FISA YOUTH COACHES CONFERENCE

1st – 4th November 2018 - Bucharest, Romania

Performance

Does 'Ergo-power' Always Equal a Faster Boat?

Ergo

On-water

Conny Draper, PhD Applied Sports Biomechanist
conny.draper@gmail.com

"Back in the late 90's I believed in the erg ... Now I look for boat movers."

http://row-360.com/mike-teti-words/

Mike Teti, In His Own Words

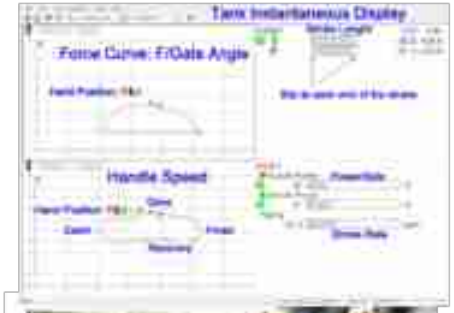
February 5, 2018

So what is it that's changed in your coaching Mike?

Back in the late 90's I believed in the erg. I would do everything in my power to get the strongest guys in the boat. Now I look for boat movers. Our Athens boat certainly wasn't the strongest. But it was the fastest. It was the same going forward. And I think that's what the Germans have. I don't know those guys. But hey they don't have the strongest guys and they are certainly moving the boat. So now I want the best boat movers. Of course if you've got someone like 'Matty' Pinsent who's a strong guy as well as being a good boat mover; that's the best combination.

(Nov,. 2017)

Coaching & objective Assessment during Training



Ergometer	On-water	Rowing tank
Load regulation	Technique & performance assessment	Movement regulation
Conditioning training	On-water technique training	Additional technique training

WHY Ergometer or WHY not?

Collection of common PRO's/ CON's thoughts & experiences from coaches/ Sport Science support teams …

Training tool PRO's/ CON's :

- Very accurate feedback tool on rowing intensity
- Allows precise training of physiology
- Stable training environment (independent on weather & water conditions)

Introduction tool to the sport PRO's/ CON's :

- Useful to introduce new rowers to the sport
- Avoid too much in the early phases. Its boring and reinforces bad habits
- Kids love to do 'team races' on the ergo over 500m or so. (Changing team members)

Technique tool PRO's/ CON's :

- Useful for basic components of rowing technique
- Create understanding of teaching the differences between good ergometer technique vs
- Danger!! It is possible to row on an ergo with a completely false grip. This is why many young scullers have an incorrect grip in the boat!
  (i.e. …hanging on with the last 2 joints of the fingers is possible. In the boat, that makes it impossible to roll the blade out into the fingers….and so many athletes need a big wrist movement to turn the blade)

WHY Ergometer or WHY not? (2)

Collection of common PRO's/ CON's thoughts & experiences from coaches/ Sport Science support teams …

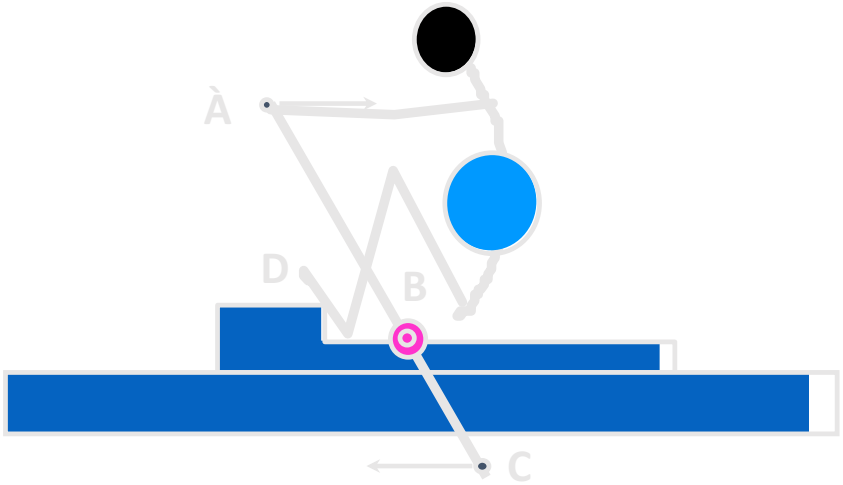
Coaching tool PRO's/ CON's :

