Knowledge, Attitudes, and Beliefs of Youth Club Athletes Toward Sport Specialization and Sport Participation

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Background: There are a variety of proposed motivations for sport specialization, such as improving sport skills to an elite level, making all-star or travel teams, or receiving a scholarship or professional contract. However, there has not been a quantitative examination of the attitudes and beliefs that may be contributing to the trend of sport specialization and year-round sport participation.

Purpose: The primary aim was to describe the attitudes and beliefs of youth club sport athletes regarding sport specialization and sport participation. A secondary objective was to investigate whether an association exists between the level of sport specialization and the belief in receiving a college scholarship.

Study Design: Cross-sectional study; Level of evidence, 3.

Methods: A total of 974 youth athletes (578 female; mean age, 14.2 ± 1.6 years) completed an anonymous questionnaire that focused on attitudes and beliefs toward sport specialization and sport participation. Questions were developed utilizing the feedback of a panel of content area experts and the University of Wisconsin Survey Center. Data were summarized using frequencies, proportions (%), and means ± SDs.

Results: Fewer than half of all athletes (45.8%) believed that specialization increased their chances of getting injured either "quite a bit" or "a great deal." However, 91% of athletes believed that specialization increased their chances of getting better at their sport either "quite a bit" or "a great deal." Similarly, the majority of athletes believed that specialization increased their chances of making their high school team (80.9%) or a college team (66.9%) either "quite a bit" or "a great deal." Overall, 15.7% of athletes believed that they were either "very" or "extremely" likely to receive a college scholarship based on athletic performance. Highly specialized athletes were nearly twice as likely to have a high belief in receiving a college scholarship compared with low-specialization athletes (20.2% vs 10.2%, respectively; $\chi^2 = 18.8$; $P = .001$).

Conclusion: Most youth athletes in this study believe that specialization increases their sport performance and ability to make not only a college team but also their high school team. Highly specialized athletes were more likely to believe that they will receive a college scholarship.

Keywords: youth sports; sport specialization; club sports; injury

To maximize sport performance, youth athletes are increasingly being encouraged to specialize in a single sport at the exclusion of other sports.[4,17,25] This behavior has been linked with an increased risk of overuse injuries in youth athletes.[3,15,23,30,32] Despite the risks associated with sport specialization, there are a wide range of benefits associated with youth sport participation. These benefits include the development of social skills, improved physical literacy, and increased physical activity both during childhood and across the life span.[1,2,14,16,18,26]

Many factors have been identified as being important to sustained and enjoyable youth sport participation, including having fun, having opportunities to play regardless of skill level, positive coach and team interactions, and being rewarded for strong effort.[35] These factors are primarily process oriented, while the main theorized motivations for sport specialization are outcome oriented. These motivations include improving sport skills to an elite level, making all-star or travel teams, or receiving a scholarship or professional contract.[7,31] However, while early specialization is viewed as a mechanism for elite success, previous studies

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have observed that elite-level athletes often do not specialize until late adolescence.[24,31]

Previous research in various populations of youth athletes has indicated prevalence rates of specialization between 13.4% and 37.5%.[3,15,30,32] There are an estimated 60 million youths between 6 and 18 years of age participating in some form of organized athletics[7] and an estimated 7.8 million adolescents participating in high school interscholastic sports each year.[28] While these previously reported specialization rates were studied in a small region of the Midwestern United States, they suggest that there may be a large population of youth athletes across the country who have decided to specialize in one sport. However, there has not been an examination of the attitudes and beliefs that may be contributing to these trends in youth sport participation and specialization. Similarly, the connection between early specialization and the expectation of financial benefits such as receiving a college scholarship has been theorized but has not been previously studied.

Therefore, the purpose of this study was to describe the attitudes and beliefs of youth club sport athletes regarding sport specialization and sport participation. We hypothesized that youth athletes would not only believe that specialization increased their risk of injuries but would also view specialization as beneficial for improving performance. Additionally, we hypothesized that youth sport participation would be primarily driven by enjoyment and social factors. A secondary purpose of this study was to investigate whether an association exists between the level of sport specialization and the belief in receiving a college scholarship. We hypothesized that highly specialized athletes would be more likely than low-specialization athletes to believe that they would receive a college scholarship related to athletic performance.

