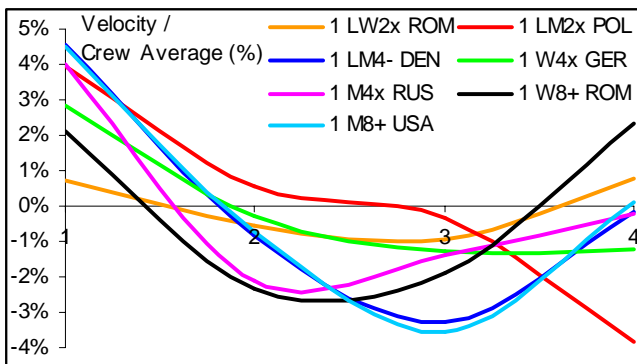
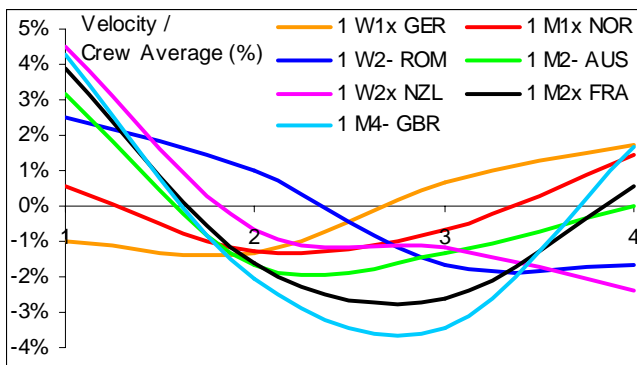


**News**

The Games of XXVIII Olympiad have just finished in Athens. This Greatest Celebration of Humanity was really marvelous and unforgettable. We all witnessed a very tough competition for medals. Congratulations to all the winners! We wish the unsuccessful crews success with goals next time and hope that biomechanics can be a little help to them.

**Facts. Did you know that...**

✓ ...the average race strategy of the winners of the Athens Olympic games was: 2.9%, -1.0%, -1.6%, -0.1%. This is a slightly different from average over the last 12 years 3.1%, -1.1%, -1.8%, -0.1%. The two charts below show the strategy of each winning crew:



You can see that majority of the winners made their first 500m 3-5% faster than average speed over 2000m. However, there were four outliers: both singles, Romanian LW2x and W8+ began the race much slower than other winners. The most unusual strategy was used by German W1x: -1.0%, -1.3%, 0.7%, 1.7%, which makes the second half 5.1s faster than the first one.

✓ ...the lowest variation of the boat speed was shown by Bulgarian and Estonian M1x: 0.70% and 0.71% respectively. Among the winners the most even boat speed was achieved by ROM LW2x (0.87%), NOR M1x (1.21%) and GER W1x (1.42%).

✓ The highest variation of the boat speed was recorded in GER M2-, M8+ and M4x (4.5-4.5%). Among the winners the most uneven boat speed was noticed in GBR M4-(3.52%), USA M8+ (3.32%) and DEN LM4- (3.27%). This sort of variation caused losses about 0.6s over 2000m race (RBN 2003/12).

✓ ...we can suspect that the wind didn't blow uniformly during the races at Schinias rowing course, which affect the race strategy. Analysis of the race tactics can be useful, because it shows where the winners gain their advantage RELATIVE to other competitors.

The table below shows a count of each of 12 tactics in each place-takers category. Let us remember that the first number in the tactics represents the fastest 500m piece, and the second is the slowest section RELATIVE average speed of all competitors in the race. (RBN 2003/07)

Tactics	Place						Total
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	
1-2	1						1
1-3	1			2	4		7
1-4		1	1	6	4	5	17
2-1	1					1	2
2-3	1				1		2
2-4	1			1		3	5
3-1	1	3	1			2	7
3-2	1		1	2		1	5
3-4	2		1		1	1	5
4-1	2	4	6	1	2		15
4-2	2	3	3	2		1	11
4-3	1	3	1		2		7
<b>Total</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>84</b>

It is interesting that the winners used all tactics except 1-4, which was previously the most popular over the last 12 years. Majority of the winners (9 out of 14) got their advantage over the second half of the race. This could be evidence of very even level of competitors, where nobody can be suppressed psychologically at the start of the race and all crews are prepared to fight until the finish.

