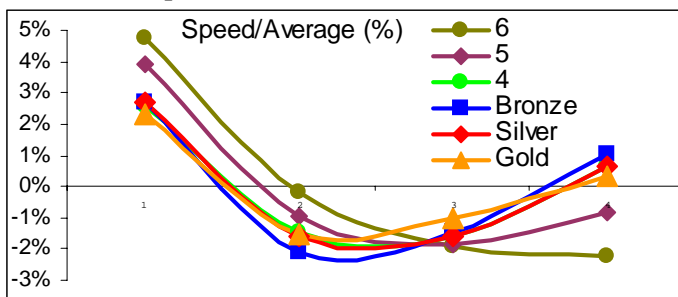




Facts. Did You Know That...

✓ ...the average race strategy on the last Worlds was similar to the Sydney Olympics (1): 3.2%, -1.3%, -1.6%, -0.1% from average speed. Winners were relatively slower over the first half of the race, but faster over the second one.

Relative boat speed in Finals A on the Worlds 2001.



✓ ...Race tactics were also similar to the last Olympics. The most popular tactics were opposite: 1-4 and 4-1. The group with emphasis on the first half of the race (1-4, 2-4, 1-3) won 12 medals out of 48 cases (25%). The group with emphasis on the finish (4-1, 3-1, 4-2) won 40 medals out of 60 cases (67%).

Matrix of race tactics in Finals A at the Worlds 2001.

Columns – fastest section, rows – slowest one. n – number of crews in each tactic. Below – number of places in each tactic, e.g.: (2,2,...) means two gold, two silvers, etc.

1-4 n=23 2,2,0,2,8,9	2-4 n=17 3,3,0,2,3,6	3-4 n=6 3,1,1,0,0,1		32%
1-3 n=8 1,0,1,1,5,0	2-3 n=4 0,0,0,1,1,2		4-3 n=9 0,2,4,3,0,0	15%
1-2 n=6 0,2,3,0,1,0		3-2 n=5 2,0,0,2,1,0	4-2 n=16 3,2,6,2,1,2	19%
	2-1 n=6 1,1,0,2,1,1	3-1 n=15 4,4,1,3,1,2	4-1 n=29 5,7,8,6,2,1	35%
26%	19%	18%	38%	

✓ ...tactics with emphasis on the last section of the race were used more by American, French, Dutch and German crews. The British mainly used the first section to take over the race, Romanians preferred the third one and Australian finalists emphasized the second 500m piece (all gold medallists used 2-4 tactics). Italians didn't show clear preference.

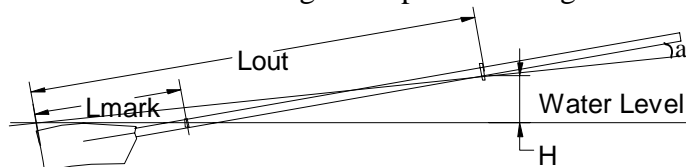
Percentages of crews from different countries used tactics with emphasis on various race sections at the Worlds 2001.

Country	Crews in FA	Fastest section of the race			
		1	2	3	4
AUS	7	14%	57%		29%
FRA	8	13%	38%		50%
GBR	12	42%	8%	17%	33%
GER	12	25%	8%	25%	42%
ITA	14	21%	29%	14%	36%

NED	7	14%	29%	14%	43%
ROM	8	25%		50%	25%
USA	13	15%	23%	8%	54%

Ideas. What if...

? ...you use markers on the oar shaft to indicate blade depth. Actually, this is not a new idea, but the following data will help you to connect the position of the marker (from the outer blade edge) with blade depth in degrees. Firstly, you need to measure the height of the gate from the water level (H). Then, take the marker position from the appropriate table at the desired depth angle (interpolate it if needed) and adjust it a little bit if your outboard is different from the indicated one. The good depth is 3-6 degrees.



Position of the marker for a SWEEP oar (m). Outboard 2.60m, add 0.7 cm for each cm if it's longer and vise versa.

Height (m)	Depth Angle (degrees)					
	3	4	5	6	7	8
0.15	1.08	1.27	1.41	1.53	1.62	1.70
0.20	0.94	1.11	1.26	1.37	1.47	1.56
0.25	0.83	0.99	1.13	1.25	1.35	1.43
0.30	0.74	0.90	1.03	1.15	1.24	1.33
0.35	0.66	0.82	0.94	1.06	1.15	1.24

Position of the marker for a SCULL (m). Outboard 2.00m, add 0.6 cm for each cm if it's longer and vise versa.

Height (m)	Depth Angle (degrees)					
	3	4	5	6	7	8
0.15	0.71	0.84	0.95	1.04	1.12	1.18
0.20	0.60	0.73	0.84	0.92	1.00	1.07
0.25	0.52	0.64	0.74	0.83	0.90	0.97
0.30	0.46	0.57	0.67	0.75	0.82	0.89
0.35	0.42	0.52	0.61	0.68	0.75	0.82

References

1. Kleshnev V. 2001. Racing strategy in Rowing during Sydney Olympics. Australian Rowing. 24(1), 20-23.

Contact Us:

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