

Force Curves and Coaching Technique

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Why simulate rowing?

- Rowing is a complex, mostly reflex, cyclic action using many muscle groups in phases
- In a boat, learning is in an unstable environment
- To learn correct technique an athlete depends on coaching and his personal impressions
- A slow learning process
- Accelerate learning using the Rowperfect and direct feedback from force curves

What are force curves?

- The rowing cycle is shown on screen as a function of the pulling action – a force curve
- Curve shape depends on technique
- It gives insight into co-ordination
- It can be used
 - For training different intensities and power strokes
 - To identify areas for improvement and suspected causes
- Visual feedback gives the rower more data
- It is very sensitive
 - Good co-ordination and good technique are rewarded
 - Poor technique is visible and clear and can be corrected quickly

The 'ideal' force curve

- General points
 - Smooth curve without bumps
 - “Fat” curve with large area underneath
 - Symmetrical for slower boats (1x, 2-)
 - Front-end loaded for faster boats (8o, 4x)
 - Long, consistent strokes
 - Identical force curves within a crew
- You can make a good curve with poor technique

Setting up the Rowperfect

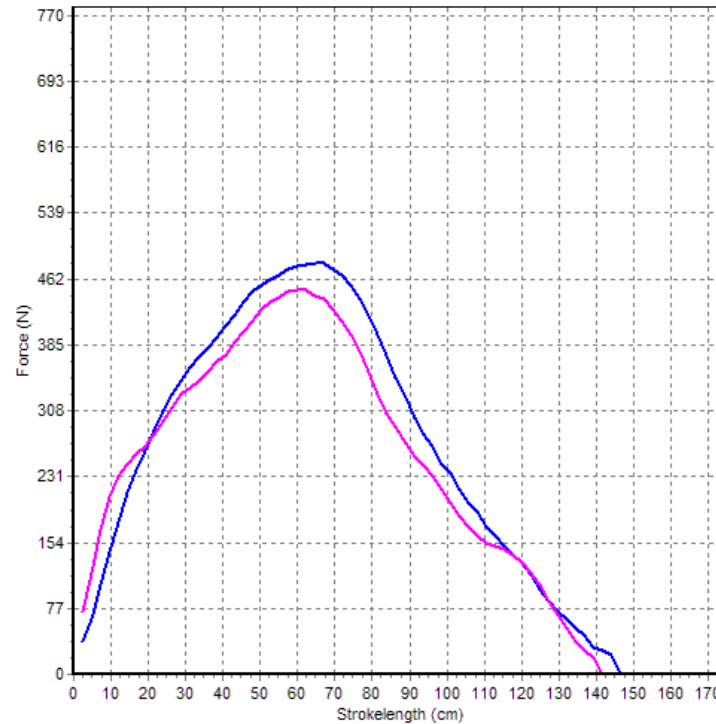
- Feet height
- Discs
- Cog (sprocket)
- F6 'user' screen personalises :
 - weight
 - sex
 - boat class
 - Sprocket
- Programme workout if required

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BRITISH ROWING TECHNIQUE

Lightweight Male 70kg, 1x

SEAN : Session Analysis 0.7.4.5



Trainings

- SID02 (9/114) —
- SIDSES1 (8/127) —

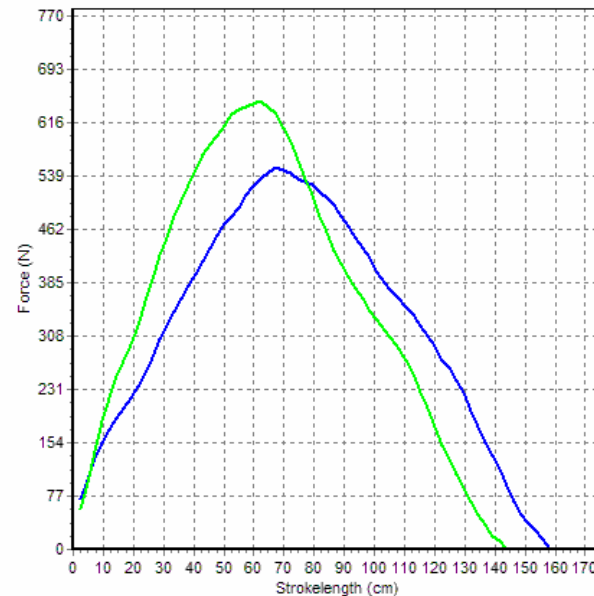
	Stroke	Power (W)	Power avg. (W)	Stroke rate (/min)	Target (W)	Time (sec)	Stroke length (cm)	Distance (m)	Est. 500m time (sec)	Energy / stroke (J)	Energy total (kJ)	Pulse (/min)	Power / pulse (J/beat)	Interval number
SID02 (9/114)	179	227	212	20		531	147	1989	130	676	112	164	1390	1
SIDSES1 (8/127)	159	278	300	26		354	143	1495	121	627	106	181	1538	1

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BRITISH ROWING TECHNIQUE

Heavyweight Man 95kg

SEAN : Session Analysis 0.7.4.6



Trainings

- POTSES1 (13/115) —
- POTSES2 (14/115) —
- *Avg. 1 active curves —
- *Avg. 2 all curves —
- *Avg. 3 all curves in acti —
- *Avg. 4 all curves in all tr —