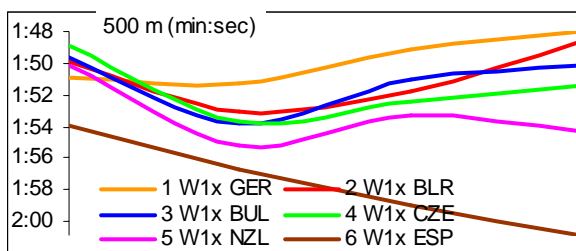
10 silver and 10 bronze medalists out of 14 gained advantage over the final section (tactics 4-1, 4-2, 4-3), while only five winners did the same. This confirms our previous conclusion: "If a crew saves energy for the last 500m, then they have more chances to win a medal, but fewer chances to win a gold medal."

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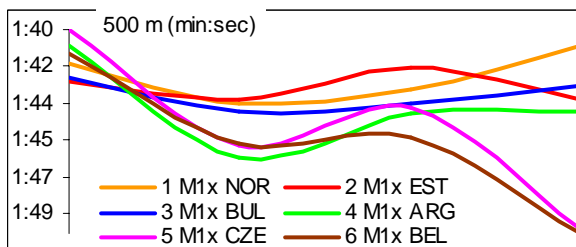
**Race strategy and tactics in rowing Finals A in the XXVIII Olympic Games in Athens.**

W1x



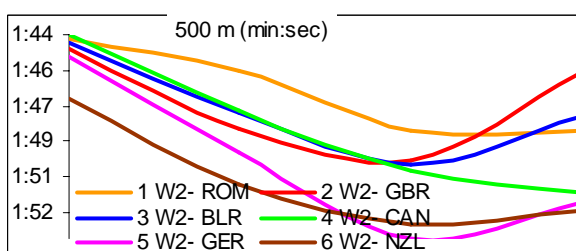
		Strategy				Var.	Tactics
1	GER	-1.0%	-1.3%	0.7%	1.7%	1.42%	4-1
2	BLR	0.8%	-1.9%	-0.8%	2.0%	1.76%	4-1
3	BUL	1.4%	-2.3%	0.1%	0.9%	1.64%	4-2
4	CZE	2.5%	-1.8%	-0.7%	0.2%	1.80%	1-3
5	NZL	2.8%	-1.7%	0.0%	-0.9%	1.97%	1-4
6	ESP	3.2%	0.8%	-1.2%	-2.7%	2.55%	2-4

M1x



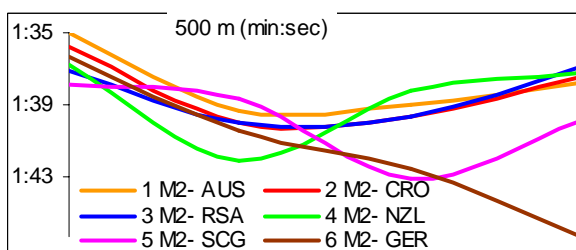
		Strategy				Var.	Tactics
1	NOR	0.5%	-1.3%	-0.7%	1.4%	1.21%	4-1
2	EST	0.2%	-0.6%	0.9%	-0.5%	0.71%	3-1
3	BUL	0.8%	-0.8%	-0.4%	0.4%	0.70%	4-1
4	ARG	2.9%	-2.3%	-0.3%	-0.2%	2.14%	4-2
5	CZE	4.6%	-0.8%	0.9%	-4.4%	3.73%	1-4
6	BEL	4.1%	0.0%	0.2%	-3.9%	3.29%	1-4

