Seat Racing and Crew Selection

Seat racing is quite a popular method of crews selection for big boats. How objective is the seat racing? This question is very important, because it may define an athlete's carrier. Here we will give some recommendations and outline common mistakes.

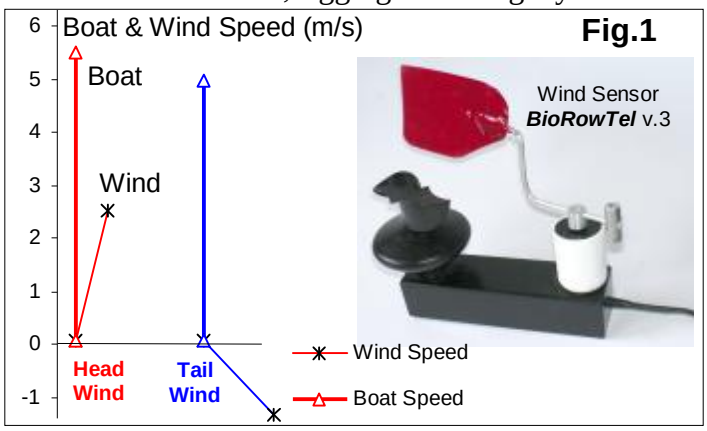
Example. A coach has firmly selected six rowers for an eight, and four other rowers bidding for two seats. Four 2000m races were performed, where four rowers were rotated on two seats and the ranking was made by the average time for a rower in all races. The boat was equipped with ***BioRowTel*** system, which measured the handle force, oar angles and other variables, and rowing power was derived (Table 1).

Table 1 Race N	Race Time	Rowers A–F	Rower G (W)	Rower H (W)	Rower I (W)	Rower J (W)
1	6:33.0	267.4	267.3	272.5		
2	6:33.7	253.1		259.1	284.8	
3	6:43.0	247.3			277.1	271.2
4	6:39.8	244.5	259.2			279.5
Average Time		6:36.4	6:36.4	6:33.3	6:38.3	6:41.4
Average Power		253.1	263.3	265.8	280.9	275.4

It was found that in the course of racing the average power of the six constant crew members (rowers A–F) gradually decreased by 22.9 W or 8.6%, which should decrease the boat speed by 2.7% or ~10s for above race times. The reason was quite obvious: the athletes got tired, so at the end of racing they were not able to apply the same power as in the first race. Therefore, rower H seeded for the first two races had the best average time 6:33.3 and rower J seeded for the last two races had the slowest average time 6:41.4, though his rowing power was higher (275.4W) than in rower H (265.8W). Without biomechanics, rower H would be selected unfairly. **Fair seat racing is not possible in one boat only. It should be done between two or more boats racing one against another**: the eight and pair or two fours in this example, so fatigue would affect all rowers similarly.

Another important factor to be considered at seat racing is weather conditions: wind speed and direction. It is very likely they could change in a few minutes between the races and severe affect the results. This strengthens above conclusion: **it is very important to measure performance in relative margins between two or more boats racing together, but not in the absolute times of a boat racing repetitively**. Also, it is always better to race with a tail wind, variation of which has much lower effect on the boat speed, then variation of the head wind (RBN 2009/12). The races in the example above were done in a head wind, which increases the uncertainty of results.

With a sensor placed directly on the boat canvas, ***BioRowTel*** system allows very accurate measurements of wind speed and direction (Fig.1). It makes possible to derive absolute speed, which could be shown by the crew at zero wind. Comparison of the absolute boat speeds in various pieces helps to evaluate rowing technique and precisely determine the effect of variations in a crew combination, rigging or rowing style.



Though biomechnical measurements provide very useful information, we would discourage using them as a selection tool for two main reasons:

1. Even with the current selection of the most informative measured characteristics, we can not measure everything in a boat. There are another known and unknown variables and effects affecting performance and measurements: e.g., effect of power transfer through hull from one rower to another (RBN 2012/04). Also, there is a risk of occasional error.
2. We can measure only biomechanics and, partly, physiology of rowers. However, there are psychological factors, which may play decisive role at competitions. Some athletes are good performers at training and testing, but fade under the pressure. Others perform better and better, when psychological pressure increases with importance of a competition.

By the way, psychological factor may affect seat racing: rowers already selected for a crew, consciously or subconsciously, may perform better or worse on the basis of preference to a rower still bidding for a seat. This makes seat racing a sort of indirect voting for new team members. If it is undesirable, the selection should be announced for all rowers at the same time, so all of them must race full effort.

Objective selection for big boats must be done performance-based in standard races over 2km in small boats (singles and pairs). Power on ergometer could be taken into account, then seat racing could be used, if performance of two or more rowers is close or a rower doesn't fit well in the crew. After selection is made, the coach should adjust individual rowers' technique for the best performance in a crew. The purpose of Biomechanics is to help in this process, but not replace selection races. The factors affecting performance in a crew vs. small boats: synchronisation of movements of crew members and stroke timing (RBN 2011/02), coordination of force application to the handle and stretcher (2006/02, 2009/11), boat balance and asymmetry in sculling (2011/07).