A comparison of rugby union match demands between age group categories in UK representative adolescent players

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The physical match demands for professional rugby union are well established (Cahill et al., 2013, Journal of Sports Science, 31, 299–237). However, there is a lack of evidence for adolescent players, especially in the UK. Therefore, the purpose of this study was to quantify and compare the demands placed upon adolescent players representing county teams across three age groups (U16, U18 and U20) and two playing positions (forwards and backs). Two county representative games for each age group were assessed, with a total of 112 independent observations collected. Players were classified into age group categories and by position (forwards; U16 [n = 20], U18 [n = 21], U20 [n = 18] and backs; U16 [n = 15], U18 [n = 19], U20 [n = 19]). Match demands were analyzed via a microtechnology unit (OptimEye S5, Catapult Innovations, Melbourne, Australia) that contained a GPS system and triaxial accelerometer sampling at 10 and 100 Hz, respectively. The magnitudes of difference between age groups within positions for locomotive and accelerometer-based variables were investigated using Cohen's d effect sizes (±90% CL). Institutional ethical approval was granted. For forwards, unclear differences between age groups were observed for total distance (TD), but relative distance (RD) showed very large (U16 vs. U20; d = −2.87 ± 0.53) and large (U18 vs. U20; d = −1.81 ± 0.52) differences between groups. Moderate effect sizes were found for both maximum sprint velocity (V_{max}; d = −1.03 ±0.53) and total sprinting distance (d = −0.78 ± 0.53) between U16 and U20. When normalised for time, PlayerLoadSlow™ ($PL_{slow} \cdot min^{-1}$) increased with age, showing moderate effects for U16 versus U18 (d = 0.68 ± 0.52) and U16 versus U20 (d = 0.80 ± 0.54). For backs, unclear differences between age groups were observed for TD, but RD showed moderate differences U16 versus U20 (d = −0.88 ± 0.58) and U18 versus U20 (d = −1.01 ± 0.54). Small effect sizes were observed for V_{max} (d = −0.52 ± 0.54) and total sprinting distance (d = −0.46 ± 0.54) between U18 and U20, whereas U16 versus U20 showed a small difference for V_{max} only (d = −0.46 ± 56). $PL_{slow}.min^{-1}$ increased with age, demonstrating a moderate difference between U16 and U18 (d = 0.86 ± 0.57) and a small difference between U16 and U20 (d = 0.56 ± 0.57). This study shows that the absolute locomotive demands are similar between age groups, although when expressed relative to time, differences were found. This is likely due to difference in playing time between age groups and the consequent fati- gue and/or pacing strategies adopted by players. The increase in $PL_{slow}min^{-1}$ with age suggests an increase in static exertions. Future research should look to explore the interaction between physical and technical performances at different ages of adolescent rugby.