W2-



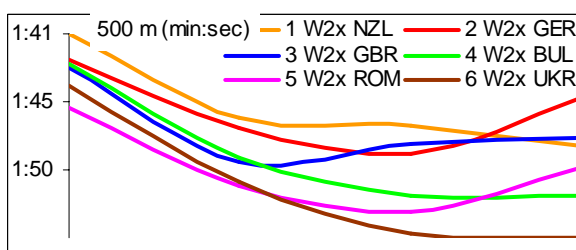
		Strategy				Var.	Tactics
1	ROM	2.5%	1.0%	-1.7%	-1.7%	2.07%	2-1
2	GBR	2.5%	-1.2%	-2.6%	1.4%	2.33%	4-2
3	BLR	3.1%	-0.2%	-2.5%	-0.3%	2.31%	4-1
4	CAN	4.3%	0.7%	-1.9%	-2.8%	3.21%	1-4
5	GER	4.9%	0.5%	-3.3%	-1.8%	3.58%	1-3
6	NZL	3.7%	-0.2%	-2.0%	-1.3%	2.53%	3-2

M2-



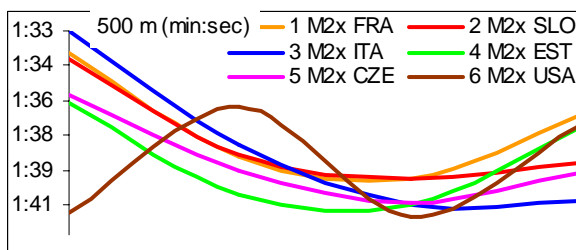
		Strategy				Var.	Tactics
1	AUS	3.2%	-1.7%	-1.4%	0.0%	2.22%	1-2
2	CRO	2.7%	-1.9%	-1.5%	0.9%	2.18%	4-2
3	RSA	1.5%	-1.7%	-1.4%	1.7%	1.83%	4-1
4	NZL	2.1%	-3.7%	0.4%	1.5%	2.59%	3-2
5	SCG	2.2%	1.3%	-3.4%	0.0%	2.44%	2-3
6	GER	5.7%	1.1%	-1.2%	-5.0%	4.45%	1-4

W2x



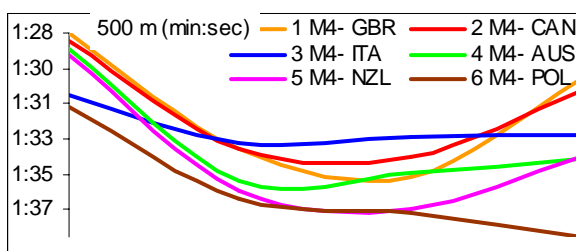
		Strategy				Var.	Tactics
1	NZL	4.5%	-0.7%	-1.2%	-2.4%	3.05%	3-4
2	GER	3.0%	-1.0%	-2.5%	0.7%	2.40%	4-1
3	GBR	3.7%	-2.0%	-0.9%	-0.6%	2.50%	3-2
4	BUL	5.5%	-0.2%	-2.4%	-2.5%	3.74%	1-4
5	ROM	3.6%	-1.0%	-2.4%	0.0%	2.58%	4-1
6	UKR	6.1%	0.2%	-2.8%	-3.0%	4.21%	1-4

M2x



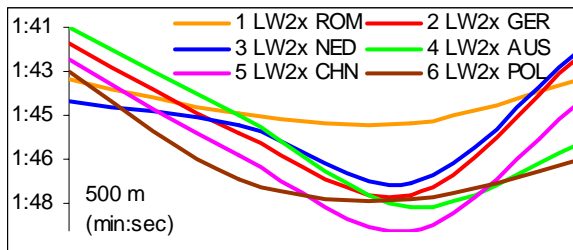
		Strategy				Var.	Tactics
1	FRA	3.9%	-1.6%	-2.6%	0.6%	2.86%	4-2
2	SLO	4.2%	-0.8%	-2.0%	-1.2%	2.80%	1-4
3	ITA	6.1%	0.1%	-2.9%	-2.7%	4.21%	1-4
4	EST	2.8%	-1.9%	-2.3%	1.6%	2.50%	4-2
5	CZE	3.4%	-0.5%	-2.1%	-0.6%	2.36%	3-4
6	USA	-2.3%	3.0%	-2.5%	2.1%	2.88%	2-1