METHODS

The institutional review board at the University of Wisconsin–Madison approved this study and procedures. Youth athletes participating at summer and club team tournaments, competitions, and practices around the state of Wisconsin were invited to complete an anonymous paper-and-pencil questionnaire that was developed for this study. The tournaments, competitions, and practices took place at various local venues that frequently host large events for noninterscholastic club teams. Therefore, the vast majority of athletes surveyed in this project were club team participants. Athletes had to be between 12 and 18 years old and active in organized sports during the previous 12 months to participate. Because the questionnaire was anonymous, parents and athletes were provided an information sheet describing the study before providing oral consent to participate.

Questionnaires were completed on site at the tournament, competition, or practice and took approximately 15 minutes to complete. The questionnaire consisted of 4 sections: (1) demographics and information regarding the sports that athletes participate in, (2) sport specialization status as determined using a widely utilized but nonvalidated sport specialization scale that has been repeatedly linked with injuries in various youth athlete populations,[3,15,29,31,32] (3) attitudes and beliefs regarding sport specialization and youth sport participation, and (4) injury history in the previous 12 months.

Questions for the third section of the questionnaire were developed utilizing the feedback of a panel of content area experts consisting of 4 athletic trainers and 2 physicians with specialties in pediatric sports medicine. These experts judged the face and content validity of the questions in this section, which included attitudes toward injuries, beliefs regarding the potential benefits and consequences of sport specialization, and attitudes toward the importance of various factors in deciding to participate in sports (eg, having fun, winning, spending time with friends, being physically active). These questions were ranked on a 5-point Likert scale ("not at all," "a little," "somewhat," "very," and "extremely"). The final question in this section asked athletes to rank their belief that they will receive a college scholarship related to athletic performance on a 7-point Likert scale ("extremely unlikely," "very unlikely," "somewhat unlikely," "neither likely nor unlikely," "somewhat likely," "very likely," and "extremely likely").

The University of Wisconsin Survey Center, an internationally recognized organization in the field of survey design and best practices, helped to design the format of the questionnaire and develop the individual questions to meet best practices in survey design. Specifically, the University of Wisconsin Survey Center held multiple meetings with the study authors to determine the goals of the project and then conducted several rounds of revisions on the original survey draft to accomplish 2 major goals: (1) clarity (rewording of questions to ensure that they were easily understandable, free of jargon, and of the appropriate reading level for this age group) and (2) ease of use (consistent formatting throughout the questionnaire, arrows and other clues to direct the participant to the next section or

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Ethical approval for this study was obtained from the University of Wisconsin–Madison (submission ID: 2016-0495).

question, and eliminating redundant questions to improve response time).

Athletes were categorized as either low, moderate, or highly specialized using a widely utilized 3-point specialization scale.[3,15,29,31,32] Responses regarding scholarship belief were used to categorize athletes as either low belief ("extremely unlikely" or "very unlikely"), neutral belief ("somewhat unlikely," "neither likely nor unlikely," or "somewhat likely"), or high belief ("very likely" or "extremely likely"). Data were summarized by frequencies and proportions (%) and means and SDs. Chi-square tests were used to compare the frequencies of attitudes and beliefs between sexes and frequencies of scholarship belief responses between low-, moderate-, and high-specialization athletes. All statistical tests were 2-sided, with statistical significance set a priori at $P < .05$. All analyses were performed using SPSS statistical software (v 22.0; IBM).

RESULTS

Surveys were distributed to 1000 youth athletes, and a total of 974 youth athletes (578 female; mean age, 14.2 ± 1.6 years) fully completed the questionnaire and were included in the analysis. Approximately 39% (n = 381) of all participants were classified as highly specialized. The 3 sports with the highest number of responses were basketball (31.7%, n = 309), volleyball (27.9%, n = 272), and soccer (14.3%, n = 139) (Table 1).

Overall, only about 13% (n = 131) of participants responded that they were "very" or "extremely" concerned about the risk of injuries while playing sports (Figure 1). Fewer than half of all athletes (45.8%, n = 446) believed that specialization in one sport increased their chances of getting injured by either "quite a bit" or "a great deal." Roughly 91% (n = 885) of athletes believed that specialization in one sport increased their chances of getting better at that sport either "quite a bit" or "a great deal" (Table 2). Similarly, the majority of athletes believed that specialization increased their chances of making their high school team (80.9%, n = 788) or a college team (66.9%, n = 652) either "quite a bit" or "a great deal."

