A MULTI-METHOD INVESTIGATION OF THE PERFORMANCE DEMANDS OF BASKETBALL OFFICIATING: IMPLICATIONS FOR THE DEVELOPMENT OF PERFORMANCE RELATED FITNESS ASSESSMENTS.

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The performance demands of sport have been established, primarily using either heart rate analysis or the categorisation of locomotor movement. The use of single techniques, however, may lead to problems e.g. heart rate variability caused by psychological stress; mis-classification of high intensity activity by heart rate during recovery when performing no movement; or subjective selection of speed categories, even when using computer tracking software. Previous investigations of the performance demands of officiating have focussed on large pitch sports (rugby union & football) with basketball receiving limited attention.

The aim of this study, therefore, was to use a multi-method approach to establish the performance demands of 2-person basketball officiating. Sixteen officials from seven games were used for time motion data capture and nine officials (age 41 ± 9.5 years, height 180 ± 8 cm, weight 84 ± 7.3 kg) were involved in heart rate monitoring during six different games in the English Basketball League. Passive recovery, active recovery, low-intensity, high intensity and maximal effort were established as <65%, 65-75%, 76-85%, 86-95% and >95% of age-predicted heart rate maximum (HRM) respectively (Helsen & Bultynck, 2004) and time motion categories were identified as rest (0 km/hr), walk (0-5.04 km/hr), slow run (5.04-10.8 km/hr), medium fast run (10.8-18.72 km/hr) and fast run (>18.72 km/hr) (Loncar, Dezman & Licen, 2004).

Motion analysis identified low within category ranges with 11% ± 2% of game time spent at rest, 61% ± 1% walking, 17% ± 2% slow running, 9% ± 0% medium fast running and 2% ± 1% fast running (low, moderate and high intensity of 72%, 17% and 11% respectively) with results similar to those of Loncar, Dezman & Licen (2004) who found 5%, 62%, 23%, 9% & 1% respectively. Heart rate analysis identified large within category ranges with 6% ± 6% of game time spent in passive recovery, 36% ± 18% active recovery, 42% ± 11% low-intensity, 16% ± 18% high intensity and 0% maximal effort.

Although data were from different games, the profile of the overall demands from each method was similar. The majority of game time was spent in low/moderate intensity activity with only 11% (motion) and 16% (heart rate) performed at high intensity, although % game time ranged from 0-60% in this heart rate category. It is therefore recommended that neither method be used in isolation. Instead, multiple methods must be used to determine the demands of basketball officiating, and indeed any sport performance, preferably using measured HRM and movement speed categories specific to the sport in question. Only then can valid performance related fitness assessments be developed that accurately reflect real game demands.


Keywords: Movement Analysis, Basketball, Referee / Umpire / Judge