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University Students Sport’s Activities Assessment in Harsh Weather Conditions

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Abstract : This paper addresses the application of physiological status monitoring (PSM) for assessing the impact of harsh weather conditions on sports activities in universities in Saudi Arabia. Real sports measurement was conducted during sports activities such that the physiological status (HR and BR) of five students were continuously monitored by using Zephyr BioHarness^{TM} 3.0 sensors in order to identify the physiological bonds and zones. These bonds and zones were employed as indicators of the associated physiological risks of the performed sports activities. Furthermore, a short yes/no questionnaire was applied to collect information on participants’ health conditions and opinions of the applied PSM sensors. The results show the absence of a warning system as a protective aid for the hazardous levels of extremely hot and humid weather conditions that may cause dangerous and fatal circumstances. The applied formulas for estimating maximum HR provides accurate estimations for Maximum Heart Rate (HR_{max}). The physiological results reveal that the performed activities by the participants are considered the highest category (90–100%) in terms of activity intensity. This category is associated with higher HR, BR and physiological risks including losing the ability to control human body behaviors. Therefore, there is a need for immediate intervention actions to reduce the intensity of the performed activities to safer zones. The outcomes of this study assist the safety improvement of sports activities inside universities and athletes performing their sports activities. To the best of our knowledge, this is the first paper to represent a special case of the application of PSM technology for assessing sports activities in universities considering the impacts of harsh weather conditions on students’ health and safety.

Keywords : physiological status monitoring (PSM), heart rate (HR), breathing rate (BR), Arabian Gulf
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