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Analysis of navigation pattern in the sport of rowing

Alessandro Pezzoli1,2, Antonio Baldacci3, Alda Cama3, Marcello Faina4, Dario Dalla Vedova4, Maurizio Besi4, Giuseppe Vercelli2, Andrea Boscolo2, Marco Dalessandro5, Elena Cristofori1,2

1DIATI – Politecnico di Torino, Torino, Italy; 2Sport Psychology Unit - Motor Science Research Center – School of Motor and Sport Sciences - University of Turin, Torino, Italy; 3Italian Rowing Federation, Roma, Italy; 4Sport Science Dep. – Institute of Sport Medicine and Science, CONI - Italian National Olympic Committee, Roma, Italy; 5School of Motor and Sport Sciences - University of Turin, Torino, Italy

The effect of weather and environmental conditions on sports has been extensively studied over the last few years (Pezzoli et al., 2010). Based upon the studies of Lobozewicz (1981) and of Kay and Vamplew (2002), Pezzoli and Cristofori (2008) have studied the impact of some specific environmental parameters over different sports using a particular impact index divided into five classes. This analysis clearly shows that most of the outdoor sport activities are strongly influenced by the variation of meteorological parameters. However the impact of meteorological conditions on outdoor sport activities has not yet been extensively studied.

The aim of this research is to show that an accurate assessment of wind and wave parameters enables decisive improvements in both training and race strategy planning. Furthermore this analysis provide a very innovative working method for the applied sport research.

The work has been based on in-situ measurements of both environmental and performance parameters (wind direction, wind velocity, boat speed and stroke rate) made over different classes and in different race conditions during the 2009 FISA World Championship (Poznan, Poland). In particular a detailed environmental analysis was performed by measuring the wind direction, the wind speed and by evaluating the significant wave height and the wave peak period for each class during the semi-final phase and the final phase. It should be noted that, since wind is a key parameter affecting not only the boat speed but also the race strategy, the assessment of the wind velocity and of the wind direction has been made in connection with the boat movement.

The comparison between coupled wind-wave data, boat speed and stroke rate evidently demonstrates that only crews that managed the adaption to changing in the environmental conditions from semi-final to final phase of the race, were able to get better results.

References