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Analysis of navigation pattern in the sport of rowing / Pezzoli A.; Baldacci A.; Cama A.; Faina M.; Dalla Vedova D.; Besi M.; Vercelli G.; Boscolo A.; Dalessandro M.; Cristofori E.. - STAMPA. - (2012). ((Intervento presentato al convegno World Congress of Performance Analysis of Sport IX tenutosi a Worcester nel 25-28 July 2012.

Availability:

This version is available at: 11583/2504696 since:

Publisher:

University of Worcester

Published

DOI:

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Analysis of navigation pattern in the sport of rowing

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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 Lobożewicz (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.

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