There were sex-based differences in attitudes and beliefs toward specialization and injuries (Table 2). Male athletes were more likely than female athletes to respond that they were "not at all" concerned about the risk of injuries in sports (29.4% vs 15.5%, respectively; $\chi^2 = 30.8$; $P < .001$). Female athletes were more likely than male athletes to believe that specialization increased the chances of getting injured either "quite a bit" or "a great deal" (50.7% vs 40.7%, respectively; $\chi^2 = 13.3$; $P = .010$) but were also more likely than male athletes to believe that specialization increased their chances of getting "a great deal" better at their sport (71.9% vs 62.9%, respectively; $\chi^2 = 15.1$; $P = .004$).

The 3 factors that the largest proportion of athletes ranked as either "very" or "extremely" important in their sport participation were opportunity to get better at their sport (94.8%, n = 923), being physically active (88.4%, n = 861), and having fun (87.3%, n = 850) (Table 3). The 3 factors that the smallest proportion of athletes ranked as

TABLE 1
Participant Demographics

	n (%)
Sex	
Female	578 (59.3)
Male	396 (40.7)
Age, y	
12	159 (16.3)
13	219 (22.5)
14	208 (21.4)
15	174 (17.9)
16	147 (15.1)
17	47 (4.8)
18	20 (2.1)
Club sport participation	
Not available	11 (1.1)
No	80 (8.2)
Yes	883 (90.7)
Specialization status	
Low	246 (25.3)
Moderate	347 (35.6)
High	381 (39.1)
Primary sport	
Baseball/softball	46 (4.7)
Basketball	309 (31.7)
Cheer/dance	9 (0.9)
Cross-country	6 (0.6)
Football	40 (4.1)
Gymnastics	2 (0.2)
Ice hockey	66 (6.8)
Lacrosse	3 (0.3)
Soccer	139 (14.3)
Softball	23 (2.4)
Swimming	12 (1.2)
Tennis	2 (0.2)
Track	12 (1.2)
Volleyball	272 (27.9)
Wrestling	17 (1.7)
None[a]	16 (1.6)

[a]Indicates that an athlete reported playing multiple sports equally and was unable to identify a "primary sport."

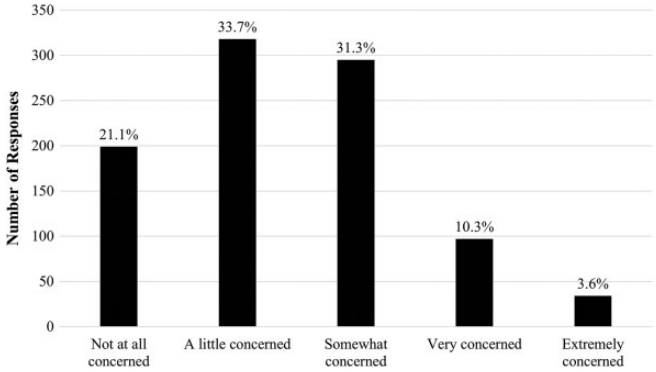

Figure 1. Participant responses to the following question: "How concerned are you about getting injured while playing sports?"

TABLE 2
Responses to Questions Regarding Potential Benefits and Consequences of Sport Specialization[a]

	Not at All	A Little	Somewhat	Quite a Bit	A Great Deal	χ^2 Value	*P* Value
How much does focusing on one sport and playing that sport all year increase your chances of the following?							
Getting injured						13.3	.010
Total	69 (7.2)	144 (15.1)	297 (31.1)	289 (30.2)	157 (16.4)		
Male	35 (9.0)	72 (18.6)	123 (31.7)	101 (26.0)	57 (14.7)		
Female	34 (6.0)	72 (12.7)	174 (30.6)	188 (33.1)	100 (17.6)		
Getting better at your sport						15.1	.004
Total	7 (0.7)	11 (1.1)	54 (5.6)	232 (24.2)	653 (68.2)		
Male	5 (1.3)	6 (1.5)	32 (8.2)	101 (26.0)	244 (62.9)		
Female	2 (0.4)	5 (0.9)	22 (3.9)	131 (23.0)	409 (71.9)		
Making a high school team						4.8	.311
Total	21 (2.2)	40 (4.2)	110 (11.5)	370 (38.6)	418 (43.6)		
Male	11 (2.8)	20 (5.1)	50 (12.9)	141 (36.2)	167 (42.9)		
Female	10 (1.8)	20 (3.5)	60 (10.5)	229 (40.2)	251 (44.0)		
Making a college team						9.5	.050
Total	24 (2.5)	80 (8.4)	199 (20.8)	270 (28.3)	382 (40.0)		
Male	13 (3.4)	40 (10.4)	89 (23.1)	97 (25.2)	146 (37.9)		
Female	11 (1.9)	40 (7.0)	110 (19.1)	173 (30.4)	236 (41.4)		

