

# Row smarter – Row faster!

*Develop your ideal Rowing technique with BioRow Biomechanics Lab.*

Regular rowers know the enjoyment of a fast and efficient boat run. Sometimes this enjoyment is compromised by imperfection or mistakes in rowing technique: too short or too long stroke at catch or finish; jerking or too slow motion at some phases, such as “bum shooting”; inefficient coordination of legs, trunk and arms; blade slip at catch or “washing-out” at finish and many others. That prevents the improvement of rowers’ performance and achievement of their personal best. Many rowers are stuck with their technique forever – always looking for those elusive perfect motions, but unable to pinpoint why they “just don’t feel quite right”.

## Our mission

BioRow Ltd. has extensively researched the biomechanical theories behind optimum boat and oar fit and coupled them with advanced data capture technologies. This enables the precise measurement and analysis of rowing technique.



In the last 20 years we have tested well over 10.000 rowers. A number of them became Olympic and World champions and medallists, among them James Tomkins & Drew Ginn (AUS) in M2-, Mark Hunter & Zac Purchase (GBR), Rasmus Quist & Mads Rasmussen (DEN) in LM2x and many others.

We are specialists in Rowing Biomechanics and offer a relaxed, private and value-for-money service, which gives hi-tech knowledge and experience straight into your hands.

We test in your own boat or in our singles, and endeavour to explain the changes we make and the expected improvements. We continually seek feedback of your subjective impressions both during and after the testing.

## What we do

We can come to your place or you could come down to us and run the testing at Dorney lake Olympic rowing course in Eton, UK or nearby on the Thames.



We quickly put our BioRowTel system on your or our boat (setup time ranges from 30 min for single to up to 1.5 hour for an eight), which will measure the most essential biomechanical variables. The system is light (from 0.7 kg for single up to 2.8 kg for eight) and does not affect your rigging and rowing technique.

The following variables are measured in the standard testing procedure:

- 2D oar angle (in the horizontal and vertical planes);
- Handle force;
- Seat position. Trunk position is also measured in small boats (single, double and pair);
- Boat speed with GPS. Impeller can be used in waters with fast stream;
- 6D acceleration and angular velocity of the boat.

Also, additional variables could be measured on-demand (subject to suitability of your boat):

- Gate force (normal to oar shaft or 2D);
- Stretcher force (two or three horizontal components);
- Vertical force applied to the seat;

- Wind speed and direction;
- 6D acceleration and angular velocity of the oar.

Then you go on water and do one or a number of specific tests, which match your targets and level of competitiveness. Usually, we evaluate the effect on rowing technique of two main factors: stroke rate and fatigue. The following test protocols can be used:

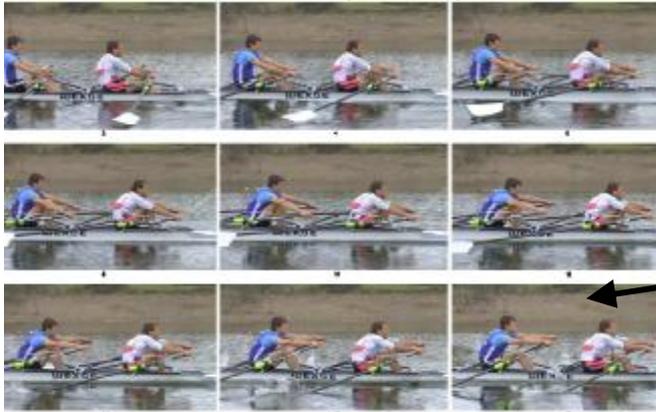
1. Two-parts test: Step test 6-8 by 250m with rest 2-4 min (stroke rates 20 str/min, 24, 28, 32, 36, 40 and maximal) and 2000m race.
2. All-in-one test: 2000m continuous step test (150m max. start, stroke rate 20 str/min to 500m, 24 to 1000m, 28 to 1250m, 32 to 1500m, 36 to 1750m, 40 to 1900 m, max. to 2000m).
3. Simplified test for masters: Step test 4 by 1 min stroke rate 20 str/min, 24, 28 and 32.

All data is recorded into the memory card of the system and video is taken at the same time. Also, it could be transmitted by radio and displayed at the coach's PC or at a portable display in the rowing boat.

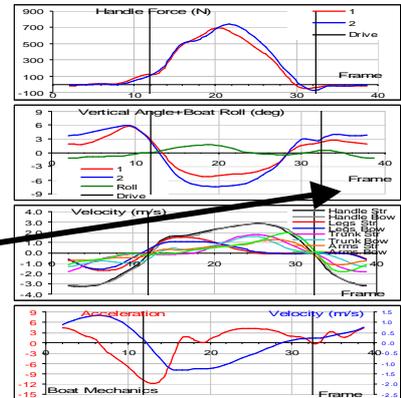
### What will you get

The collected data will be processed and typical patterns of your biomechanical variables will be obtained from many strokes for each sample of your rowing (at various stroke rates or sections of the race). Then, a report will be printed out, which contains the following main parts:

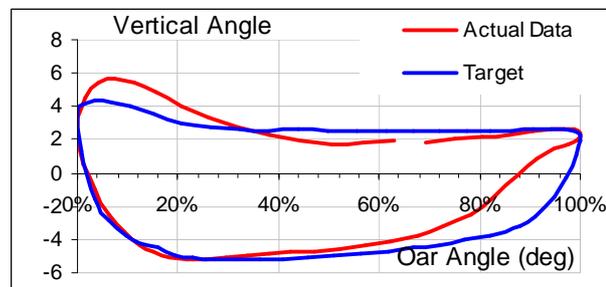
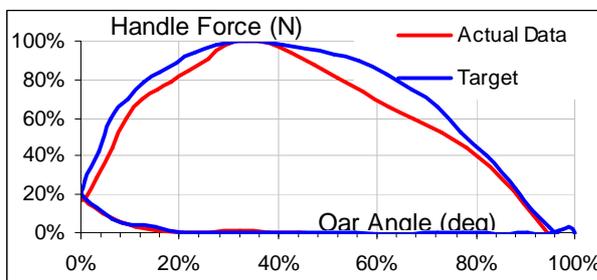
- A summary page with information about the boat velocity, acceleration, roll, pitch and yaw at different stroke rates;
- A summary pages for each rower with information about the oar angles, forces, blade work and segments sequence at different stroke rates;
- Pages for each sample with detailed information about biomechanical variables, which could be linked with still pictures printed from video:



Frame Numbers



- Evaluation pages for each rower, where the actual data is compared with target values and curves:



The data can be replayed in computed together with video for the best feedback. Finally, recommendations can be produced for each rower for the most effective technique improvement.

Please contact Dr. Valery Kleshnev at [kleva1@btinternet.com](mailto:kleva1@btinternet.com) for more information.