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Early Sport Specialization in Men’s Lacrosse: A Survey of 158 Professional Lacrosse Athletes

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ABSTRACT

Background: Across all youth sports, the trend of single sport specialization continues at a concerning pace and often at an increasingly younger age.

Objectives: To determine the prevalence of youth single sport specialization among current professional lacrosse athletes.

Methods: An online survey was distributed to each athlete of a men’s professional lacrosse league. Athletes were asked if they specialized to play lacrosse at the exclusion of other sports. We analyzed the rate and age of early sport specialization, reasons for specialization, and the athlete’s perceptions pertaining to this topic.
Results: A total of 158 out of 164 athletes completed the survey, for a response rate of 96.3%. Less than one-third, (48/158= 30.4%) of men’s professional lacrosse athletes specialized to play lacrosse at the exclusion of other sports during their childhood/adolescence. Of the athletes that did specialize, they did so at an average age of 16.5 ± 1.58 years old. Only 2.5% of professional lacrosse athletes specialized prior to the age of 13, with the majority (88.6%) of athletes classifying themselves as “multi-sport” athletes during high school. 96.8% of professional lacrosse athletes would not recommend single sport specialization to their own children.

Conclusion: For the professional lacrosse athletes studied, single sport specialization was not necessary to achieve elite status in their sport. The majority of current professional lacrosse athletes were multi-sport athletes in high school. This study adds to the growing body of literature challenging the trend of single sport specialization among current youth athletes.

Key Terms: lacrosse, specialization, sport, single

Introduction

Early sport specialization continues to rise among American youth athletes. Furthermore, the age at which an athlete specializes to become a year-round, single sport athlete is dropping, often at an age before high school. The decreasing age of specialization before phyeal closure places increased pressure and risk of injury on the developing adolescent body. An athlete is
considered overspecialized if he/she are engaged in intense, year-round (8+ months per year)
training and competition in a single sport at the exclusion of other sports.\textsuperscript{2}

Many youth athletes, parents, and coaches who share the goal of obtaining a college
scholarship or reaching elite status in their sport continue to feel pressure to focus on skill
development within one sport at an increasingly young age. Anecdotes and individual examples
of success through this approach seem to counterintuitively outweigh the now growing
orthopaedic literature and expert opinion expressing the contrary. The disconnect between the
current trend towards early sport specialization and the recommendations of the sports medicine
community present a challenging topic and highlight the important role of the sports medicine
physician in the current societal landscape and care of the youth athlete.

In response to this growing trend of early sports specialization, there have been a number
of position statements issued on the role of sports specialization in youth sports including
recommendations from the American Academy of Pediatrics (AAP)\textsuperscript{3}, National Athletic Trainers
Association (NATA)\textsuperscript{4}, American Orthopaedic Society for Sports Medicine (AOSSM)\textsuperscript{5}, and the
National Federation of High Schools (NFHS)\textsuperscript{6}. All statements recommend the importance of
sports diversification for youth athletes, appropriate rest both in-season and between seasons,
involvement with one team at a time, and the importance of time away the athlete’s main sport
for appropriate rest after each season. Furthermore, they highlight the increased risk of injury
with early sport specialization at a young age.

Cited as one of the world’s oldest sports, lacrosse is a fast paced, team sport that
continues to grow in popularity over the past two decades among high school and youth
athletes.\textsuperscript{7} USA Lacrosse notes a 50\% rise in the level of youth participation from 2006 to 2018
with over 275,000 boys playing youth lacrosse in the United States.\textsuperscript{7} The National Federation of
High School Sports has also seen a rise in boys high school lacrosse, with participation numbers increasing from 50,000 participants across the United States in 2002, to more than 113,000 in 2018. Collegiate Men’s lacrosse saw a similar increase in participation 2006-2018 with a 36% increase in participation and a 19% increase in the number of collegiate teams playing lacrosse from 2013-2018. The rise in popularity of the sport of lacrosse also brings with it a risk of early sport specialization among youth athletes.

We hypothesize that the majority of current professional lacrosse athletes were multi-sport athletes during their childhood and did not specialize to play lacrosse before high school. The purpose of this study was to examine the topic of single sport specialization within the sport of lacrosse, which to our knowledge has not been reported on to date. We sought to determine the prevalence of youth single sport specialization in current professional lacrosse athletes, identify the age at which specialization occurred, and examine the reasons and beliefs of professional athletes surrounding this topic.

