Athletes temporal and tactical mapping of the XXVIII Pan American Junior Championships 2019 – from sub 13 to sub 19

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Introduction

The analysis and interpretation of the actions that occur in the game can imply in the improvement of the players' competitive performance, and the observational methodology has been the most usual and accessible means to collect the data of the players' actions in competition (Anguera & Hérnandes-Mendo, 2013), supported by the notational analysis method to identify the characteristics of the game.
The studies on notational analysis have been carried out in badminton, with those on temporal-technical aspects being the most interesting, followed by those oriented to performance indicators (technical-tactical). Regarding the first group several studies described the duration of the rally, rest time, number and types of strokes per rally or the most used foot movements. The second group of studies leaned towards the competition rounds or serve pattern. With most analyzing high level world competitions such as Olympic games and world championships.
It is notable that studies have investigated the games of individual events of the main category to a greater extent and to a lesser extent the games of doubles (Torres-Luque et al., 2019) and juniors. Therefore, the current study aimed to identify the characteristics of the game profile and performance of junior badminton players at the Pan American level in its five events.

Methods

The sample consisted of 124 matches of Boys' Singles (BS) (n=60 games), Girls' Singles (GS) (n=63 games), Boys' Doubles (BD) (n=51 games), Girls' Doubles (GD) (n=48 games), and Mixed Doubles (XD) (n=55 games) of the 28th Pan American Junior Championships 2019 from under-13 to under-19 categories from the qualifiers, totaling 9,847 rallies.
Independents variables: Modalities, games, knockout stage, categories.
Dependents variables: Match/game duration, rally time, real playing time, rest time between rallies, density, % time played, total points played, shots per rally/game, shot frequency rally/game, point outcome performed of the last shot, hitting area of the last shot.
The system of observable categories and supporting field for the analyses were based on previous studies. A game analysis tool called Ideal Performance® was created to trigger specific commands recorded in spreadsheets the data of the study variables from the playback of the games on screen. The responsible researcher and an external observer, both trained by an expert trainer performed the reliability of the results, with an almost perfect degree of agreement (kappa > 0.92).

Results

A 3-way Manova multinomial regression models presented in Heatmap and descriptive analysis were conducted. The results showed that the duration of the rally is shorter (4-5 s) and with higher frequency of strikes (1.28-1.45 s^{-1}) on BD and XD than on GD, GS and BS (6-7 s and 0.81-1.20 s^{-1}) ($p < 0.001$). The GD rallies have a higher number of strokes (7-8) compared to the other events (5-7). The GS event rests longer (11-16 s) than the BD, XD, GD and BS ($p < 0.001$). Forcing an opponent's error was common to all events, and usually the forced point is headed for the net or outside ($p \leq 0.001$).

Discussion

The game behavior of the junior categories seems to follow the characteristics revealed in the first category regarding the number and frequency of strokes, however, in the latter the temporal structure presents higher values of rally duration. Regardless of the categories, differences were observed between the events, both in the time structure and in the notational (technical and tactical) structure.

Conclusion

The analyses revealed the game behavior of juniors in the five events and the results may imply benefits for the training process for these groups, considering similar skill levels or making this information gold standard for lower performance levels of the same age group. Such results serve as support for practical applications in the planning of unique training for each event, with the recreation of the different contexts of time in each phase of the match and competition round, and of the technical-tactical actions.

References

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