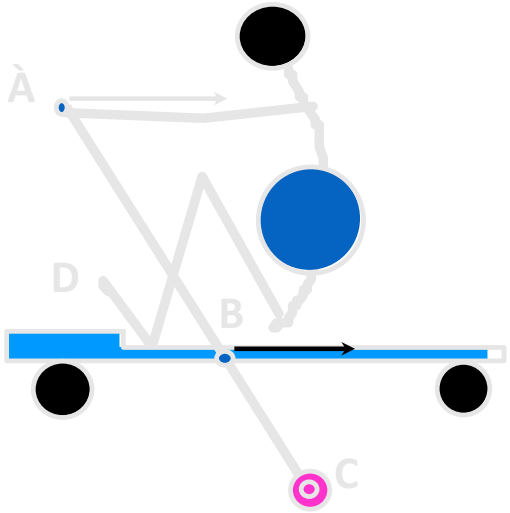
- Always use lowest drag factor, unless it's a specific exercise
- The ergo is too often used as a 'baby sitter' for odd numbers of athletes or people who come late. Often better to get them to run or maybe come in the motor boat.
- Gymnasts often say "for every incorrect repetition, you need to do approx. 7 correct ones to write over the bad one"
- Ergometer calculation can misguide athletes towards wrong technique to achieve higher erg scores (can badly affect on-water technique) – and overuse can cause injuries

Selection tool PRO's/ CON's :

- Strong performance indicator for competitive on-water rowing, HOWEVER – VERY controversial to base selection purely on ergometer scores (you can easily lose crucial fast boat movers & racers)

Biomechanical Difference
Ergometer vs. On-Water Rowing (1)





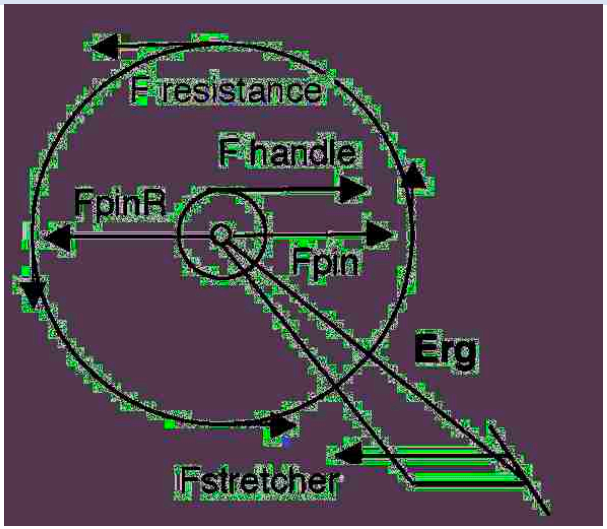
during Ergometer Rowing:

- Rower moves his body relative to the stable support
- “Oar” works as a I type level (pivot point is in the middle)

during On-Water Rowing

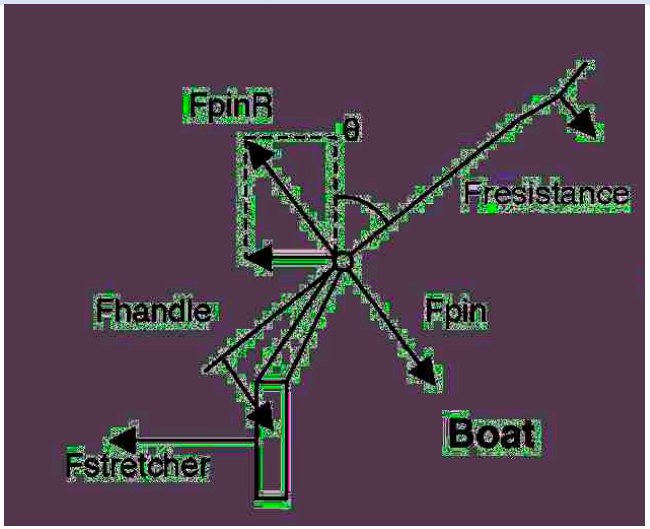
- Rower moves lighter boat relative to himself
- Oar works as a II type lever (pivot point is on the end)

Biomechanical Difference
Ergometer vs. On-Water Rowing (2)



during Ergometer Rowing:

- Leg drive linear
- Handle pull/ Body swing translational
- Stretcher & Handle force: similar magnitude

