

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