

Analysis of the influence of sand surface on physiological and kinematic responses in professional badminton players

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Abstract

Introduction. Badminton is an Olympic racquet sport characterized by intermittent high-intensity actions with energy provided by the aerobic (60-70%) and anaerobic (30%) systems (Phomsoupha & Laffaye, 2015). The objective of this work is to analyse internal and external load variables during the 1vs1, 2vs2 and 3vs3 modalities in simulated badminton competitions, disputed on sand surface.

Methods. Six professional players from the Spanish National Badminton Team were recorded in simulated competitions, from 7th to 9th July 2018 in Elche (Alicante), with their consent. 38 matches were played on sand surface in 1vs1, 2vs2 and 3vs3 modalities with different court measurements, different net heights and different scores.

External load parameters (distances, average and maximum speeds) were recorded using GPSports as an instrument. It is a GPS technology device validated (Edgecomb and Norton, 2006), portable and lightweight called SPI Elite, which integrates a GPS receiver at 1 Hz and triaxial accelerometer at 100 Hz. Also recorded internal load parameters (average HR, maximum HR and Kcal consumed) using Polar Team application for Ipad and Polar H7 heart rate transmitters.

Results. The values of average HR (%), maximum (%) and calories consumed (Kcal) in 1vs1 were 88, 100 and 169, while in 2vs2 and 3vs3 were lower (78, 89, 148, 61, 71, 86).

Average speed (km/h), maximum (km/h) and distance travelled (m) showed a high variability between 1vs1 (11.7; 2.0; 803.1), 2vs2 (8.3; 1.3 ; 356) and 3vs3 (11.9; 1.6; 548.8).

Conclusion. Internal load during 1vs1, 2vs2 and 3vs3 modalities was lower as the number of players increased. 3vs3 presented external load values greater than 2vs2 because of a longer duration of points during the game.

References

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