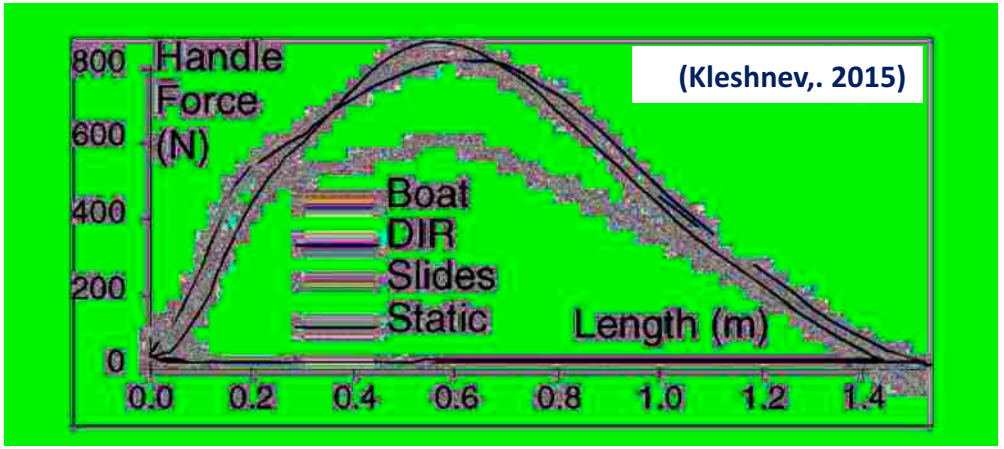


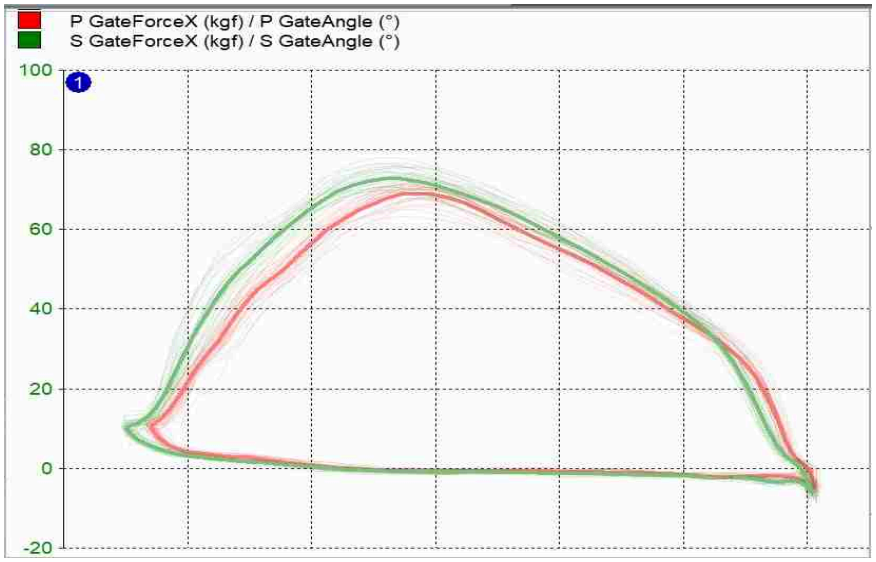
during On-Water Rowing

- Scull/Sweep: Leg drive linear
- Sculling: Body swing: translational (linear)
  Handle pull: rotational
- Sweep: Body swing: rotational
  Handle pull: rotational
- Stretcher - handle force: 30% smaller handle force due to the gearing factor

(Kleshnev,. 2015)

Biomechanical Difference
Ergometer vs. On-Water Rowing (3)





Biomechanical Difference
Ergometer vs. On-Water Rowing (4)

