

Q&A

Q: Jamie Croly, Gauteng Schools Provincial Coach, South Africa kindly sent us a collection of the data on performance of junior and U23 crews over the last 19 years. Jamie has asked if this data can be used for developing prognostic times for juniors and under 23 categories of rowers.

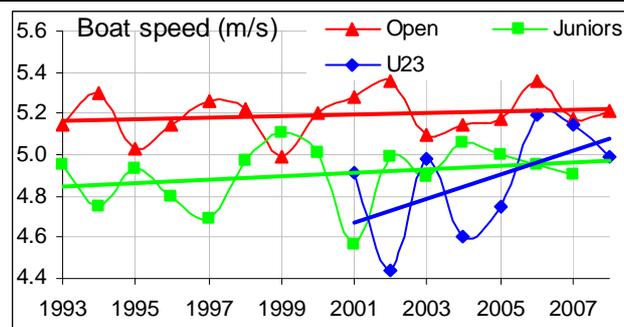
A: Analysis of the world best times in the open, under 23 (U23) and junior categories has shown that on average U23 crews are 3.5% slower and juniors 5.1% slower than their adult colleagues:

Boat	Open	U23	Jun	U23	Jun
W1x	7:07.71	7:27.81	7:39.61	95.5%	93.1%
M1x	6:35.40	6:46.93	6:57.95	97.2%	94.6%
W2-	6:53.80	7:14.91	7:11.53	95.1%	95.9%
M2-	6:14.27	6:27.84	6:36.15	96.5%	94.5%
W2x	6:38.78	6:53.40	7:00.15	96.5%	94.9%
M2x	6:03.25	6:14.05	6:19.40	97.1%	95.7%
M4-	5:41.35	5:53.19	6:00.86	96.6%	94.6%
W4x	6:10.80	6:24.55	6:32.62	96.4%	94.4%
M4x	5:36.20	5:46.44	5:50.39	97.0%	96.0%
W8+	5:55.50	6:06.68	6:13.81	97.0%	95.1%
M8+	5:19.85	5:30.43	5:35.43	96.8%	95.4%
			Average	96.5%	94.9%
LW2x	6:49.77	7:03.16	-	96.8%	-
LM2x	6:10.02	6:19.77	-	97.4%	-
LM4-	5:45.60	5:58.88	-	96.3%	-

Small boats and female crews display greater differences from the corresponding open categories than large boats and male crews.

The World Best Times do not show how performance changes over the years. Therefore, we analysed trends on the boat speed of the winners of World Championships. It was found that in juniors the speed grew by 0.203% every year over the period 1993-2008. In U23, performance grew much faster, from 2001 (when the first U23 Worlds took place) to 2008 the average annual improvement was 1.09%. The reasons of this huge improvement could be statistical (too small sample and high variation of boat speed owing to weather conditions), but also could be a real increase in performance related to tougher competition in this relatively new event. If we relate the data to the 0.082% per year improvement by the winners in the open category (RBN 2008/09), we can conclude that in juniors the performance improved more than twice as fast as in adults. The speeds of silver and bronze medallists also grew faster than that of winners (by 1.11% and 1.15% in U23 and by 0.205% and 0.207% in juniors categories), which means the competition became tougher everywhere.

The chart below shows the average boat speed and its trends in 11 comparable boat categories:



How can we derive prognostic times? This question is not simple to answer. There are a number of possible approaches here:

- Using world best times. However, in this case the standards can be affected by some exceptional speeds dependent on both performance and weather.
- Using average speed of the winners over the years and its trends (RBN 2005/11). However, in this case the prognostic speed will not be high, because it will be related to average weather conditions. Various methods of filtering are quite ambiguous and not statistically significant.

Here we try to solve the problem by using a combination of both methods. The average boat speed for all boat types was taken from the World best times. Then, it was multiplied by the ratio of speeds in various boat types taken from the average of the winners over 1993-2008. Finally, trends were applied from average over the category (U23 trend was taken as average of open and juniors, because its unreliable value, which produced a very high predicted value).

In this way, we obtained the following prognostic times for the winners in 2012:

Boat type	Open	U23	Juniors
W1x	7:11.5	7:25.7	7:32.0
M1x	6:32.5	6:45.5	6:51.4
W2-	6:52.9	7:06.7	7:12.6
M2-	6:16.5	6:29.0	6:34.6
W2x	6:39.5	6:52.7	6:58.7
M2x	6:02.1	6:14.1	6:19.6
M4-	5:41.0	5:52.4	5:57.6
LW2x	6:47.0	7:00.4	-
LM2x	6:07.2	6:19.4	-
LM4-	5:46.2	5:57.7	-
W4x	6:08.5	6:20.7	6:26.3
M4x	5:33.2	5:44.3	5:49.4
W8+	5:53.1	6:04.9	6:10.2
M8+	5:18.6	5:29.2	5:34.1

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