Materials and Methods

Over a two-month period in 2020, all professional lacrosse athletes in the Premier Lacrosse League (PLL) were sent an electronic survey by the head league physician. The Premier Lacrosse League (PLL) was formed in 2018, and recently merged with the Major League Lacrosse (MLL) league, making it the sole and major outdoor men’s professional lacrosse league in America. At the time of the survey, a total of seven teams comprised the PLL, with a total of 164 athletes in the league. 158 out of 164 athletes completed the survey, for a response rate of 96.3%. This survey has been previously administered and published in a similar professional athletic population on this topic. Institutional review board approval and exempt
status was obtained for this study. Additionally, league approval was obtained prior to study administration.

An online survey was distributed to each athlete of a men’s professional lacrosse league. An online survey tool (SurveyMonkey, San Mateo, CA) was utilized to collect the surveys and the athletes’ responses were voluntary. Survey questions asked details pertaining to demographics, current sport involvement, history of specialization, and each players perspective on single sport specialization. Athletes were asked if they chose to specialize to play lacrosse at the exclusion of other sports. If yes, further information was gathered pertaining to this decision.

The data collected were retrospective in nature and analyzed for statistical results. To account for a small percentage of questions left blank by an individual athlete, all percentages reported represent the number of responses divided by the total number of respondents for that individual question.

Results

The demographic information of the professional athlete cohort is presented in Table 1. The average number of years playing professional lacrosse was 5.8 ± 3.5 years. Most athletes surveyed played a different sport as their first competitive sport (82.3%) and played multiple sports in their lifetime competitively (96.8%).

The results of the survey pertaining to sport specialization are presented in Table 2. Of the 158 professional lacrosse athletes, less than one-third, (48/158= 30.4%) specialized to play lacrosse at the exclusion of other sports during their childhood/adolescence. Of the athletes that did specialize, they did so at an average age of 16.5 ± 1.6 years old. Only 2.5% of athletes specialized before the age of 13 to play lacrosse at the exclusion of other sports. The majority
(96.2%) of athletes played on their high school lacrosse team. A lower, but still high percentage played on a travel or club lacrosse team (85.9%), however, the majority of athletes did not overlap seasons to play on more than one team at a time (73.2%).

Table 3 presents the athletes’ perspectives on single sport specialization. The majority (88.6%) of athletes classified themselves as “multi-sport” athletes during high school. When asked about their opinion of single sport specialization, 96.8% of professional lacrosse athletes would not recommend single sport specialization to their children. However, of those that did specialize, most (73.9%) were happy with the age at which they did specialize. Less than half (41.7%) of athletes who did specialize believed they would be playing professional lacrosse if they did not specialize at the age at which they did.

Reasons for specialization are presented in Figure 1. The majority of responses (76.6%) chose to specialize to improve in their sport or due to love/ enjoyment of this sport.

**Discussion**

The results of our study showed that for the current cohort of men’s professional lacrosse athletes, early single sport specialization was not necessary to achieve elite status. Our study represents the largest study examining the topic of early sport specialization in professional lacrosse athletes. In our study, less than one third of professional athletes specialized to play lacrosse at the exclusion of other sports.

Our findings support our hypothesis that professional lacrosse players were multi-sport athletes and did not specialize during their childhood to focus on lacrosse at the exclusion of other sports. Furthermore, our research goes against the current perception among many youth athletes, parents, and coaches that focusing on one sport at a young age is the recipe to success at
a high-level in that sport. The majority of current professional lacrosse athletes were multi-sport athletes in high school. Our study also highlights that the majority of professional lacrosse athletes (73.2%) did not play for two teams in the same season.

Youth sport participation has a number of benefits such as promoting an active lifestyle, allowing the athlete to enjoy playing their sport, and improved self-image. However, sport specialization, and to be specific, early sport specialization has been shown to be an independent risk factor for overuse injury and can also lead to unintended psychological effects, including burnout, depression and anxiety. In our study, of the athletes that did specialize, they did so at an average age of 16.5 years old, with only 2.5% of lacrosse athletes choosing to specialize before the age of 13. An average age of specialization of 16 years old contrasts with the current trend of youth athletes, who are often choosing to specialize before their high school years. This young age of specialization carries with it a higher risk of injury to the developing body before physeal closure and further emotional maturation. When combining our data on the sport of lacrosse to the remainder of the literature on this topic, the message is clear; we should continue to advocate for multi-sport participation of our youth athletes with at least 4 months of rest away from their main sport at until at least the beginning of their high school years.