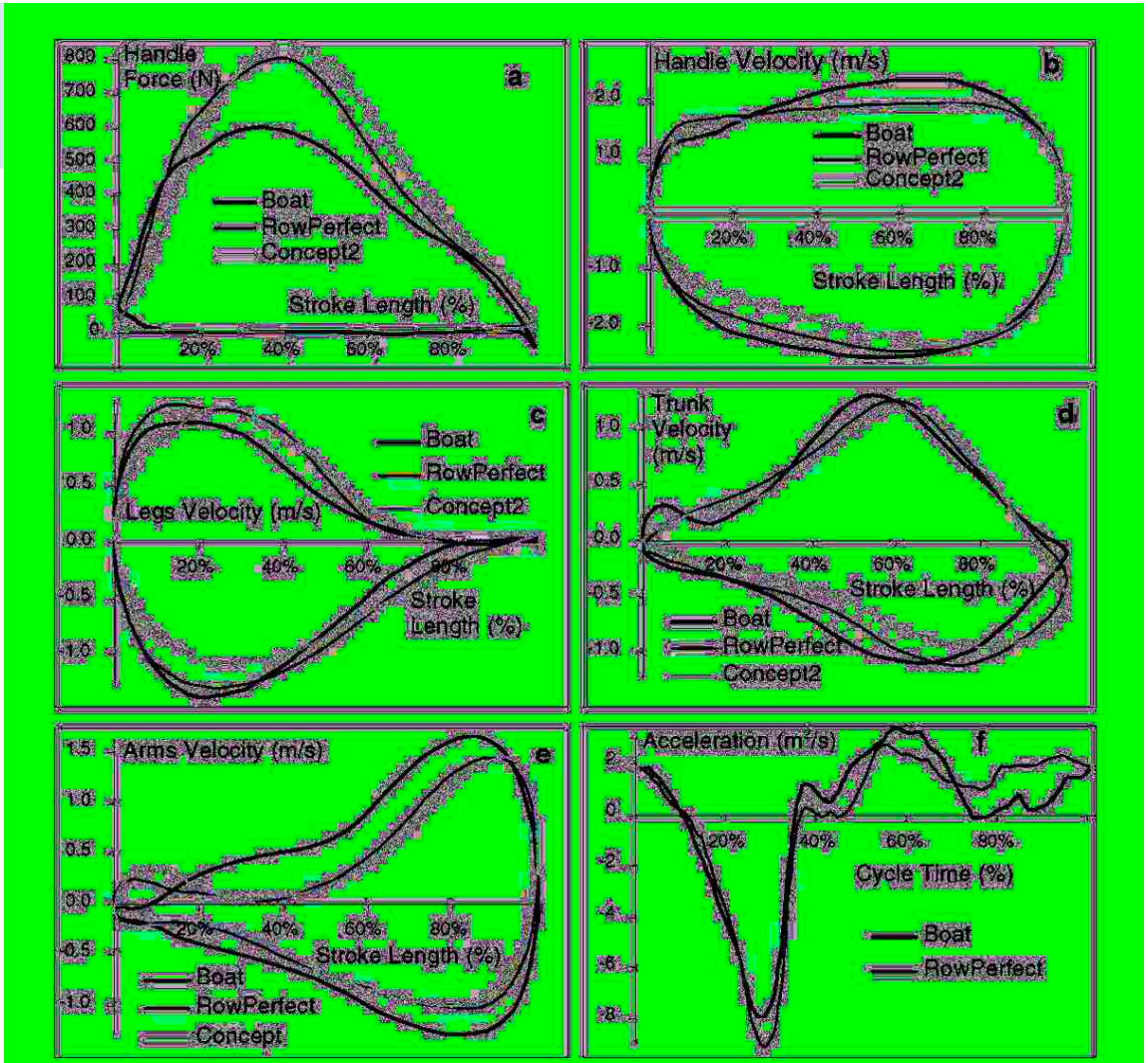
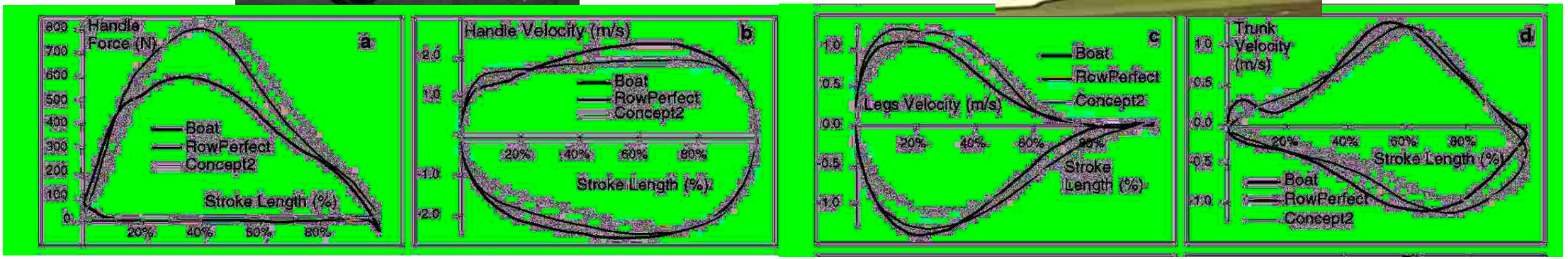


Fig. 5.1 Patterns of biomechanical variables in rowing in a boat and on ergs of two types. (Kleshnev,. 2015)

Biomechanical Difference
Ergometer vs. On-Water Rowing (4)



Handle force:

- Erg approx. 34-40% higher Max Force
- Erg approx. 25% higher Ave Force
- On-water: wider F-profile
- On-water: earlier Max force
- On-water: earlier peak force

Handle velocity:

- Erg (stationary): 10+% shorter stroke length
- On-water: 18-20% higher velocity

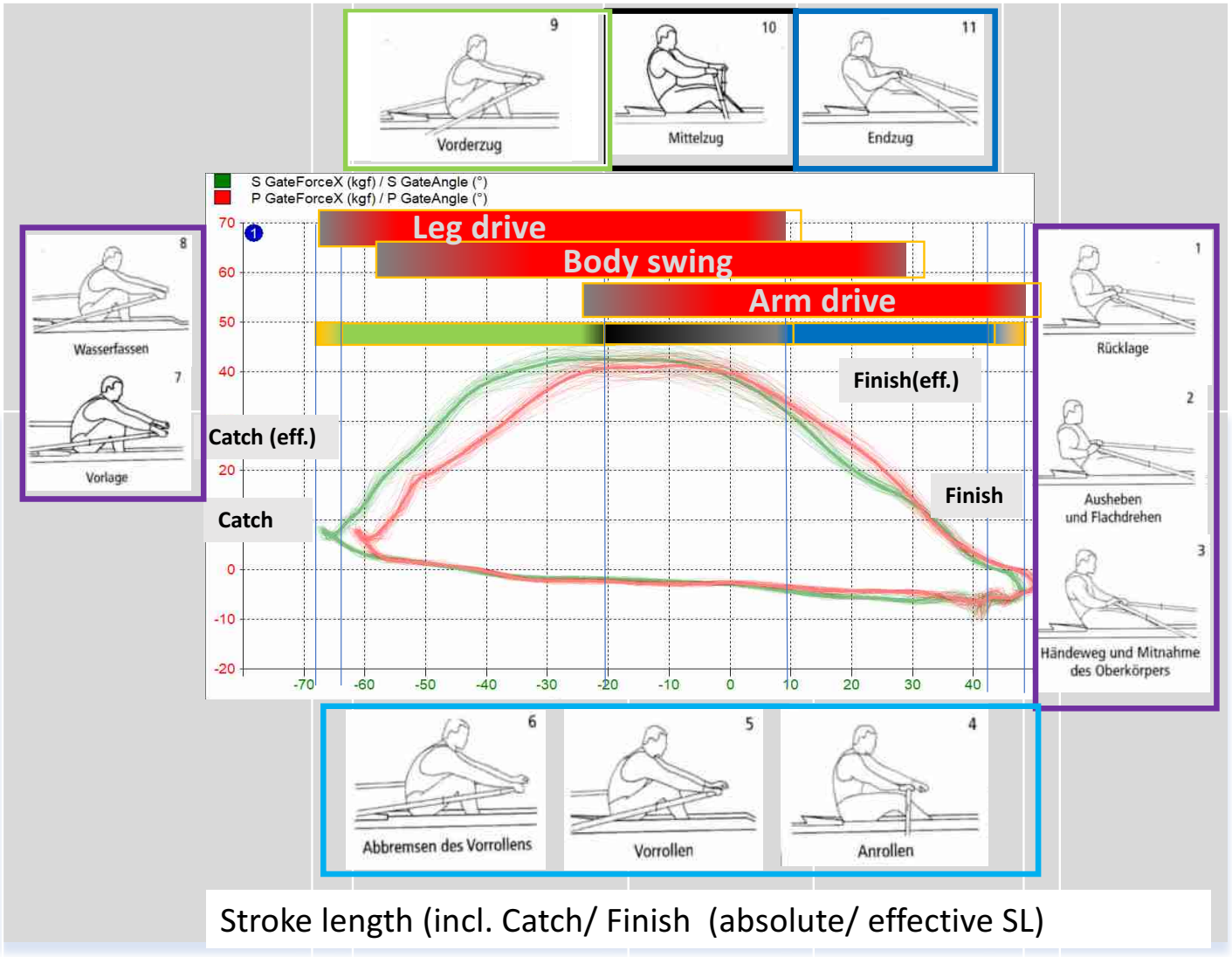
Seat (leg) velocity:

- Erg (stationary C2): 5% longer leg drive than RP

Trunk velocity:

(Kleshnev,. 2015)

