

News

Our Rowing Biomechanics Newsletter celebrates its 5 year anniversary! The first RBN had seen the world in April 2001. 60 issues were published since then. Originally, it was intended for a small audience of Australian coaches. However, the popularity of the Newsletter has grown amazingly. Now it has more than 200 subscribers from all over the World and a dedicated web site www.biorow.com. It is regularly translated into Russian and some issues were translated into German and French.

I want to thank specially the great swimming coach Gennady Touretsky, who inspired me for this project.

Thanks to everybody who contributed to the success of the Newsletter. Your feedback, comments and questions are very important stimulus for further development of rowing Biomechanics.

Q&A

✓ We received positive feedback from Igor Grinko in regards of rowing styles classification published in previous Newsletter. Now Igor is working in China and doing his best to get the Chinese rowers ready for their first home Olympics in Beijing-2008. He said: "Actually you are right about my style of rowing. I remember when my guys won the first gold medals in 4x in 1986-87, the coaches' comments were: "I don't understand how they could win with this technique". However, a few years later coaches understood this style better and tried to copy it. Also, Viacheslav Ivanov (three times Olympic champion in single scull) told me in 1987, that he likes the style I was teaching. He said that it is very close to what he thinks about good rowing technique"

? **Q:** Cas Rekers, inventor of the RowPerfect rowing machine has asked us a question about the second section of the previous Newsletter: "In normal rowing, the time for the recovery is longer than the time for the stroke. ... I timed a video tape of the Dutch eight in Atlanta Olympic Games; they had a drive time of around 0.6s, at a stroke rate of 38 str/min, resulting in a ratio of around 1.6 between drive time and recovery time. ... In both your graphs however the handle speed during the recovery is higher at any moment of the cycle. In my opinion they should in both cases be roughly a factor 1.5 lower. Could you please explain?"

✓ **A:** We already published some analysis of the rhythm and drive/recovery times in RBN 2003/03, which you can find on our Web site. The analysis was based on an extensive data base (more than 7000 samples) of measurements done using the telemetry system, which is more accurate than video. We measure drive from the moment when the oar changes direction at the catch till the similar moment at the finish. You can see that the average drive time in 8+ is about 0.85s at a stroke rate of 36 and about 0.75s at 44 str/min.

If one measure drive using placement of the blade into the water, then the drive time will be shorter and the rhythm percentage lower. It is quite likely that this can be the case in Cas's measurements using video. In the examples given in the previous Newsletter for two rowers in pairs, the stroke rates were 36.2 and 36.4 respectively, drive times 0.90 and 0.94 and rhythm values 54.3% and 57.1%, i.e the recovery time was 1.19 and 1.33 shorter than the drive time. Therefore, the handle speed must be on average 1/3 faster during recovery, than during the drive.

Facts. Did you know that...

...high handle speed during recovery is linked with another interesting issue: aerodynamical resistance of the blade. The blade velocity is higher than the handle velocity by an inboard/outboard ratio. E.g., the maximal handle velocity 2.92m/s in 8+ at 40str/min (RBN 2002/07) would give us 6.88m/s velocity of the centre of the blade. Boat velocity also contributes 7.03m/s to it (during the recovery it is higher than the average boat speed, RBN 2004/07). This gives us nearly 15m/s or 54km/h blade speed relative to the air, which is more than a race speed of a good cyclist. At this speed the air drag of the blade is very significant. It contributes about 3% of total drag at calm conditions and more than 10% at the head wind of 5m/s.

If a crew squares the blade early during recovery, this increases drag resistance dramatically. Engineers from Southampton University made calculations, which show us that every 10deg of early squaring blade before catch would add about 1.5s to the 2k race time and 3s at head wind 5m/s. Quite often we can see that some crews square the blade virtually at the middle of the recovery and lose about 5s and much more at head wind.

Contact Us:

✉ ©2006 Dr. Valery Kleshnev, EIS, Bisham Abbey
www.biorow.com e-mail: kleva@btinternet.com