M4-



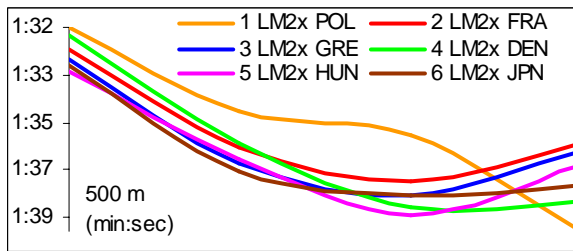
		Strategy				Var.	Tactics
1	GBR	4.3%	-2.1%	-3.5%	1.6%	3.52%	4-3
2	CAN	3.8%	-2.1%	-2.5%	1.0%	2.93%	4-2
3	ITA	1.8%	-0.8%	-0.5%	-0.4%	1.18%	3-1
4	AUS	5.0%	-2.1%	-1.7%	-1.0%	3.34%	1-4
5	NZL	5.4%	-1.9%	-2.8%	-0.2%	3.69%	1-3
6	POL	4.4%	-0.5%	-1.2%	-2.4%	2.97%	2-4

LW2x



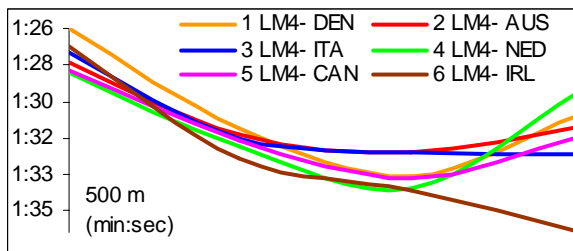
		Strategy				Var.	Tactics
1	ROM	0.7%	-0.5%	-0.9%	0.8%	0.87%	3-1
2	GER	2.4%	-1.0%	-3.3%	2.0%	2.69%	4-3
3	NED	0.5%	-0.4%	-2.5%	2.5%	2.07%	4-1
4	AUS	3.7%	0.3%	-3.1%	-0.7%	2.84%	1-4
5	CHN	3.0%	-0.7%	-3.4%	1.4%	2.77%	1-3
6	POL	3.1%	-1.0%	-1.7%	-0.3%	2.16%	1-4

LM2x



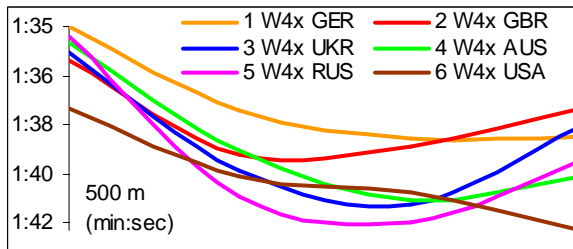
		Strategy				Var.	Tactics
1	POL	3.9%	0.6%	-0.4%	-3.8%	3.20%	3-4
2	FRA	3.2%	-0.6%	-1.9%	-0.5%	2.20%	4-1
3	GRE	3.2%	-0.8%	-1.9%	-0.3%	2.24%	4-2
4	DEN	4.4%	0.1%	-2.2%	-2.0%	3.06%	1-4
5	HUN	3.2%	-0.3%	-2.3%	-0.5%	2.29%	4-3
6	JPN	3.5%	-0.6%	-1.5%	-1.1%	2.31%	4-2