[a]Data are expressed as n (%) unless otherwise indicated.

TABLE 3
Responses to Questions Regarding the Importance of Various Factors Affecting Their Decision to Participate in Youth Sports[a]

	Not at All	A Little	Somewhat	Very	Extremely
How important are the following parts of sports to you?					
Winning	14 (1.4)	66 (6.8)	241 (24.9)	373 (38.6)	273 (28.2)
Spending time with friends	19 (2.0)	99 (10.3)	245 (25.5)	361 (37.6)	235 (24.5)
Developing life skills such as teamwork and friendship	10 (1.0)	48 (5.0)	119 (12.4)	375 (39.0)	410 (42.6)
Having fun	7 (0.7)	17 (1.8)	87 (9.1)	268 (27.9)	582 (60.6)
Increasing your ability to make high school varsity teams	21 (2.2)	29 (3.0)	118 (12.2)	297 (30.8)	499 (51.8)
Getting better at your sport	3 (0.3)	5 (0.5)	32 (3.3)	239 (24.8)	684 (71.0)
Being physically active	14 (1.5)	12 (1.3)	71 (7.4)	285 (29.7)	576 (60.1)
Increasing your ability to play on a travel, all-star, or elite team	42 (4.4)	57 (5.9)	160 (16.7)	310 (32.4)	389 (40.6)
Increasing your chances of receiving a college athletic scholarship	74 (7.7)	80 (8.3)	165 (17.1)	220 (22.8)	427 (44.2)

[a]Data are expressed as n (%).

either "very" or "extremely" important were increasing their ability to play on a travel, all-star, or elite team (71.8%, n = 699); winning (66.3%, n = 646); and spending time with friends (61.2%, n = 596). Again, differences were observed between sexes for the most important sport participation factors. Male athletes were more likely than female athletes to rate the following factors as "very" or "extremely" important: winning (75.6% vs 68.2%; $\chi^2 = 43.2$; $P < .001$) and spending time with friends (64.6% vs 60.5%; $\chi^2 = 10.5$; $P = .032$). Conversely, female athletes were slightly more likely than male athletes to rate the following factors as "very" or "extremely" important: developing life skills such as teamwork and friendship (85.0% vs 76.7%; $\chi^2 = 16.8$; $P = .002$), getting better at their sport (97.0% vs 94.1%; $\chi^2 = 18.2$; $P = .001$), and being physically active (91.6% vs 87.5%; $\chi^2 = 13.7$; $P = .008$).

Overall, 15.7% (n = 153) of athletes believed that they were either "very" or "extremely" likely to receive a college scholarship based on athletic performance (Figure 2). Nearly 40% (n = 368) of all athletes responded that they were "somewhat likely" to receive a college athletic scholarship. When asked how many youth athletes receive college athletic scholarships, 12.2% (n = 118) of respondents believed that either "most of them" or "almost all of them" receive scholarships (Figure 3). Highly specialized athletes were nearly twice as likely to have a high belief in receiving a college scholarship compared with low-specialization athletes (20.2% vs 10.2%, respectively; $\chi^2 = 18.8$; $P = .001$) (Table 4).