Conny Draper, Applied Sports Biomechanist, conny.draper@gmail.com



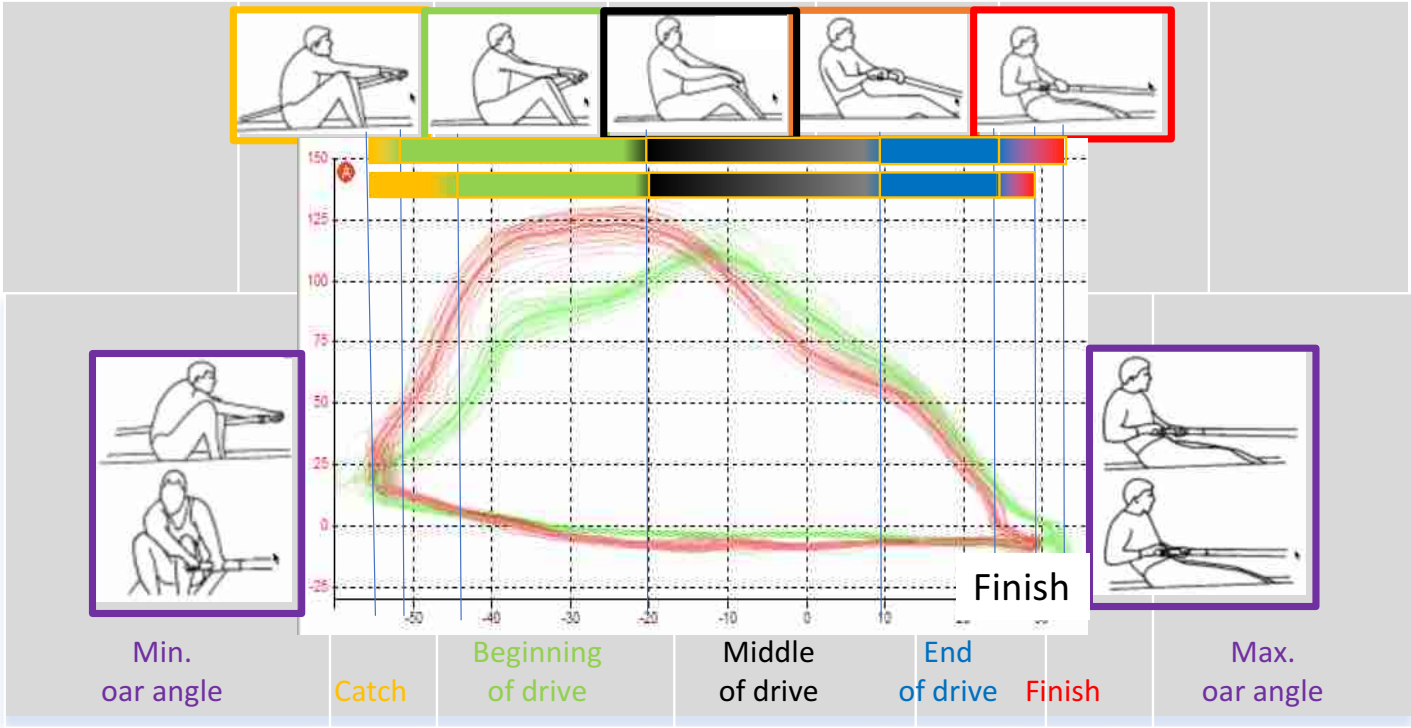
Stroke length (incl. Catch/ Finish (absolute/ effective SL)

Conny Draper, Applied Sports Biomechanist, conny.draper@gmail.com

Rowing stroke Profile:

