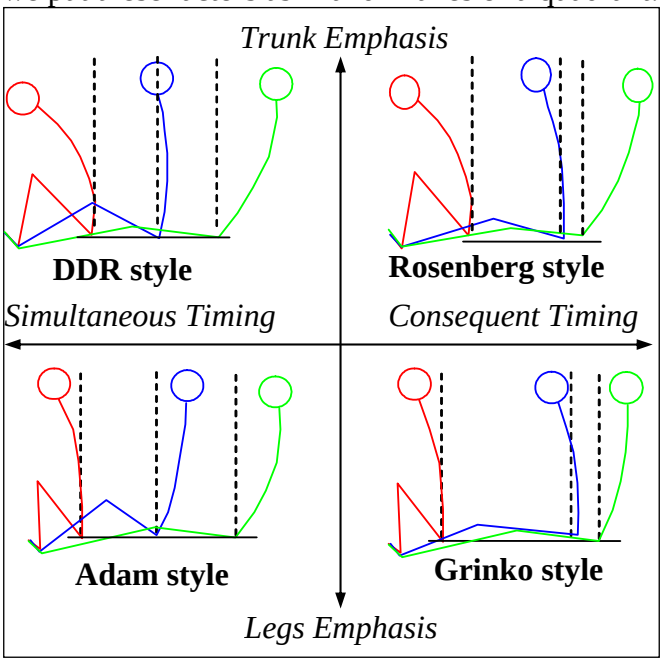
Ideas

✓ The most popular classification of rowing styles was introduced by Klavora in 1977 (1) and defined three rowing styles: the Adam style; the DDR style; the Rosenberg style:

- **Adam** - Comparatively long legs drive and limited amplitude of the trunk. Simultaneous activity of legs and trunk during the stroke;
- **DDR** - Large, forward declination of the trunk, which begins the drive, followed by simultaneous activity of the legs;
- **Rosenberg** - Large, forward declination of the trunk at the beginning of the stroke, then strong leg extension without significant trunk activation. At the end of the cycle the trunk stops in the deep backward position.

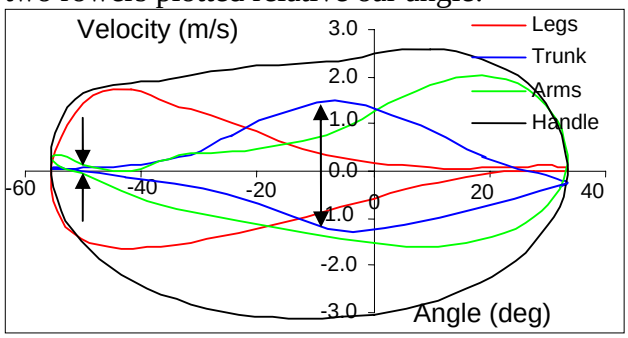
We defined two main factors, which distinguish these styles: timing (simultaneous or consequent activity of two biggest body segments) and emphasis during the drive (on legs or trunk). Then we put these factors as X and Y axes of a quadrant:



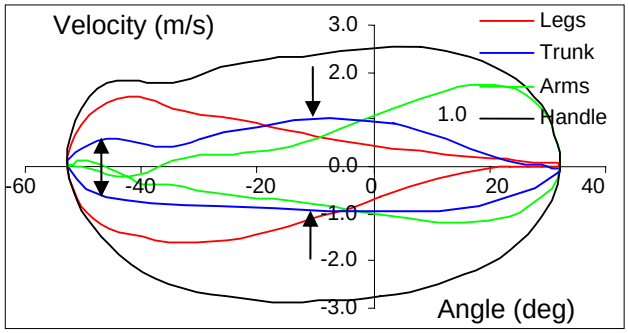
We found that the three styles perfectly fit three quarters. However, we found that the fourth rowing style must exist. This style has consequent timing and emphasis on the legs drive. We called it "**Grinko style**" after the name of talented Russian coach Igor Grinko, who practises this style. Igor coached many World champion scullers in USSR and USA. One of them is Silver Olympic medalist in M1x Jueri Jaanson (Appendix 1).

It is not very often we can see a pure example of these rowing styles. Most of the rowers have a style somewhere in between of these four extremities.

✓ We found that very often the sequence and velocities of the segments on recovery mirrors the sequence on the drive. If we plot the segments velocities relative oar angle, they will look like mirror images, where the negative part (recovery) resembles positive part (drive). Below are charts of two rowers plotted relative oar angle:



1



2

The first rower prepares his trunk earlier during recovery and approaches the catch with legs only. The trunks is ready for the drive (trunk speed is nearly zero). This rower has fast legs drive strait after the catch and increase trunk velocity in the second quarter of the drive. As we discussed in RBN 2001/07 this "consequent" rowing style produce higher relative maximal force and power.

The second rower spreads the trunks movement across the recovery and continues tilting the body until the last moment before the catch. As a result, this rower "opens the body" early during the drive and spreads its movement across the drive. This "simultaneous" rowing style produces lower maximal force and power, but the shape of force curve is more rectangular.

An interesting practical application of this principle could be the following: I you want to achieve certain sequence and velocities of the segments during the drive, you should practice the mirror sequence and velocities during recovery.

References

1. Klavora P. 1977. Three predominant styles: the Adam style; the DDR style; the Rosenberg style. Catch (Ottawa), 9, 13.

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Appendix 1 to the Rowing Biomechanics Newsletter 60(6), March 2005.

Drive phase of Jueri Jaanson during final race of 2004 Olympic Games in Athens.