DISCUSSION

The most important finding of this study is that youth athletes strongly believe that sport specialization is an

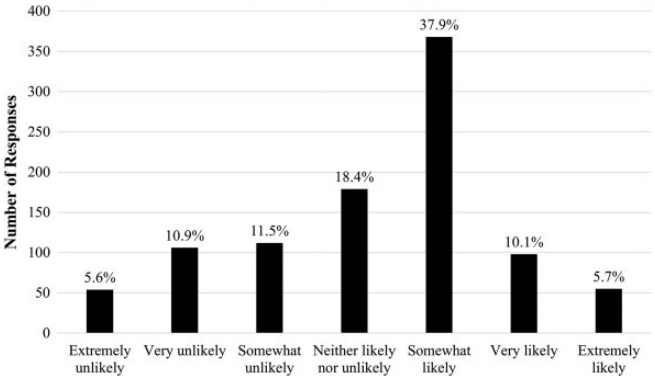

Figure 2. Participant responses to the following question: "How likely do you believe it is that you will receive a college scholarship that is related to athletic performance?"

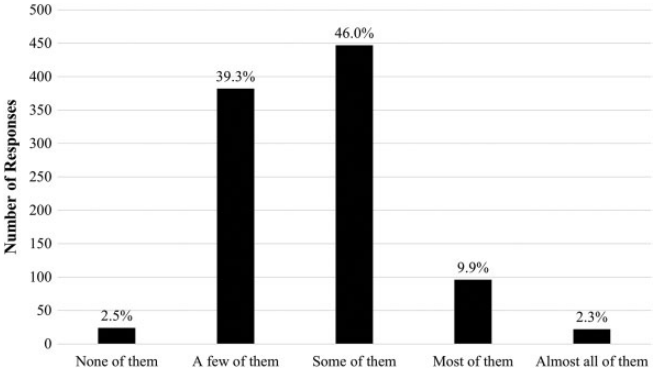

Figure 3. Participant responses to the following question: "About how many youth athletes do you think receive a college scholarship that is related to athletic performance?"

TABLE 4
Association of Specialization Level With Belief in Receiving a College Athletic Scholarship[a]

	Low Belief	Neutral Belief	High Belief	χ^2 Value	*P* Value
Low specialization	56 (23.0)	163 (66.8)	25 (10.2)	18.8	.001
Moderate specialization	51 (14.7)	245 (70.6)	51 (14.7)		
High specialization	53 (13.9)	251 (65.9)	77 (20.2)		

[a]Data are expressed as n (%) unless otherwise indicated. Low belief: "extremely unlikely" or "very unlikely"; neutral belief: "somewhat unlikely," "neither likely nor unlikely," or "somewhat likely"; and high belief: "very likely" or "extremely likely."

effective strategy for improving sport performance and attaining various levels of success in sport. However, the majority of youth athletes do not strongly believe that specialization increases the risk of overuse injuries. Furthermore, the proportion of athletes in this study who believe that they are very or extremely likely to receive a college athletic scholarship is much higher than the National Collegiate Athletic Association (NCAA)–reported proportion of athletes who will receive some form of athletic scholarship, (16% vs 2%, respectively), and the belief in receiving a scholarship was strongest among highly specialized athletes.[27]

The increasing trend toward specialization and year-round sport participation is driven by many potential factors, such as the increasing professionalization and profit made from youth sports, increased media coverage of dominant youth athletes and of sports in general, glorification of athletes as celebrities, and parental pressure for their child to keep up or compete with others.[21,22] The strong belief in specialization as an avenue for improving sport performance could additionally be driven in part by the popularization of the "10,000 hours rule,"[12] which proposes that hours of deliberate practice is the primary mechanism through which elite ability is gained, discounting the effects of genetics, environment, and opportunity.[12,19,33]

We propose that these beliefs may have pervaded not only the adults involved in youth sports but also the youth athletes themselves and that the "10,000 hours rule" may currently be a widely adopted framework across youth sports, despite evidence that this framework may not be applicable to athletic endeavors.[19,33] For example, a recent meta-analysis examining all activities in which deliberate practice has been studied as an avenue for skill development concluded that deliberate practice only explains 18% of the variance in sport performance.[19] Additionally, it appears that these beliefs exist despite research indicating that early sports specialization is not necessary to reach elite levels, such as college or national teams.[5,8,24,31] For example, a retrospective study of Division I athletes found that although specialization rates increased during late adolescence, the majority of athletes were not highly specialized at any point during their high school years.[31]

While our study did not directly examine why certain athletes decided to specialize, our data suggest that youth athletes believe specialization not only improves their chances of receiving a college scholarship but also improves their chances of simply making a high school team. This appears to reflect a disturbing cycle in youth sports, with increased competition and pressure at younger ages and lower levels of play becoming more prevalent as the perceived need to specialize and compete year-round to keep up with peers becomes more common at younger ages. This in turn may decrease opportunities for children to play sports at the interscholastic, intramural, or even community level because of the environment and culture of hypercompetitiveness surrounding youth sports.

