

PHYSIOLOGICAL DEMANDS OF PROFESSIONAL RUGBY LEAGUE MATCH-PLAY USING MICROTECHNOLOGY

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Introduction

Time-motion analysis (TMA) is of importance to applied sport scientists in order to assist in the development of game-specific conditioning programs. While TMA has been used extensively in most team sports, research into the physiological demands of rugby league match-play is limited. The purpose of this study was to investigate the physiological demands of professional rugby league match-play using microtechnology.

Methods

Thirty-seven elite rugby league players (mean \pm SE age, 23.6 \pm 0.5 yr) underwent global positioning system (GPS) analysis during 104 NRL appearances. Movement was recorded using a commercially available microtechnology unit (minimaxX, Catapult Innovations), which provided information on speeds, distances, accelerations, physical collisions and repeated high-intensity efforts.

Results & Discussion

Mean distances covered during match-play by the hit-up forwards, wide running forwards, adjustables, and outside backs were 3,569m, 5,561m, 6,411m, and 6,819m, respectively. Hit-up forwards and wide running forwards were engaged in a greater number of moderate and heavy collisions than the adjustables and outside backs, and more repeated high-intensity effort bouts per minute of play (1 bout every 4.8 to 6.3 minutes). The majority (67.5%) of sprint efforts were across distances of less than 20m. The most common sprint distance for hit-up forwards was 6-10m (46.3%). Outside backs had a greater proportion (33.7%) of sprint efforts over distances of 21m or greater. Of the sprints performed, ~48.0% involved contact, ~58.0% were preceded by forward locomotion, while over 24.0% occurred from a standing start. Hit-up forwards more commonly sprinted from a standing start, or following lateral movement, whereas forward striding activities more commonly preceded sprint efforts for the adjustables and outside backs. The majority of sprint efforts were performed without the ball (78.7% vs. 21.3%). Most sprint efforts (67.5%) were followed by a long recovery (i.e., 5 minutes or greater). Outside backs had the greatest proportion (76.1%) of long duration recovery periods, and the smallest proportion (1.8%) of short duration recovery periods (i.e., <60 seconds) between sprints.

Conclusion

These results demonstrate that absolute distances covered during professional rugby league match-play are greater for outside backs, while the collision and repeated high-intensity effort demands are higher for hit-up forwards and wide running forwards. In addition, differences were observed among playing positions for the nature of sprint efforts and the typical distances covered during sprint efforts. These findings suggest that rugby league conditioning programs should be tailored to meet the individual demands of specific playing positions.