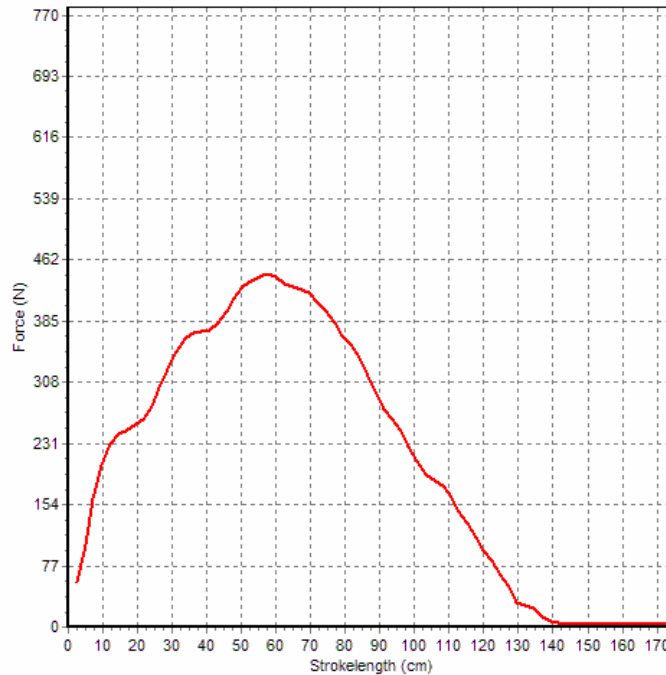
	Stroke	Power (W)	Power avg. (W)	Stroke rate (/min)	Target (W)	Time (sec)	Stroke length (cm)	Distance (m)	Est. 500m time (sec)	Energy / stroke (J)	Energy total (kJ)	Pulse (/min)	Power / pulse (J/beat)	Interval number
POTSES1 (13/115)	259	313	289	21		750	158	2963	123	869	216	101	3099	1
POTSES2 (14/115)	279	335	288	23		789	145	3118	120	872	228	120	2792	1

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Novice

SEAN : Session Analysis 0.7.4.5



Trainings

- JMESTR2 (23/99) —
- *Avg. 1 active curves —
- *Avg. 2 all curves —
- *Avg. 3 all curves in acti —
- *Avg. 4 all curves in all tr —

	Stroke	Power (W)	Power avg. (W)	Stroke rate (/min)	Target (W)	Time (sec)	Stroke length (cm)	Distance (m)	Est. 500m time (sec)	Energy / stroke (J)	Energy total (kJ)	Pulse (/min)	Power / pulse (J/beat)	Interval number
JMESTR2 (23/99)	23						135							

Some problems

- If the athlete has trouble keeping seat still and risks hitting the front of the bar
- It is happening because of mis-timing the stroke sequence
 - STOP ROWING immediately
 - Add a bungee cord around bar in front of seat
 - Advise them to work on disciplined sequence at finish (arms, arms & body, quarter, half slide)
 - Also work on leg / body sequence from catch (quarter, half, three quarter, full slide)

Some problems...2

- If the athlete has a very ‘wobbly’ force curve
 - Isolate parts of stroke and work on separate parts
 - Try single leg rowing – leg only, leg and back, leg back and arms
 - Then swap legs

Coaching British Technique

- First, communicate the ‘pattern’ you are coaching
- Then identify what the athlete is not yet understanding correctly
- Here are some exercises and drills that help with specific parts of the stroke cycle listed against the “Key Concepts” of British Rowing Technique

Key concepts and drills

- Hang on Handle
 - Legs only
 - Legs and back only
 - Wide grip sculling
- Connection Low down not in shoulders
 - Quarter slide push

Key concepts and drills...2

- Wheels still turning
 - Loose legs on recovery
 - No handle rowing
 - Hook catch shape early
 - Hold back of seat (rowing) outside arm only
- Hands in and out at same speed – finish
 - Watch hands
 - Single strokes
 - Double quick hands

Key concepts and drills...3

- Left hand near stern
 - Exaggerate left hand lead
- Long strokes
 - Fix a measured length to aim at
- Placing blade at catch
 - “Feel” time
 - Quarter slide push
 - Wide arm sculling / Outside arm only rowing

Key concepts and drills...4

- Accelerate boat past blade
 - Leg drive “squashing” legs down
 - Loose legs on recovery
 - Video – head not moving against bank
- Weight transfer to feet
 - Single strokes to weight on feet
 - Double quick hands & double slow slide

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Appendix

Why have a rowing simulator?

- Rowers and scullers strive for an optimal combination of power, stamina and perfect co-ordination
- Perfect co-ordination is the hardest to train
- The dynamic rowing simulator plays a critical role

ROWperfect BRITISH ROWING TECHNIQUE

Simulator must be like a boat

- The Rowperfect has the same dynamics as a racing shell – weight, feel, action
- The muscle groups (legs, back, arms) work identically to in-boat training
- Without this the rower on the machine inevitably learns the wrong lessons
- The Rowperfect dynamic rowing simulator was developed because of the failings of the stationary ergometer

Testing confirms alignment

- Testing confirmed that the power cycle of the pull phase is identical on the simulator and the boat (Dutch 8 in 1993)
- The difference between simulator and boat is smaller than that between the actual crew members.
- University of Perth and Western Australian Institute of Sport measured scullers and found that the difference between the pull profiles (RP & boat) were similar to the difference between the left and right hands of the same sculler.