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Position-specific external workload of professional rugby union players during tactical periodization training

Hu, X.P., Boisbluche, S., Ren, X.Y., Philippe, K., Maurelli, O., Li, S.C., Xu, B., Prioux, J.

East China Normal University; Rennes 2 University; École Normale Supérieure de Rennes; Rugby Club Vannes; University of Pau and Pays de l'Adour; University of Montpellier.

INTRODUCTION:
Tactical periodization (TP) is a training strategy that emphasizes the tactical aspect of the game. It originated in soccer and is quickly gaining traction in other team sports, particularly rugby union (RU) [1]. RU differs in external workload (EWL) response during training and matches depending on player position [2]. A greater understanding of the external workload of TP for different positions within three acquisition days (strength, StD; endurance, EnD; and speed SpD) would support coaches in planning loads for specific positional groups. Therefore, the purpose of this study was to shed light on the effect of TP acquisition days on different positions of RU players and apply the knowledge gained to the training environment.
METHODS:
Twenty-six professional RU players (27.0 ± 3.5 years; 185.6 ± 7.1 cm; 101.7 ± 15.7 kg) were recruited from the French second-division rugby club by playing position: forwards (n = 15) and backs (n = 11). EWL was measured using a global positioning system and accelerometer microtechnology throughout 10 weeks of in-season home games. The following global positioning system (GPS) metrics were studied: arbitrary units of PlayerLoadTM (AU; extracted from all triaxial accelerometers in each unit); PlayerLoadslow (AU; extracted from all triaxial accelerometers when speed was below 2 m/s) ; total distance (TD) covered; distance covered in different intensity zones: > 15 km/h (D15), > 21 km/h (D21), and > 25 km/h (D25); the number of repeated high-intensity efforts (RHIE); and the number of low (> 2 m/s2; [A-D]2) and medium (> 2.5 m/s2; [A-D]2.5) speed accelerations/decelerations. A total of 780 observations were analysed, and differences between positions were assessed using Cohen's d effect size (ES) and magnitude-based inferences.
RESULTS:
There were different EWL profiles for each position under each acquisition day. Mean PlayerLoadTM, TD, D15, D21, D25, RHIE, [A-D]2, and [A-D]2.5 were significantly higher ($p \leq 0.01$; ES = 0.41 to 1.93) for backs compared with forwards for all acquisition days. However, forwards experienced greater PlayerLoadslow than backs on EnD (152.59 ± 27.39 vs. 133.10 ± 28.03 AU; $p < 0.001$; ES = 0.70). Furthermore, the difference between positions in PlayerLoadslow was unclear on StD and SpD ($p = 0.23$ and 0.22, respectively).
CONCLUSION:
PlayerLoadTM combined with PlayerLoadslow demonstrated acceptable reliability for EWL and provided different information between positions. Validating EWL characteristics on TP acquisition days enables extensive analysis of training load data, which can then be utilised to discover the unique characteristics of each position and design position-specific acquisition days to improve performance.

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