Movement phase vs. gate force - angle Curve characteristics

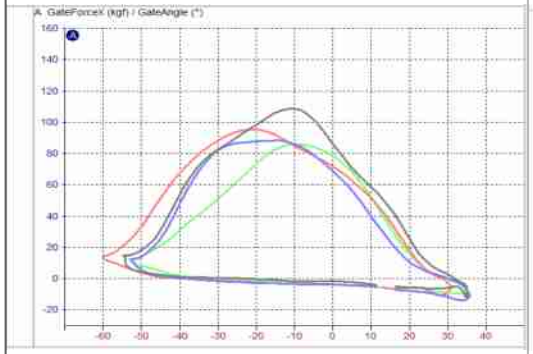
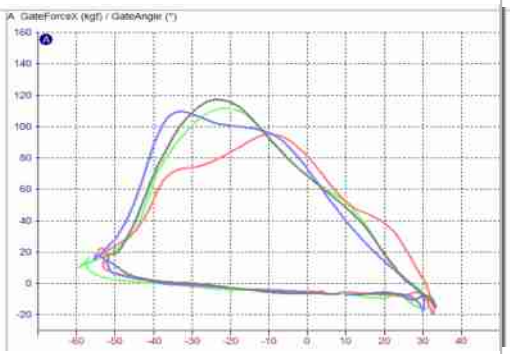
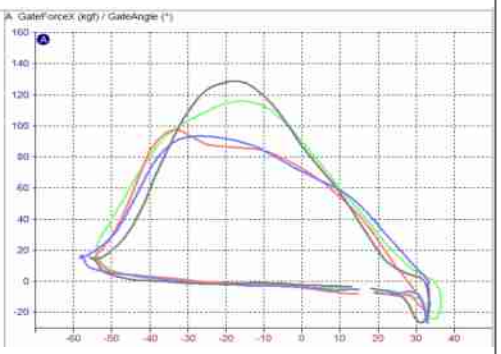
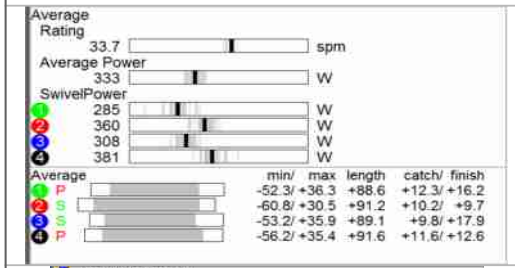
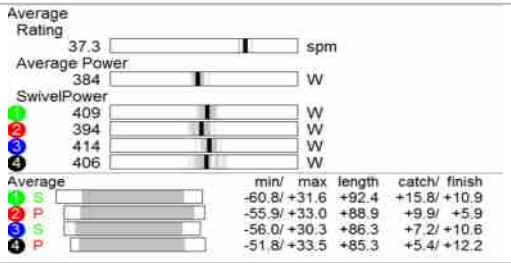
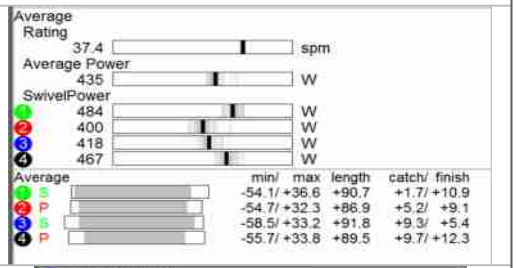
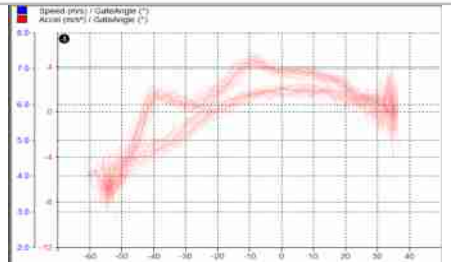
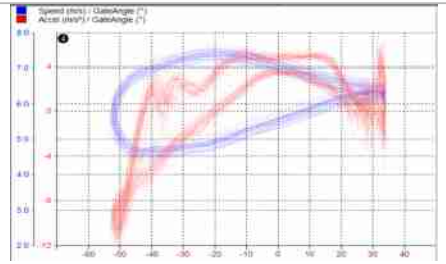
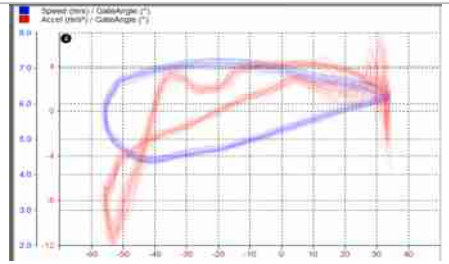
M4- Example: 2 athletes (same boat) with different rowing technique profiles @ SR36



Stroke Length (incl. catch/ finish (absolute/ effective)