Does Specialization Increase College Scholarships?

An analysis of sports specialization in NCAA Division I athletes by Post et al found that the majority were not classified as highly specialized throughout high school with 16.9% of surveyed athletes classified as specialized in 9th grade and 41% by 12th grade. Another study of Division 1 athletes published by Swindell et al found that 94.7% of specialized athletes previously played other sports prior to college. Forty five percent of respondents played multiple
sports until the age of 16. Members of team sports specialized at a later age vs individual sports (15.5 vs 14). The conclusion of the study noted that early sports specialization is uncommon at NCAA division I for most team sports participants. Consequently, it can be assumed that early specialization is not necessary for a college scholarship. There are other factors besides sports specialization, like injuries, speed, physical stature, mental toughness and intelligence which impact participation on the collegiate or elite levels.

What Motivates Early Sport Specialization?

It is also important to examine the motivating reasons to specialize in one sport year-round at a young age. There is a commonly held belief that early specialization will increase the likelihood of attaining a college scholarship and achieving elite level status in their sport. However, the data tells a different story. Based on the NFHS participation numbers, 12.8% of high-school lacrosse athletes will play at a collegiate level, with 3.1% participating at a Division I level. Furthermore, although the NCAA did not calculate the rate of “going pro” in the sport of lacrosse; one would expect a similarly low percentage to the published rates of other sports such as basketball (1.2%), football (1.6%), ice hockey (7.4%) and baseball (9.9%). (NCAA.org)

In contrast, Padaki et al. studied 201 parents in the New York area and found that half of all surveyed parents expected their child to play college or pro. Parental influence is particularly strong among younger athletes and additionally coaches are also often involved in influencing intensive training and specialization. This discrepancy between perception and reality will likely continue to drive early sport specialization trends in youth athletics for years to come.

Limitations
There are several limitations to this study that are important to highlight. First, this survey was done retrospectively, so exact memory of sport specialization timing and rationale may be subject to recall bias by the athlete as this was not a prospective study of this topic. Second, our study did not have any medical confirmation of injury data so any extrapolation of an athlete’s perception of injury during their adolescence must be interpreted with this information in mind. Third, understanding the path to elite level success of today’s professional athletes can aid in counseling current youth athletes. However, it is important not to over extrapolate this data to current youth athletes, as the landscape facing today’s youth athlete is very different than at the time many of the current athletes were at the same phase of their development. We do not know if this would have affected the current professional athletes’ decisions on specialization. Finally, this study was performed on men’s professional lacrosse athletes and it is unknown if this data can be extrapolated to women’s lacrosse athletes.

**Conclusion**

For the current professional lacrosse athletes, early sport specialization was not necessary to achieve elite level success. The majority of professional lacrosse athletes did not specialize before high school and were multi-sport athletes. This study adds to the growing body of literature challenging the trend of single sport specialization among current youth athletes. We, as sports medicine providers, need to continue to educate athletes, parents, coaches, and other physicians that early sport specialization is not necessary for sport success and advancement, but rather has been identified as an independent risk factor for injuries.

**Informed Patient Consent**

The author(s) should confirm that written informed consent has been obtained from the involved patient(s) or if appropriate from the parent, guardian, power of attorney of the involved patient(s); and, they have given approval for this information to be published in this case report (series).
Authorship Contribution:

TW - Manuscript preparation, editing, and submission

EN - Survey administration, manuscript preparation and editing.

PB - Survey administration, manuscript preparation and editing, final analysis of manuscript.

CL - Survey administration, manuscript preparation and editing, final analysis of manuscript.

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Declaration of interests

☐ The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

☒ The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

Patrick Buckley reports a relationship with Smith and Nephew Inc that includes:

Declaration of Interest

none

References


Baxter-Jones, Maffulli G; *Parental Influence on Sport Participation in Elite Young Athletes*.2003;43(2):250-255.
Table 1. Demographic information of the professional lacrosse athlete cohort.

