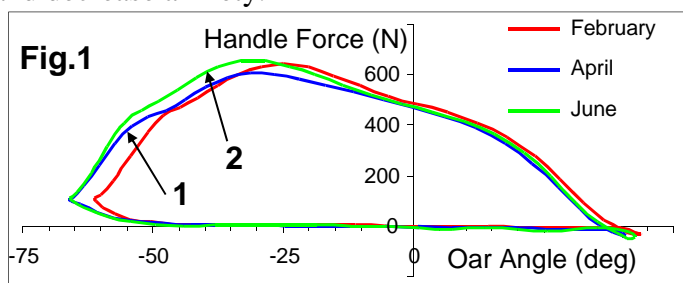


Rowing biomechanics & psychology

Coaches, which we were working with, quite often mentioned psychological effect of biomechanical information and methods. During FISA conference-2012 in Limerick Thomas Poulsen said that objective measurements helps coach to communicate with rowers in positive way. During FISA conference 2013 in Tallinn Johan Flodin has shown how biomechanical assessment creates confidence and sets clear targets for improvement. Here we try to summarise psychological effects of biomechanical measurement and evaluation procedure. As we hadn't used psychological research methods, these are only subjective observations, though they were quite consistent. Biomechanics could assist Psychology in three main areas: to increase motivation, decrease anxiety and improve collaboration in teams.

1. Motivation. Understanding of biomechanical laws and principles, experimenting with technique based on objective data sets the creative climate in a rowing team and motivates coaches and rowers to find new ways to improve performance. Comparison of personal data with Gold Standards could create a challenge for rowers and improve their motivation.

2. Anxiety. When evaluating biomechanical data and, we always try to find and emphasise something positive in the technique on the first place. Combined with objective identification of "points to improve", it sets clear targets and helps rowers and coaches to obtain positive thinking. Fig.1 shows example of progression of one of top rowers through the season, which was culminated by a gold Olympic medal. Firstly, the length of the stroke at catch was increased during February - April period (1), though force application became slightly lower. Then, during April - June force was significantly increased, force curve became more "front-loaded" (2) and length was maintained. This objective evidence confirms that rowers and coaches are on a right way, helps to increase awareness and decrease anxiety.

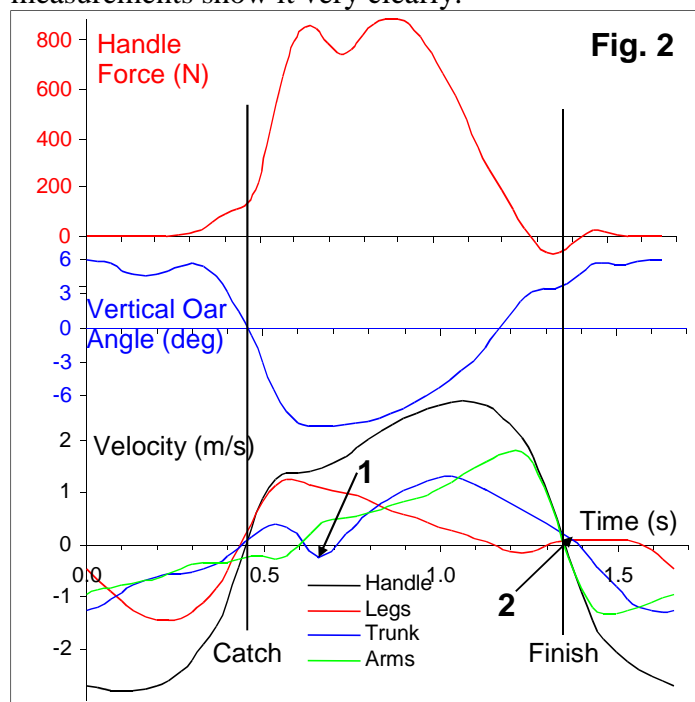


3. Collaboration. The current generation of young rowers was born and grown up in the age of computers, so they believe more in charts and numbers rather than in verbal explanations. Sometimes, coaches ask me to tell rowers something specific and confirm it with the data. They say: "I repeat it them every day, but they would accept it much better in your scientific way". Therefore, objective data helps coaches to prove their

technical ideas and improve relationships and collaboration in teams.

4. Perception of technical changes. Working with Adrian David in South Australia in 1998 we introduced repeated measurements, when after the first testing, analysis and feedback session rowers were given a chance to improve their technique and see the changes. It was found that if a rower needs, say, to increase stroke length by 10% and he tried to do exactly this, the measurements usually show only 1% difference. We called it "ten-fold ratio of perceived changes". This means that **if you want to change some variable of rowing technique by 10%, you have to try to change it by 100%**. Of course, this ratio significantly varies in different athletes.

5. Long-term changes in technique. Working with many experienced rowers, we found that quite often they try to repeat their feelings, which have brought them success in the past. However, their technique was getting worse and worse: fast legs drive became "bum shooting" (Fig.2, 1), long powerful body swing became so-called "gymnastics" at the finish, when the trunk still moves to the bow in vain, but the blades are already out of water (Fig.2, 2), and so on. It appeared to be that human body and psycho are so smart that they always try to find the easiest way to do everything. If you rely on your feelings only and try to do "as before", then, stroke after stroke, day after day, year after year, your stroke became shorter and shorter, less and less powerful and effective. Our objective measurements show it very clearly.



Always try to find something new, extend the limits of your technique. Try to make every next stroke better than the previous.