LM4-



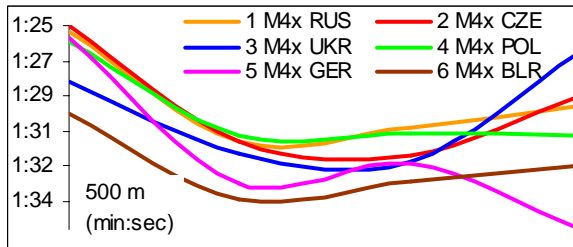
		Strategy				Var.	Tactics
1	DEN	4.6%	-0.8%	-3.3%	-0.2%	3.27%	1-3
2	AUS	3.0%	-0.8%	-1.7%	-0.4%	2.05%	3-1
3	ITA	3.9%	-0.7%	-1.4%	-1.5%	2.59%	3-4
4	NED	2.8%	-1.1%	-3.2%	1.8%	2.72%	4-1
5	CAN	3.2%	-0.5%	-2.4%	-0.2%	2.34%	4-1
6	IRL	6.0%	-0.1%	-1.7%	-3.7%	4.17%	1-4

W4x



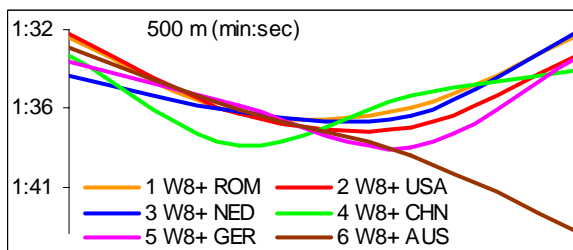
		Strategy				Var.	Tactics
1	GER	2.8%	-0.3%	-1.3%	-1.2%	1.93%	2-4
2	GBR	2.1%	-1.3%	-1.0%	0.3%	1.56%	4-1
3	UKR	3.2%	-1.1%	-2.3%	0.4%	2.36%	4-3
4	AUS	3.7%	-0.3%	-2.0%	-1.2%	2.54%	1-4
5	RUS	4.4%	-1.5%	-2.4%	-0.2%	3.00%	1-3
6	USA	2.5%	0.0%	-0.6%	-1.9%	1.82%	3-4

M4x



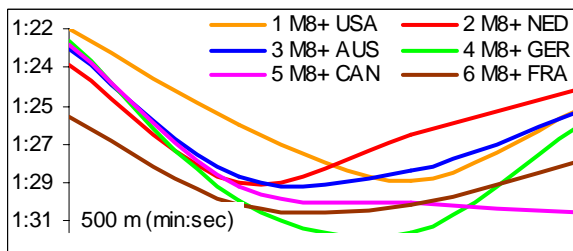
		Strategy				Var.	Tactics
1	RUS	4.0%	-2.1%	-1.4%	-0.2%	2.74%	3-2
2	CZE	4.5%	-2.0%	-2.7%	0.5%	3.27%	4-3
3	UKR	1.7%	-2.2%	-2.6%	3.4%	2.95%	4-1
4	POL	4.0%	-1.3%	-1.2%	-1.3%	2.63%	2-4
5	GER	6.6%	-1.6%	-0.5%	-3.9%	4.51%	1-4
6	BLR	2.8%	-1.8%	-0.9%	0.0%	2.00%	3-1

W8+



		Strategy				Var.	Tactics
1	ROM	2.1%	-2.3%	-1.9%	2.3%	2.50%	4-2
2	USA	2.9%	-1.8%	-2.5%	1.7%	2.64%	4-3
3	NED	0.5%	-1.6%	-1.8%	3.2%	2.34%	4-1
4	CHN	2.1%	-3.0%	-0.2%	1.3%	2.25%	3-2
5	GER	1.8%	-0.8%	-3.1%	2.2%	2.48%	4-3
6	AUS	5.2%	1.6%	-1.1%	-5.2%	4.37%	2-4

M8+



		Strategy				Var.	Tactics
1	USA	4.5%	-0.7%	-3.5%	0.1%	3.32%	2-3
2	NED	2.8%	-3.3%	-0.9%	1.6%	2.71%	3-1
3	AUS	4.2%	-2.5%	-2.2%	0.8%	3.14%	4-2
4	GER	5.9%	-2.6%	-4.1%	1.3%	4.47%	1-3
5	CAN	6.3%	-1.2%	-2.0%	-2.6%	4.16%	1-4
6	FRA	2.9%	-1.7%	-1.7%	0.6%	2.18%	3-1