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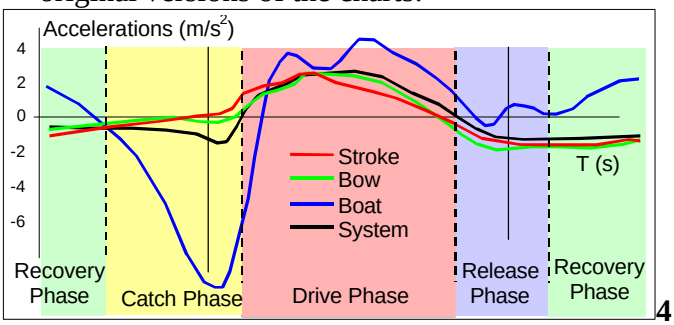
News

☺ Our article "Moving the Rowers: biomechanical background" was published in the last Australian Rowing magazine. Mistakenly, Figure 4 was printed twice, and Figure 5 was excluded. Here are original versions of the charts:



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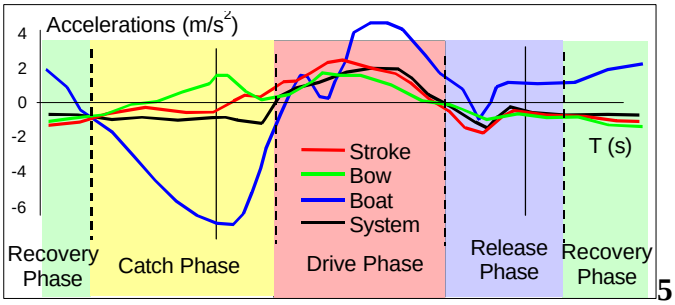

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Boat, rowers CM and the system CM accelerations of World Champions (4) and national level rowers (5) in M2-, 35 strokes/min.

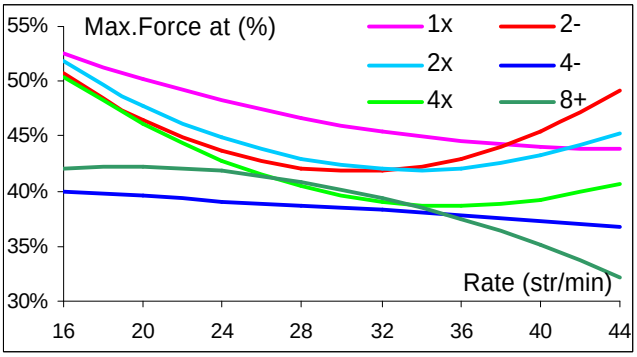
You can see that better rowers have a higher and more synchronous accelerations of their center of mass (CM). This leads to a longer period of positive system acceleration (drive phase) and shorter periods of negative system acceleration, when rowers' masses exchange kinetic energy with boat mass.

See the Australian Rowing magazine for more details.

Facts. Did You Know That…

? …the peak of the force application depends on stroke rate? It is common opinion that in the bigger, faster boats rowers should apply force quicker and earlier during the drive phase (1). But how much earlier? We studied position of peak force (as a percentage of the length of the rowing arc) in different boat types and found that this parameter has mild negative correlation (r = -0.25 - -0.45) with stroke rate. This means that at higher stroke rates position of peak force is closer to the catch. The trend of relationship of peak force position and stroke rate is different in different for each boat types (Fig.1). Notice:

✓ at low ratings two groups of boats can be defined: 1x, 2-, 2x, 4x with peak force at 50-55% and 4-, 8+ with the peak force at 40-43% of the arc.



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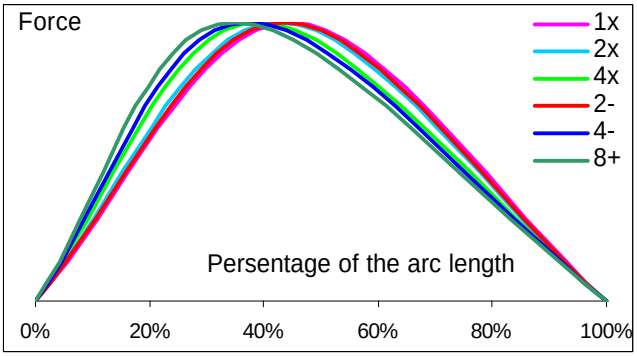
✓ at higher ratings position of the peak force agrees with common opinion: the faster the boat the earlier peak force is applied;

✓ the shapes of the trends also form two groups: one with continuous decreasing (1x, 4-, 8+); and another with non-linear dependence and the earliest peak forces at around 32 str/min (2-, 2x, 4x).

Here are the average positions of peak force for the different boat types at their racing stroke rates:

Boat Type	1x	2x	4x	2-	4-	8+
Prognostic Rate	36	38	39	37	39	40
Max.Force at (%)	44.6%	42.5%	39.0%	43.5%	37.4%	35.1%

Visual images of the average force curves with above positions of peak force are presented here:



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References

📖 1. Schwanitz P., 1991, Applying Biomechanics to Improve Rowing Performance. FISA Coach 2(3), pp.2-7.

Contact Us:

✉ *©2002 Dr. Valery Kleshnev, AIS/Biomechanics*
POBox 176, Belconnen, ACT, 2616,Australia
tel. (w) 02 6214 1659, (m) 0413 223 290
fax: 02 6214 1593
e-mail: kleshnevv@ausport.gov.au