<table>
<thead>
<tr>
<th>Table 1: Characteristics of All Players</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No. of Responses</strong></td>
<td>158</td>
</tr>
<tr>
<td><strong>Age (years)</strong></td>
<td>$26.89 \pm 3.41$</td>
</tr>
<tr>
<td><strong>Position</strong></td>
<td></td>
</tr>
<tr>
<td>- Attack</td>
<td>$27/158 = 17.1%$</td>
</tr>
<tr>
<td>- Midfield</td>
<td>$75/158 = 47.5%$</td>
</tr>
<tr>
<td>- Defense</td>
<td>$31/158 = 19.6%$</td>
</tr>
<tr>
<td>- Face Off</td>
<td>$12/158 = 7.6%$</td>
</tr>
<tr>
<td>- Goalie</td>
<td>$13/158 = 8.2%$</td>
</tr>
<tr>
<td><strong>No. years playing professional lacrosse</strong></td>
<td>$5.8 \pm 3.5$</td>
</tr>
</tbody>
</table>

**Was Lacrosse the First Sport you played at a competitive level? (Y)**

<p>| | |</p>
<table>
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<tbody>
<tr>
<td><strong>28/158 = 17.7%</strong></td>
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</table>

**Have you only played one sport competitively in your life? (Y)**

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<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5/157 = 3.2%</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Values are presented as mean ± SD unless otherwise indicated. Percentages are presented based on the number of responses for each individual question.*
Table 2. Survey results regarding sport specialization in professional lacrosse athlete cohort.

<table>
<thead>
<tr>
<th>Table 2: Sport Specialization Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Did you specialize to play lacrosse before the age of 13? (Y)</strong></td>
</tr>
<tr>
<td>4/157 = 2.5%</td>
</tr>
<tr>
<td><strong>Did you quit other sports to focus on lacrosse? (Y)</strong></td>
</tr>
<tr>
<td>48/158 = 30.4%</td>
</tr>
<tr>
<td><strong>At what age did you quit other sports to focus on lacrosse? Years</strong></td>
</tr>
<tr>
<td>16.5 ± 1.6</td>
</tr>
<tr>
<td><strong>At the time of specialization:</strong></td>
</tr>
<tr>
<td><strong>How many months/year did you play lacrosse?</strong></td>
</tr>
<tr>
<td>8.7 ± 2.7 mo/y</td>
</tr>
<tr>
<td><strong>How many months/year did you train for lacrosse (weight training, fitness,</strong></td>
</tr>
<tr>
<td><strong>skills)?</strong></td>
</tr>
<tr>
<td>9.4 ± 3.7 mo/y</td>
</tr>
<tr>
<td><strong>How many months/year did you compete in lacrosse games?</strong></td>
</tr>
<tr>
<td>6.7 ± 2.1 mo/y</td>
</tr>
<tr>
<td><strong>Did you ever sustain an injury you attributed to specialization in lacrosse? (Y)</strong></td>
</tr>
<tr>
<td>7/48 = 14.6%</td>
</tr>
<tr>
<td><strong>Did you compete on your high school (HS) team in lacrosse? (Y)</strong></td>
</tr>
<tr>
<td>151/157= 96.2%</td>
</tr>
<tr>
<td><strong>Did you compete on a travel or club team in lacrosse? (Y)</strong></td>
</tr>
<tr>
<td>135/157 = 85.9%</td>
</tr>
<tr>
<td><strong>Did you compete on your HS and travel/club teams in the same season? (Y)</strong></td>
</tr>
<tr>
<td>42/157 = 26.8%</td>
</tr>
</tbody>
</table>

*Values are presented as mean ± SD unless otherwise indicated. Percentages are presented based on the number of responses for each individual question.
Table 3. Professional lacrosse athletes’ perspectives on single sport specialization.

<table>
<thead>
<tr>
<th>Table 3: Single Sport Specialization Perspectives</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Are you glad you specialized to play one sport at the age you did?</td>
<td>yes: $34/46 = 73.9%$</td>
</tr>
<tr>
<td>Do you think you would be playing lacrosse at a professional level if you did not specialize at the age you did?</td>
<td>yes: $20/48 = 41.7%$</td>
</tr>
<tr>
<td>During high school, would you consider yourself a multi-sport or single-sport athlete?</td>
<td>Multi: $140/158 = 88.6%$</td>
</tr>
<tr>
<td>Will you recommend to your kids to specialize to play one sport before high school?</td>
<td>yes: $5/158 = 3.2%$</td>
</tr>
</tbody>
</table>
Figure 1: Pie chart showing athlete responses when asked their reason for specialization.