Despite most youth athletes believing that specialization leads to increased sport performance and an increased likelihood of making high school and college teams, fewer than half of all athletes strongly believed that specialization increased their chances of injuries. Multiple studies across a variety of youth sport populations have observed consistent associations between specialization or year-round sport participation and overuse injuries.[3,13,15,23,30,32] Most recently, McGuine et al[23] were the first to conduct a

prospective analysis of specialization and injuries and found that being classified as highly specialized was an independent risk factor for sustaining a lower extremity injury during a high school sport season. However, despite the growing accumulation of evidence linking specialization and injuries, it appears that this link is either not being communicated effectively to parents, coaches, or league/team organizers, or those groups believe that the supposed benefits of specialization outweigh the risk.

Sex-based differences were observed in attitudes and beliefs toward sport specialization and injuries. Male athletes were nearly twice as likely to respond that they were "not at all" concerned about the risk of injuries while playing sports compared with female athletes. Similarly, female athletes were more likely to believe that specializing in a single sport increased their risk of sustaining an overuse injury. Despite this belief, female athletes were more likely to view specialization as beneficial to getting better at their sport. Previous research has found adolescent female athletes to be more likely than male athletes to specialize and compete on year-round club teams.[30] The positive attitudes held by female athletes in this study regarding the benefits of specialization may explain the increased rates of specialization previously seen among female athletes. The attitudes and beliefs of female athletes mirror the overall trends seen in this study, with roughly half of female athletes expressing concern regarding the risks of specialization but the vast majority viewing specialization as beneficial to sport performance.

A large majority of athletes responded that getting better at their sport and having fun were "very" or "extremely" important components of participating in youth sports. Previous research has indicated that having fun is the primary reason that children participate in sports and that loss of enjoyment can lead to sport dropout.[6,34] Youth club sport teams often advertise advanced skill development as a reason for joining their team, and because nearly all the participants in this study were club team athletes, it is not surprising that nearly all participants would rate getting better at their sport as highly important. Additionally, Visek et al[35] identified learning and improving at a sport as a primary determinant of whether sport participation is fun for a youth athlete, so the 2 factors are highly linked.

The factors selected by the fewest athletes as "very" or "extremely" important were increasing chances of making an elite team, winning, and spending time with friends. It was surprising that spending time with friends was selected by the fewest athletes of any factor, but this may reflect that these predominantly club team athletes were willing to miss time with friends to achieve their athletic goals. Nearly 82% (n = 795) of all athletes answered "yes" when asked whether they had missed time with their friends in the past year because of their sport. It is possible that children and adolescents are forsaking unstructured time with friends because of the increasingly competitive nature of not only youth sports but also other youth activities, such as music, dance, or art, in which practice and improvement are parent driven and highly structured.[11] Although fewer athletes ranked winning or making an elite team as highly important, both factors were still rated as being "very" or "extremely" important by many athletes, further indicating the highly competitive atmosphere of the club athletes that we surveyed.

Over 50% of athletes believed that there was some degree of likelihood that they would receive a scholarship. Highly specialized athletes were twice as likely to exhibit a high belief in receiving a college scholarship compared with low-specialization athletes, further highlighting the perceived connection between specialization and attaining sport success. The allure of receiving a college scholarship is often cited as a motivation and rationalization for paying extensive fees to participate on exclusive year-round club teams and to travel to tournaments and showcases where college scouts are present.[4] However, according to the NCAA, only 2% of all high school athletes receive some form of athletic scholarship, and even fewer of these receive scholarships that cover the full cost of tuition and housing.[27] Applying this rate to this sample of youth athletes, we would expect only 19 or 20 athletes of 974 to receive some form of college athletic scholarship. Despite this, nearly 16% (n = 153) of youth athletes in this study believed that they were "very" or "extremely" likely to receive a college athletic scholarship.

