Physical demands of lacrosse: Gaps in knowledge

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The physical (movement) demands of athletes and referees for several field sports (e.g., football, rugby, field hockey, etc.) has been well documented in the literature. Published data on movement demands has grown exponentially for these sports over the past 2 decades with the advent of micro-technologies and permanent video systems that has increased the ability for data collection while simultaneously reducing turnaround time of movement tracking analysis. Lacrosse is indigenous to North America and has over 28,000 high school and 214,000 college participants in the United States as well as over 70 member nations in World Lacrosse. Despite the continued growth of lacrosse domestically and internationally, there is a paucity of research describing the physical demands of this sport.

To date, there are only two papers describing the physical demands of men’s and women’s National teams. Akiyama and colleagues reported that the Japan men’s team covered up to 4.5 km per match with more than two-thirds of that distance occurring below 14.4 kph during the 2014 World Championship. There were also 200 to 300 accelerations and decelerations performed per match. The Austrian women’s National team covered approximately 3.4 to 4.6 km with about two-thirds of that distance below 15.0 kph, highlighting some general similarities between the physical demands of men’s and women’s lacrosse at an elite level.

The majority of papers describing physical demands of lacrosse have focused on Division I college women. Total distance seems to range between 4.5 to 7.0 km with the potential for exceeding 8 km. High-intensity running distance was 500 to 800 m with some achieving over 1 km in a single game. Unfortunately, data about movement demands for other divisions of women’s college lacrosse as well as any division of men’s college lacrosse games are not yet available.

There are currently no studies reporting on the physical demands of youth lacrosse, box lacrosse, or officials/referees at any level. Another area void of information is on the newly created discipline of lacrosse sixes, which has fewer players, smaller fields, and different rules than the traditional version of lacrosse. It is clear that there are substantial gaps in the literature that need attention and can provide valuable contributions to practitioners working in lacrosse.

A challenge that all field sports encounter when quantifying movement demands is how the various metrics are defined. For example, running distances are often described across different intensities demarcated by operationally defined thresholds. The methods and thresholds applied within the lacrosse literature are varied. Some researchers have used absolute thresholds (e.g., <7.2 kph, 7.2-14.4 kph, etc.) whereas others have used a percent of individual maximal running velocity (e.g., >60% maximal sprint speed) to define high-intensity running. The lack of consistency makes it difficult to compare studies and evolve our understanding about the sport of lacrosse.

There are obvious gaps that need to be addressed in an effort to better understand the movement demands of lacrosse. Below is a call to action with several preliminary topics that researchers and practitioners can use to help advance our knowledge about this sport.

- Establish unified, yet sex-specific, velocity and acceleration thresholds for lacrosse.
- Examine overall as well as peak movement demands of lacrosse players and referees in all 3 disciplines (field, sixes, and box) and across the entire developmental spectrum (youth, college, professional, and international).
- Evaluate the impact of tournaments and congested schedules on match demands.
- Assess the relationship between physical demands and injury risk across a season.
- Explore the alignment of training and drill demands with match demands.

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References