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Movement characteristics of male and female 3-on-3 basketball players at national and international tournaments

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INTRODUCTION:

Despite the increased popularity and number of national and international competitions for 3-on-3 basketball, internal and external movement demands are not well described. Such information is important for coaches and trainers alike to ensure adequate training protocols are used to prepare athletes for competition demands. Therefore, the aim of this study was to quantify the internal and external movement demands of 3-on-3 basketball matches in both national and international competitions using indoor GPS technology (VX Sport, Omni, Wellington New Zealand) and an athlete monitoring system (Health and Sport Technologies Ltd., trading as Metrifit, Millgrange, Greenore, Co. Louth, Ireland).

METHODS:

Twelve well trained representative basketball athletes (8 males; 20.8 ± 1.8 yr, 190.3 ± 5.5 cm, 92.4 ± 9.9 kg and 4 females; 20.3 ± 1.5 yr, 171.4 ± 2.3 cm, 72.2 ± 3.8 kg mean \pm SD) competed in (n=12) national competition matches and (n=6) international competition matches on a FIBA-sized basketball half-court (15 m x 11 m) with VXSport Omni devices inserted into custom-made pockets in the back of VXSport Smart vests. Measures taken included total duration (mins) total distance (m), relative distance (m/min) covered during games, high intensity distance (m) travelled at 15 km/h, high intensity sprints (number) at 15 km/h, maximal speed (km/h), total number of sprints, total number of jumps, high-intensity accelerations, and decelerations ($> 3\text{m/s/s}$), maximum and average heart rate (bpm) and distance travelled at difference speed band zones (0 – 6 km/h, 6.1 – 12 km/h, 12.1 – 18 km/h and 18.1 - 24km/h). Post-game internal demands were recorded on the Metrifit athlete monitoring system on player's phones, which included rate of perceived exertion (RPE), perceived physical, technical, tactical, and psychological performance on a Likert scale ranging from 1 – 10 for RPE and 1 – 5 for the other measures.

RESULTS:

When compared to national competition, male and female international competition variables were higher for total duration ($p = 0.008$), total distance ($p = 0.026$), high intensity HR duration ($p = 0.040$), mean HR ($p = 0.048$), maximum HR ($p = 0.040$), and distance at 6.1-12 km/h ($p = 0.003$). Interestingly, the same variables were substantially higher in females compared to males in both national and international competitions. In addition, all post-game psychological variables such as RPE, perceived physical, technical, tactical, and psychological performance were higher in international matches compared to national matches for both males and females.

CONCLUSION:

The novel finding of this study was that international external and internal 3-on-3 basketball competition demands showed higher intensities in most variables. Significant differences between genders were also observed highlighting the importance of gender-specific training and coaching strategy prior to and during competitions.

Topic: Training and Testing

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