It is not unexpected that youth athletes would have an optimistic outlook regarding their sport potential or the potential of their peers, and to a certain extent, this should not be discouraged. However, if parent and child decisions are being made with the expectation of receiving a return on a significant financial investment in year-round sports, it may lead to disappointment, stress, and friction between parents and the youth athlete, potentially leading to dropout or burnout from sport participation altogether. For example, adolescent swimmers were more likely to stay in sport if they perceived their parents as being supportive of them but not overinvolved or pressuring them regarding participation.[10]

Overall, nearly 40% of all athletes were classified as highly specialized, and 9 of 10 athletes reported that they played on a club team in addition to their high school team. The prevalence of specialization found in this study is similar to a previous examination of youth athletes participating in summer tournaments, which found that 37.4% of those athletes were highly specialized.[32] However, the extremely high rate of club sport participation seen in the current study is much higher than the rate (50%) that has been reported previously in a sample of high school athletes.[30] This is likely explained by differences in our sample, which consisted of youth athletes participating at sport events outside of the school setting compared with the sample in the previous study, which consisted of high school athletes during their interscholastic season.[30]

The high rate of club sport participation in this study may further explain the relatively large number of athletes who reported believing that they would receive a college athletic scholarship. With the large financial investment often required to participate in club sports, some athletes and parents may view participation on a club team as an investment that will pay off in the future in the form of an athletic scholarship or professional contract. Future research should examine whether beliefs regarding college

scholarships differ between club sport athletes and athletes who primarily participate in a school environment.

The results of this study indicate the need to increase awareness of the risks of early specialization among various youth sport stakeholders, including sport governing bodies, team and league organizers, parents, coaches, and youth athletes. There is a significant disconnect between the published evidence regarding the benefits and risks of sport specialization and the beliefs held by youth athletes. Recently presented data from our research group indicate that this disconnect also exists for parents and coaches (Bell et al, unpublished data, 2018; Post et al, unpublished data, 2018). While parents and coaches do seem more concerned about injuries than the youth athletes in this study, they seem to have similar beliefs regarding the benefits of specialization and may also believe that the potential benefits of specializing outweigh the risk of injuries.

Further, we have observed that although parents and coaches are concerned about injuries, roughly 80% of parents and coaches are unaware of sport volume recommendations that aim to reduce the risk of overuse injuries. These guidelines include limiting the months per year and hours per week that a youth athlete participates in a single sport. This is similar to previous findings from separate studies in youth baseball, in which only about 40% of youth coaches were observed to have accurate knowledge of pitch count recommendations.[9,36] Because of these low levels of awareness and the increasing rates of overuse injuries seen in youth pitchers, Major League Baseball and USA Baseball developed the Pitch Smart initiative, which was aimed at increasing awareness and providing pitch volume guidelines to parents, coaches, and youth athletes.[20] A similar initiative may be necessary to increase awareness of guidelines for reducing the risk of overuse injuries from early specialization.

There are several limitations to this study. Athletes were recruited at sport tournaments and competitions within a single state, and sport attitudes and beliefs may differ in states with differing climates or youth sport cultures. Similarly, these athletes were primarily club team athletes competing in sport events outside of a school setting. Attitudes and beliefs of athletes who compete only in interscholastic sports may differ from those observed in this study. As mentioned previously, the questionnaire utilized in this survey was not validated. However, the format and questions on the questionnaire were developed using feedback from content area experts and a nationally recognized survey center. Finally, as this was a cross-sectional survey, causality cannot be determined for certain beliefs. For example, it cannot be determined if athletes have a high belief in receiving a scholarship as a result of specializing in one sport or if they believe that they are more athletic than their peers and more likely to receive a college scholarship and thus decided to specialize because of that belief.

CONCLUSION

Overall, most club athletes in this study believe that sport specialization increases their sport performance and ability to make not only college teams but also their high school team. Concern regarding the risk of injuries is low among club athletes, and fewer than half of all athletes believe that sport specialization increases the chances of sustaining an overuse injury. Highly specialized athletes are more likely to believe that they will receive a college scholarship, despite evidence indicating that early specialization may not increase the chances of making an elite or collegiate team in many sports.[5,8,24,31] The disagreement between athlete beliefs and previous research in this area indicates the need for improved communication and education regarding the risks and benefits of specialization between sport governing bodies, team and league organizers, parents, coaches, and youth athletes.

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