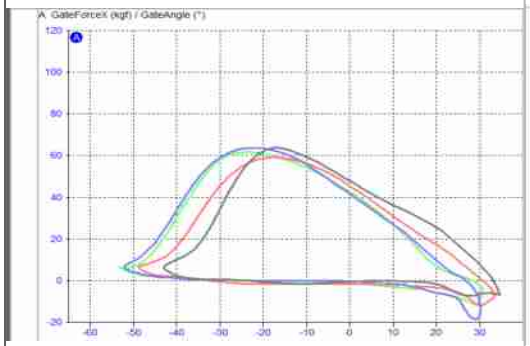
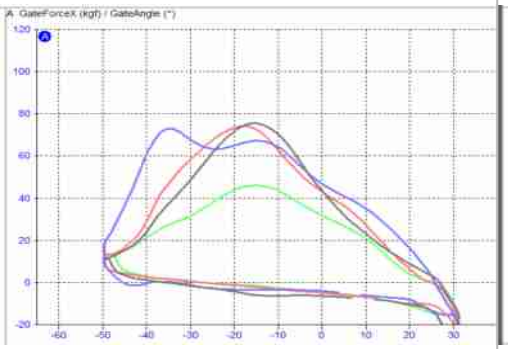
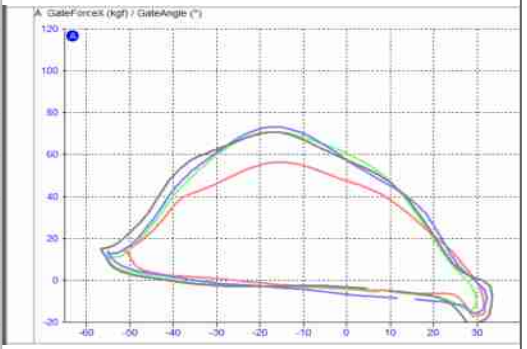
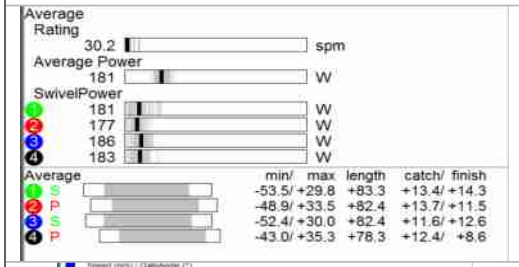
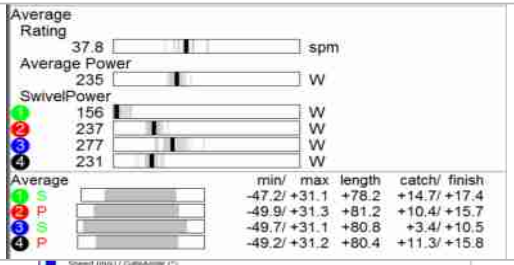
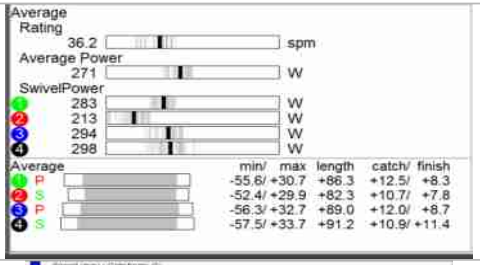
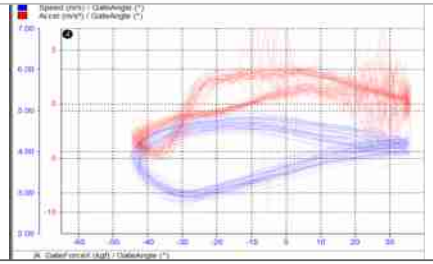
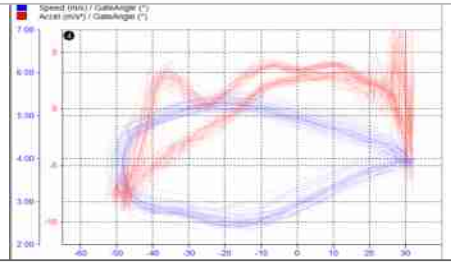
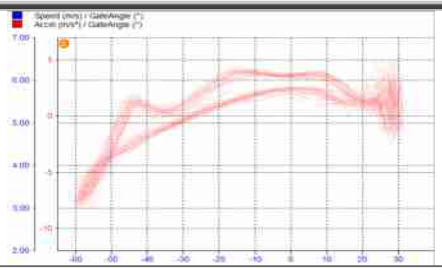
Skill Level Comparison: School – Collegiate – Elite (MEN SWEEP)

Men's Sweep Comparison: 5min SRRP pieces

School boys (JM4+) Sweep	Collegiate Rowing (M8+) Sweep	National Team (M8+) Sweep
		
		
		

Skill Level Comparison: School – Collegiate – Elite (WOMEN SWEEP)

Women's Sweep Comparison: 5min SRRP pieces

School girls (JW4+) Sweep	Collegiate Rowing (OW8+) Sweep	National Team (W8+) Sweep
		
		
		

Biomechanical Difference
Ergometer vs. On-Water Rowing (3)

Very accurate feedback on rowing intensity (precise physiology training)
Winter training tool…

2018 FISA YOUTH COACHES CONFERENCE

1st – 4th November 2018 - Bucharest, Romania

‘Does ‘Ergo-power’ Always Equal a Faster Boat‘

Thank you for your attention!

Conny Draper, PhD Applied Sports Biomechanist Consultant
conny.draper@gmail.com