

DigiTrainer and TechniqueStudio data analysis software

In today's competitive sports, the reaching of the desired goals is not only dependent on the coaches' knowledge or the physical abilities and talent of the athletes. The scientific research and development also plays an important role in increasing athletic performance. Besides new nutritional and training methods, the technical innovations are of great importance to sports: the exact measurement of technique and performance is necessary for better results.

DigiTrainer's great advantage over the various ergometers on the market today, is that it provides data not only on the ground (like the machines), but under real training conditions on water. Furthermore it doesn't require the boat to be customized or altered in any way by installing cables and sensors, it can be easily mounted on any boat without any cabling. Due to its small size and weight, DigiTrainer does not influence the gliding of the boat or restrict the movement of the athlete. Based on the collected data, the athletes' technique can be analyzed and compared, which had only been possible through the coaches' observations or video recordings. Moreover, beyond the usual parameters which can be measured on an ergometer, it provides data on the stability (tilt) of the boat, which is impossible with the ground measurements. With this new measurement technique, the movements can be inspected under real circumstances by the analysis of parameters which have not been measured before. This instrument can be used to improve technique and performance not only in kayaking, canoeing and rowing but in many other sports as well.

The DigiTrainer, when mounted on a boat, measures and records the movement of the vessel for further computer analysis. During training, the momentary stroke rate (stroke/min) and speed can provide important feedback to the athlete since their ratio describes the efficiency of the paddling technique. The DigiTrainer continuously displays the stroke rate, speed, the distance covered, and heart rate data. This information helps the athlete in planning and economizing the energy usage during a race.

The instrument measures the acceleration of the boat in all three directions (up/down, left/right, forward/backward), records the GPS coordinates and heart rate, and stores the data on its memory card. Further analysis can be made from the collected data. The acceleration data provides important information regarding the paddling technique: power symmetry between left and right strokes (kayak), power distribution of single strokes, tilting of the boat, and thus the change of the technique through the training session. Besides all these, numerous other technical details can be observed, which can help both coach and athlete in the improvement of the technique in order to achieve better results.

The Training Partner feature can simulate racing against a virtual opponent, who's speed-time characteristics (racing tactics) can be programmed in any desired way. This helps the athletes learn a given course tactic, or to practice racing against one of their real-world opponents.

The state-of-the-art accelerometer embedded in the device continuously tracks the movement of the boat and records the data more than one hundred times per second. The collected data can be sent to a computer in real time via Bluetooth. This allows the coach to monitor the athlete during training and give instant feedback or instructions regarding the paddling technique and performance. The recorded data can be downloaded to a computer after training through USB connection.

The DigiTrainer system also includes the TechniqueStudio software, which offers easy display and more detailed analysis of the collected data. The position of the boat is drawn on a satellite-based map and the measured data is displayed on various charts, which can also be synchronized to a video recording. This new instrument opens new perspectives in the perfection of technique and enhancement of performance.

